MCDF PPP HOT TOPICS REPORT SERIES

MCDF PPP Hot Topics Report 2024–2025

Managing Risks, Accessing Diverse Financing Sources, and Innovations in Transport and Small-Scale Public-Private Partnerships

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Foreword

Public-private partnerships (PPPs) enable governments to procure and deliver public infrastructure through the private sector. When properly designed and executed, PPPs can create social value through efficiency gains, innovation in project design, incorporation of global expertise, and access to new sources of capital. Conversely, poorly designed and executed PPPs can fail to deliver on these promises and create additional fiscal, operational, and governance risks compared to traditional financing modalities.

Capacity building for developing country governments on PPPs is therefore essential to ensure that their benefits are harnessed and risks mitigated. To address this need, and as part of its mandate to promote high-quality and sustainable connectivity infrastructure, the Multilateral Cooperation Center for Development Finance (MCDF), in collaboration with Egypt's Ministry of Finance, the African Development Bank, the Asian Development Bank, the Public-Private Infrastructure Advisory Facility, and the World Association of PPP Units & Professionals, launched the annual "Workshop Series on PPP Hot Topics" in 2024. The first two rounds of workshops, held in 2024 and 2025, were extremely popular, attracting 665 practitioners from a wide range of institutions representing the PPP "ecosystem": PPP units, ministries of finance and planning, project developers, financiers, and international organizations. The strong participation demonstrated both the relevance of the topics and the growing demand for practical, internationally aligned knowledge on PPPs across developing countries.

In order to disseminate the content of the workshops to a wider audience, we are delighted to launch the *MCDF PPP Hot Topics Report Series*, which will summarize the key lessons from the workshops every two years. This inaugural 2024–2025 report covers eight workshops under three important themes: managing risks (financial, fiscal, and technological); accessing diverse financing sources (including project preparation funds, climate finance, and land value capture); and innovative sectors (small-scale PPPs and transport PPPs). Under each of these themes, it draws out the top practical lessons identified by experts and experienced practitioners from international financial institutions.

I hope this publication proves to be a valuable resource for all those working to strengthen PPP capabilities and deliver meaningful connectivity for all.

Zhongjing Wang
Chief Executive Officer
Multilateral Cooperation Center
for Development Finance

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The report was copyedited by **Adam Majoe** and proofread by **Maria Priscila del Rosario**. It was designed and laid out by **Maria Guardia Marin** and **Gail Rae Javier**.

This publication presents a summary of the discussions, with in-depth case studies and global lessons, from the two rounds of virtual workshops of the "Workshop Series on PPP Hot Topics" in 2024 and 2025, co-organized by Egypt's Ministry of Finance (Egypt MOF), the African Development Bank (AfDB), the Asian Development Bank (ADB), the Public-Private Infrastructure Advisory Facility (PPIAF), hosted by the World Bank, and the World Association of PPP Units & Professionals (WAPPP). We thank our co-organizers who worked with us in delivering eight successful workshops in the two series:

Egypt MOF: **Atter Hannoura**, Director of the Central PPP Unit

AfDB: **Epifanio Carvalho de Melo**, Manager of the NEPAD Infrastructure Project Preparation Facility; **Ekow Coleman**, Principal Infrastructure Investment Officer, Infrastructure Partnerships Division; **Joel Molel**, Principal Resource Mobilization and Partnerships Officer; **Ababacar Sambe**, PPP Operations Specialist

ADB: **Adrian Torres**, Director, Special Initiatives and Funds; **Helen Steward**, Principal Public-Private Partnership Specialist

PPIAF: **Jane Jamieson**, Program Manager, PPIAF and the Quality Infrastructure Investment Partnership; **Jade Shu Yu Wong**, Senior Infrastructure Finance Specialist, Global Infrastructure Facility; **Deblina Saha**, Infrastructure Specialist, Infrastructure Finance, PPPs and Guarantees Group; **Lorena Meco**, Operations Consultant

WAPPP: **Ziad-Alexandre Hayek**, President; **Jean-Cristophe Barth**, Executive Director

The workshops included overview presentations, case studies, and lessons from practitioners' experiences. We thank the speakers listed below who shared their time and expertise on the various topics.

2024 WORKSHOP SERIES ON PPP HOT TOPICS

Workshop 1: How to Deal with Inflation, Exchange Rate, and Interest Rate Risks in PPPs

Elikia Abraham, Infrastructure and PPP Specialist, World Bank
Atter Hannoura, Director of the Central PPP Unit, Egypt MOF
Elif Erkul, Associate Vice President of Sales and Structuring, TCX Fund
Nasser Massoud, Founder and Managing Director, Concept Realisation
João Reye Sabino, Senior Infrastructure Finance Specialist, Global Infrastructure Facility

Workshop 2: PPP Project Preparation Funds

Mikel Tejada Ibañez, Senior Infrastructure Finance/PPP Specialist, PPIAF
Atter Hannoura, Director of the Central PPP Unit, Egypt MOF
Syed Afsor Hassan Uddin, Principal Investment Solutions Specialist, Asian Infrastructure Investment Bank
Ekow Coleman, Principal Infrastructure Investment Officer, Infrastructure Partnerships Division, AfDB
Ireen Musonda-Habasimbi, Director of Public Investment Planning, Ministry of Finance and National Planning, Zambia
Johnson Mwawasi Kilangi, Director, Taita Taveta Investment & Development Corporation

Workshop 3: PPPs for New Technologies

Mariana Carolina Silva Zuniga, Senior Infrastructure Finance Specialist, Global Infrastructure Facility
Jyoti Bisbey, Executive Committee Member and Head of Partnerships, WAPPP
Cristina Albuquerque, Senior Urban Mobility Manager, WRI Cities Program
Jenny Jing Chao, Senior Public-Private Partnerships Specialist, World Bank

Workshop 4: New Sources of Public Financing for PPPs

Lorena Meco, Program Officer, PPIAF
Jeffrey Delmon City, Senior PPP Specialist, World Bank
Nana Dwemoh Benneh, Chief Executive Officer, Ghana Infrastructure Fund
Euna Shim, Senior Markets Development Advisory Specialist, Office of Markets Development and Public-Private Partnership, ADB

2025 WORKSHOP SERIES ON PPP HOT TOPICS

Workshop 1: Small-Scale PPPs

Jyoti Bisbey, Executive Committee Member, WAPPP
Syed M. Zaidi, Senior Director, Alternative Capital Partnerships, Alberta Infrastructure
Arun Kumar, Principal Investment Officer, AfDB
Thiago Grego, Vice President and Director of Finance, Institute of Planning and City Management, Belo Horizonte
Abduqodir Yoqubov, Deputy Director, PPP Development Department, Ministry of Economy and Finance, Uzbekistan
Moderator: **Ziad-Alexandre Hayek**, President, WAPPP

Workshop 2: Ensuring Fiscal Affordability of PPPs

Mikel Tejada Ibañez, Senior Infrastructure Finance/PPP Specialist, PPIAF
Eunice Ajambo, United Nations Resident Coordinator Office for Namibia, United Nations Economic Commission for Africa
Elena Timusheva, PPP Specialist, Infrastructure Finance, PPPs & Guarantees Group, World Bank
Christine Ng'ang'a, Director of Origination and Structuring, PPP Directorate, Kenya
María Paula Vargas, Director of Fiscal Risks, General Directorate of Public Treasury, Ministry of Economy and Finance, Peru
Jeffrey Manalo, Deputy Executive Director, Public-Private Partnership Center of the Philippines

Workshop 3: Innovation in Transport PPPs

Ekow Coleman, Principal Infrastructure Investment Officer, Infrastructure Partnerships Division, AfDB
Eric Lancelot, Lead Transport Specialist, World Bank
Jit Bhattacharya, Co-Founder and CEO, BasiGo
Radhika Behuria, Social and Gender Specialist, ADB
Sithembiso Mkwanazi, Senior Manager, Performance Monitoring and Evaluation, Government Technical Advisory Centre, National Treasury, South Africa

Workshop 4: Building Bankability of PPPs

Atter Hannoura, Director of the Central PPP Unit, Egypt MOF
Rupinder Kaur Rai, Public–Private Partnerships Specialist, World Bank
Jimmy Pannett, Program Lead, Renewable Energy Integration Program, Climate Investment Funds
Alan Narayadu, Senior Underwriter, Extractive and Energy Sector, Multilateral Investment Guarantee Agency, World Bank
Andrew Yu Han, Senior Investment Specialist, Private Sector Facility, Green Climate Fund
Paolo Craviolatti, Transaction Adviser, Dar, representing WAPPP

Abreviations

ADB	Asian Development Bank
AfDB	African Development Bank
AIIB	Asian Infrastructure Investment Bank
BRT	bus rapid transit
CapEx	capital expenditure
CCI	City Creditworthiness Initiative
CIF	Climate Investment Funds
CPI	consumer price index
EBRD	European Bank for Reconstruction and Development
EPPF	Egypt Project Preparation Facility
EURIBOR	Euro Interbank Offered Rate
EV	electric vehicle
FCCL	fiscal commitments and contingent liabilities
FX	foreign exchange
GCF	Green Climate Fund
GDP	gross domestic product
GIIF	Ghana Infrastructure Investment Fund
GWh	gigawatt-hour
IFC	International Finance Corporation
IFI	international financial institution
IIF	Indonesia Infrastructure Finance
IMF	International Monetary Fund
IPP	independent power producer
IsDB	Islamic Development Bank
ITF	International Transport Forum
km	kilometer
KPI	key performance indicator
LCF	local currency financing
LVC	land value capture
MCDF	Multilateral Cooperation Center for Development Finance
MDB	multilateral development bank
MIGA	Multilateral Investment Guarantee Agency

MOF	Ministry of Finance
MRV	measurement, reporting, and verification
MW	megawatt
NDC	nationally determined contribution
NEPAD-IPPF	NEPAD Infrastructure Project Preparation Facility
O&M	operations and maintenance
OPEX	operating expense
PFRAM	Public-Private Partnerships Fiscal Risk Assessment Model
PIM	public investment management
PPA	power purchase agreement
PPF	project preparation fund/facility
PPIAF	Public-Private Infrastructure Advisory Facility
PPP	public-private partnership
PV	present value
SSPPP	small-scale public-private partnership
tCO_2e	ton of carbon dioxide equivalent
TCX	The Currency Exchange Fund
UNECA	United Nations Economic Commission for Africa
UNFCCC	United Nations Framework Convention on Climate Change
VGF	viability gap funding
WAPPP	World Association of PPP Units & Professionals
WRI	World Resources Institute

Executive Summary

In 2024 and 2025, the Multilateral Cooperation Center for Development Finance (MCDF), together with Egypt's Ministry of Finance (Egypt MOF), the African Development Bank (AfDB), the Asian Development Bank (ADB), the Public-Private Infrastructure Advisory Facility (PPIAF), hosted by the World Bank, and the World Association of PPP Units & Professionals (WAPPP), organized the first two virtual rounds of the "Workshop Series on PPP Hot Topics," spanning eight workshops. The objective of these workshops was to share practical experiences and lessons learned across different regions on topics critical to public-private partnership (PPP) professionals.

The eight workshops addressed three key issues that PPP practitioners typically encounter. First, how to manage diverse risks, ranging from the more typical inflation, exchange rate, and interest rate risks to uncertainties associated with new technologies. Second, how governments can tap new sources of public financing to leverage private capital in a challenging global fiscal environment, which requires high-quality preparation of bankable PPPs. Third, how PPPs are evolving, including emerging issues and innovations. The workshop series also analyzed recent developments in the transport sector and small-scale PPPs.

The workshops were organized around eight key questions faced by PPP practitioners. This Executive Summary presents the context for each of these questions. The Conclusions and Summary Lessons chapter of this publication presents the main lessons learned and recommendations discussed in the workshops.

The workshops included overview presentations, case studies, and lessons from practitioners' experiences. This publication presents a summary of the discussions, with in-depth case studies and global lessons. The workshops are organized into themes as follows.

Managing risk

Inflation, exchange rate, and interest rate risks in PPPs. The long implementation period of most infrastructure PPPs, typically 10–30 years, combined with their capital-intensive nature, can lead to a high proportion of debt financing. Furthermore, a substantial portion of capital expenditures is financed in hard currencies. These factors mean that infrastructure PPPs can be highly sensitive to changes in macroeconomic and financial conditions in developing countries.

Periods of high interest rates, currency devaluation, and inflation can place strain on PPP projects, leading to renegotiation or even contract cancellation. When these risks materialize, the private partner may request increases in tariffs, fees, or other forms of compensation. The workshop on this topic discussed measures government agencies can include in PPP contracts, such as hedging instruments for foreign-currency debt, detailed identification of foreign-currency expenses, targeted indexation, clear rules for debt refinancing, and the distribution of costs and benefits among parties.

Ensuring fiscal affordability of PPPs. While PPPs can be an effective part of the solution for providing infrastructure services when governments face challenging fiscal conditions, these contracts also create multiyear fiscal commitments. Governments may be required to pay subsidies, capital grants, viability gap funding, and other incentives to attract private parties to finance infrastructure assets.

Equally important, PPPs can also create contingent liabilities. These liabilities do not require immediate payment; instead, they arise only when certain contract conditions are not met. In these cases, governments may need to cover payments under guarantees, minimum-revenue obligations, termination payments, or other obligations. In some instances, governments lack a clear view of contingent liabilities across their entire PPP portfolio. It is therefore critical to establish systems to measure, cap, budget for, and control all contingent liabilities across PPP portfolios. Strong leadership from the MOF, together with the execution capability of PPP centers or equivalent government bodies, is indispensable for ensuring the fiscal affordability of PPPs.

PPPs for new technologies. The rapid development and adoption of new technologies are radically changing infrastructure services. This shift requires new assets to be designed to adapt to, and incorporate, emerging technologies to deliver better services. Renewal cycles for many infrastructure assets are shortening, and new delivery approaches are disrupting entire subsectors, from urban mobility to decentralized renewable energy.

PPP contracts with long tenures will be affected by emerging technologies and should be designed to mitigate the impacts of these disruptions, including obsolescence, upgrade cycles, and contract renegotiation. PPPs must also plan for significant risks posed by new technologies, from cybersecurity threats to data governance challenges.

Accessing diverse financing sources

New sources of public financing for PPPs. The bankability of PPPs and their credibility with potential private sector partners depend on the level of public funding committed to a project. However, fiscal constraints and the challenges of substantially raising user tariffs and fees require governments to be creative in finding new sources of public funding. The workshop on this topic discussed several new sources, including land value capture (LVC), property developer contributions, brownfield asset recycling, carbon market revenues for green infrastructure PPPs, and funding from global climate funds.

LVC refers to financial mechanisms that enable the government to monetize a portion of the benefits that land and property owners expect to receive from the construction or upgrading of infrastructure assets and services under a PPP. Brownfield asset recycling involves selling or leasing existing infrastructure assets to unlock capital for new or upgraded infrastructure. Green infrastructure investments, when well designed, can generate revenue from voluntary carbon trading, carbon taxes, and related mechanisms, as well as from global climate funds such as the Green Climate Fund.

PPP project preparation funds. High-quality preparation of PPP transactions is a determining factor in the successful closure of contracts and subsequent implementation over 10–30 years of service provision. The preparation of PPP transactions is a complex endeavor that encompasses a wide range of technical studies, legal and procurement work, and contract design. Advisory services for PPPs are expensive, and contracting agencies do not always have the financial resources, budget mechanisms spanning fiscal years, or procurement and contracting capabilities to bring individual transactions to fruition. Improvised processes by agencies with insufficient experience can lead to slow, costly processes that frustrate decision-makers.

For these reasons, many countries have set up PPP project preparation funds. These funds provide not only the financial resources for high-quality preparatory work but also the standardization and PPP expertise that agencies need to complement their deep sectoral knowledge. The workshop on this topic explored various models, governance lessons, funding sources, and potential risks, including three typical biases: "PPP bias," where all infrastructure projects are pushed to be PPPs, "donor bias," where the source of funding influences which PPPs are supported, and "study bias," where the fund supports many studies but few deals.

Building bankability of PPPs. PPPs need to be bankable to mobilize debt and private equity financing. A PPP transaction is generally considered bankable if it meets five conditions: a reliable and credible revenue stream; transparent and fair risk allocation; adequate instruments to cover residual risks; a credible dispute-resolution mechanism; and realistic mechanisms to ensure prompt approval of documents and meet all necessary prerequisites for project initiation.

The workshop on this topic discussed actions governments can take to make PPPs bankable, including implementing robust screening processes, a credible team of advisors, a strong PPP unit or center, and a solid, credible pipeline of PPPs, among others.

Innovative sectors

Innovations in transport PPPs. The workshop series selected the transport sector to discuss the rapid changes it is experiencing and the impacts of those changes on PPPs, including contract design, digital technologies, and other technological advances.

In the urban public transport sector, some cities are contracting private operators to provide electric bus services, paying per kilometer, and through viability gap payments, rather than purchasing buses directly. In the railway sector, modern concessions are innovating by incorporating comprehensive performance requirements (such as availability, punctuality, safety, cleanliness, feeder integration, and customer feedback) through data-driven asset and performance monitoring. Performance-based maintenance PPPs for roads are becoming more common. As climate shocks become more frequent and intense, transport PPP contracts are incorporating more explicit climate considerations, including in road maintenance contracts.

Small-scale PPPs. While most PPPs are designed for large infrastructure assets, the model can also be applied to smaller assets and service areas, including at the municipal level. However, small-scale PPPs often require a different approach, as the contracting agencies, private providers, and financing they mobilize are different. These PPPs generally have higher fixed preparation costs, requiring as much streamlining and standardization as possible. Bundling and aggregation of assets or geographical areas can increase the scale of services and attract larger private investors. Performance monitoring and dispute resolution mechanisms also need to be simpler than those used for large PPPs, given the more limited technical and financial capacity of the private parties compared to large infrastructure companies. Finally, the range of financial instruments used for small-scale PPPs is broad, ranging from vendor finance to direct finance, leasing, and local bank loans.

Despite these challenges, small-scale PPPs can be an effective tool for mobilizing private sector financing and improving the quality of delivery of municipal services and smaller assets. The workshop discussed well-functioning examples in education, street lighting, smallholder irrigation, and small-scale water supply services, among others.

1. Introduction

In 2024 and 2025, the Multilateral Cooperation Center for Development Finance (MCDF), together with Egypt MOF, the African Development Bank (AfDB), the Asian Development Bank (ADB), the Public-Private Infrastructure Advisory Facility (PPIAF), hosted by the World Bank, and the World Association of PPP Units & Professionals (WAPPP), organized two virtual rounds of the "Workshop Series on PPP Hot Topics," spanning eight workshops.

These were designed to build practical, practitioner-oriented skills and share best practices on topics critical to public-private partnership (PPP) professionals. The workshops went beyond standard PPP training by focusing on niche and emerging issues, shared experiences from developing-country PPP programs, and applied insights from international financial institutions (IFIs) and financiers.

The workshops covered eight topics that can be grouped as follows:

Managing risk:

- **Inflation, exchange rate, and interest rate risks in PPPs:** Practical approaches to identifying, allocating, and indexing key macro-financial risks in PPP contracts.
- **Ensuring fiscal affordability of PPPs:** Practical fiscal affordability assessments and mechanisms used by countries to ensure PPPs minimize fiscal risks, including through better monitoring and management of contingent liabilities.
- **PPPs for new technologies:** How PPP programs can accommodate fast-changing technologies and avoid locking in obsolete solutions.

Accessing diverse financing sources:

- **New sources of public financing for PPPs:** How governments can complement private finance with new public financing sources to improve feasibility and affordability.
- **PPP project preparation funds:** How preparation facilities are structured, funded, governed, and, in some models, replenished through cost-recovery mechanisms.
- **Building bankability of PPPs:** Tools and approaches to strengthen bankability (including government support mechanisms and the role of climate/concessional finance in de-risking).

Innovative sectors:

- **Innovations in transport PPPs:** What are the latest trends and innovations in transport PPPs around the world?
- **Small-scale PPPs:** How are small-scale PPPs different in their formulation, tendering, and implementation from large-scale PPPs? What lessons have been learned from small-scale PPP programs?

The workshops included overview presentations, case studies, and lessons from practitioners' experiences. This publication presents a summary of the discussions, with in-depth case studies and global lessons. It is organized following the same sequence as the workshop series. The chapters include brief overviews of the topics and why they are important, followed by summaries of the workshops.

Recordings and downloadable presentations from the PPP Hot Topics Workshop Series are available on the MCDF website.

2. Managing Risk

2. Managing Risk

2.1 Inflation, Exchange Rate, and Interest Rate Risks in PPPs

Topic Overview

This workshop in the "PPP Hot Topics" series examined the risks that PPP projects face from inflation, exchange rate, and interest rate changes. Most infrastructure PPPs are contracted for an extended period of time, commonly 10–30 years. They are also capital intensive and immobile, and are mostly financed with a high proportion of debt. Finally, most infrastructure projects allocate a portion of capital expenditures (e.g., for imported equipment) and a portion of their debt denominated in foreign hard currencies, while revenues are in the local currency (e.g., tariffs and fees).

For these reasons, infrastructure PPPs are sensitive to macroeconomic and financial shocks and to episodes of high inflation. In many developing countries, economic history has seen periods of rapid devaluation against hard currencies such as the US dollar and the euro.

If PPP contracts are not prepared to deal with these risks, the infrastructure project will face liquidity stresses with significant consequences for the private party.[1] The pressure to renegotiate the contract will increase as the private party seeks increases in tariffs, fees, or other forms of compensation. In extreme cases, the government may incur significant fiscal exposure and face a potential crisis in the provision of infrastructure services if the contract fails. For these reasons, proper planning of PPP transactions and good design and management of PPP contracts are indispensable.[2]

Some of the common measures to deal with foreign exchange risk include careful monitoring of project components that require purchases in hard currency, hedging instruments for debt in foreign currency, and government support mechanisms to shift all or part of the risk to the public sector (such as indexation). However, experience shows that indexed tariffs that automatically pass the entire impact of devaluation on to consumers can lead to challenging affordability crises.[3]

For interest rate risks, well-designed PPPs typically define which party (public or private) bears the risk of base-rate movements, what hedging is needed, and how refinancing gains and losses will be allocated to the contracting parties.[4]

Finally, most PPP contracts include inflation indexation. A careful design will distinguish between a fully unitary charge versus operation and maintenance (O&M)

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1 World Bank, *How to Deal with Exchange Rate Risk in Infrastructure and Other Long-Lived Projects* (2023). https://documents1.worldbank.org/curated/en/099212209192362605/pdf/IDU0877f762b0163d04f400b28302d18946b5eec.pdf

2 World Bank, "Fiscal Risk in PPPs—What's the Problem & What to Do?," *World Bank Blogs*, April 30, 2020. https://blogs.worldbank.org/en/ppps/fiscal-risk-ppps-whats-problem-what-do

3 OECD, *OECD Principles for Private Sector Participation in Infrastructure* (2007). https://www.oecd.org/content/dam/oecd/en/publications/reports/2007/07/oecd-principles-for-private-sector-participation-in-infrastructure_g1gh801a/9789264034105-en.pdf

4 World Bank, *Public Private Partnership Handbook* (2023). https://documents1.worldbank.org/curated/en/099011524111939011/pdf/P17218315f839d0d18db4145d96004bea4.pdf

indexation, a clear index (consumer price index (CPI) or more specific sectoral indices), and bands with caps and floors, plus levels of extreme inflation that require different solutions.[5]

There have been several cases in which these risks have materialized, resulting in highly challenging situations for governments, the private sector, and the public. For example, Buenos Aires' water and sewer services were awarded through a 30-year concession in 1993, with a commitment to substantial investment to improve service quality and coverage in the Argentinian capital. In 2001–2002, the country faced a macroeconomic crisis that ended the Argentinian peso's parity with the US dollar. This caused a sharp devaluation in the currency and rapid inflation. The shock led to a prolonged renegotiation process between 2002 and 2006, with rising social tensions linked to the affordability of water and sanitation services. Eventually, the government cancelled the concession in 2006 and transferred the services to a new public company. The arbitration process lasted until 2015, and the government had to compensate the private concessionaire for about $380 million, plus interest.[6]

In 1989, Mexico's federal government launched an ambitious toll road program with 53 concessions covering 5,500 kilometers (km). A total of $13 billion was invested over 1989–1994, financed mainly by domestic commercial bank debt (primarily short-maturity, variable-rate loans), with some equity and government contributions. The PPP contracts included semiannual CPI-linked road toll adjustments, and some included provisions to deal with lower-than-expected traffic levels. The country experienced a currency crisis in 1994 that led to a sharp spike in interest rates (to more than 100% per year for many projects) and reduced economic activity due to the economy's poor performance. Banks faced non-performing loans with concessions estimated at $4.5 billion–$5.0 billion. By 1997, nearly 40 projects had entered into restructuring and renegotiation. In August of that year, the government was forced to put together a restructuring package of Mex$60 billion of project debt and a Mex$19 billion cash injection.[7]

Practitioners' Discussion and Case Studies

The workshop included overview presentations by Elikia Abraham, Senior Infrastructure Specialist at the World Bank, and Atter Hannoura, Director of the Central PPP Unit, Egypt MOF. These were followed by a panel discussion with Elif Erkul, Associate Vice President of Sales and Structuring at TCX Fund; Nasser Massoud, Founder and Managing Director, Concept Realisation; and João Reye Sabino, Senior Infrastructure Finance Specialist, Global Infrastructure Facility.

5 European PPP Expertise Centre (EPEC) and European Investment Bank, *EPEC Guide to Public-Private Partnerships* (2021). https://www.eib.org/files/publications/epec_guide_to_ppp_en.pdf

6 International Centre for Settlement of Investment Disputes (ICSID), *Decision on Argentina's Application for Annulment* (2017). https://icsidfiles.worldbank.org/icsid/ICSIDBLOBS/OnlineAwards/C19/DC10372_en.pdf

7 World Bank, *A Retrospective on the Mexican Toll Road Program* (1989–94) (1997). https://documents1.worldbank.org/curated/en/587931468757220112/pdf/17083-Replacement-file-125RUSTE.pdf

World Bank Insights on Local Currency Financing

Elikia Abraham, Senior Infrastructure Specialist at the World Bank, presented the findings from a recent publication by the PPIAF on local finance for sustainable infrastructure.[8] One of the most important challenges for infrastructure PPPs in developing countries is the currency mismatch between local-currency revenue and foreign-currency debt service.

Local currency financing (LCF) can help address this challenge by reducing foreign exchange risk and pressure on the country's foreign reserves and by aligning debt service with local revenue streams. At the same time, LCF helps unlock domestic pools of capital for infrastructure development and can strengthen local financial systems.

As highlighted by Ms. Abraham, developing LCF for infrastructure requires countries to consider both the credit/banking and capital markets. There is more research and experience on capital market development. The PPIAF publication focuses more on emerging practices and lessons learned in the development of long-term credit markets and on crosscutting approaches that connect the credit and capital markets.

There are at least five significant barriers to LCF in developing countries. First, thin domestic markets have limited ability to lend in local currency. Second, national banks typically have tenors much shorter than those required by infrastructure developers (typically exceeding 10 years). Third, Basel III requirements can discourage long-term lending (as infrastructure is not recognized as a distinct asset class with strong default recovery potential). Fourth, national banks may lack the expertise required to appraise and conduct due diligence on infrastructure projects or on non-recourse project finance structures. Finally, high domestic interest rates can lead to a preference for foreign-currency borrowing despite its higher risk.

Key Lessons/Innovations: Ms. Abraham discussed the three key characteristics of a national ecosystem supportive of LCF for infrastructure:

- **Macroeconomic stability:** Stable macroeconomic conditions translate into lower inflation and interest rates, stronger growth, and greater fiscal headroom.
- **Diverse supply of finance through multiple channels:** These can include (i) institutional investors like pension and insurance companies; (ii) capital markets supported by an established government yield curve; (iii) credit markets with longer tenors for infrastructure; (iv) alternative financial vehicles (such as infrastructure funds and private equity) that can aggregate projects and strengthen structuring and risk appraisal; and (v) de-risking instruments (such as credit enhancement, risk-sharing facilities and partial credit guarantees).
- **A strong pipeline of bankable infrastructure projects and a supportive enabling environment:** This should include good PPP regulatory frameworks, predictable procurement and contract enforcement, and early integration of LCF into project design.

8 World Bank, *Unlocking Local Finance for Sustainable Infrastructure* (2024). https://documents1.worldbank.org/curated/en/099091124150032446/pdf/P179102-e6a66f88-ee32-4553-b4a1-825d8f88cba9.pdf

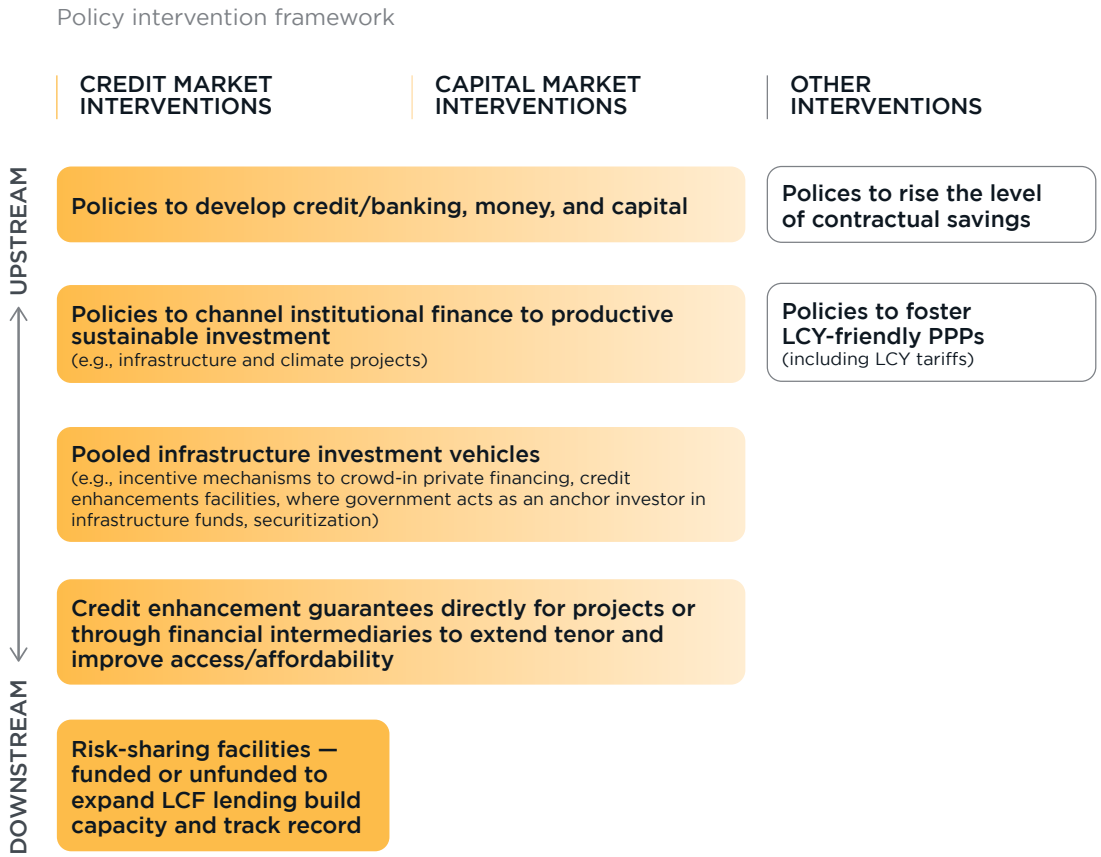
- **Capacity for structuring and credit evaluation skills for sustainable infrastructure financing:** This includes developing local currency schemes to build capacity and support the low-carbon transition.

An important contribution of the PPIAF publication is a policy intervention framework, as shown in Figure 1, outlining specific actions that countries can take to advance a robust LCF market for infrastructure investments. Box 1 presents some case studies discussed at the workshop and in the publication.

In order to provide countries and practitioners with practical tools, priority intervention roadmaps, and capacity building to deepen LCF for infrastructure, PPIAF has developed an LCF platform and toolkit that aim to gather global knowledge and expertise, address some of the key binding constraints to LCF, and provide step-by-step guidance on implementing selected case studies and international best practices. The platform is accessible at www.localinfrafinance.org.

In conclusion, countries should see LCF as a system-building agenda rather than a single-transaction action. The building blocks in Figure 1 are the foundation of the LCF system and its long-term evolution.

Figure 1: Upstream and Downstream Policy Interventions by Category



LCF = local currency financing, LCY = local currency, PPP = public-private partnership.

Source: World Bank, Unlocking Local Finance for Sustainable Infrastructure (2024). https://documents1.worldbank.org/curated/en/099091124150032446/pdf/P179102-e6a66f88-ee32-4553-b4a1-825d8f88cba9.pdf

Box 1: Examples of Local Currency Financing Analysis for Infrastructure PPPs

Malaysia: The country's very high savings rate, combined with mandatory public pension plans and a strong, diverse banking market, provides a solid basis for LCF for infrastructure PPPs. In addition, the country has a deep institutional investor base, including pension funds, insurance companies, and *takaful* (Shariah-compliant) companies. These investors provide liquidity to fund long-term infrastructure projects. The financial market has developed over the last decades to the point where, in 2019, nearly 80% of the country's non-financial corporate debt was denominated in ringgit.

Finally, Malaysia has a series of infrastructure development programs that provide a strong basis for LCF mobilization, including a toll road program, the Green Technology Financing Scheme, which supports green infrastructure projects, and the Large Scale Solar program, which has been highly successful. For example, the toll roads program comprises 31 highways, with approximately 2.6 million vehicles per day during peak travel periods, and a network length of 1,121 km.[1] The Green Technology Financing Scheme has supported 319 projects with more than RM3.5 billion in financing through a combination of partial guarantees, interest rebates, and a central certification mechanism to standardize "green" projects.[2] The Large Scale Solar program has been instrumental in Malaysia, having approved 6,028 MW for 117 companies after several successful rounds of support.[3]

Indonesia: The Indonesian financial sector is smaller than that of other middle-income countries in East Asia. As of 2023, financial sector assets accounted for approximately 72% of gross domestic product (GDP).[4] Mutual funds, pension funds, and insurance companies are among the institutional investors in the country. However, the largest issuer of bonds is

1 Highway Authority Malaysia, *Annual Report 2021* (2022). https://www.scribd.com/document/672253419/LLM-2021

2 "More RM35 Bln Approved for Green-Based Projects," *OANA News*, accessed January 13, 2026. https://oananews.org/content/news/bussiness/more-rm35-bln-approved-green-based-projects

3 "Over 6 GW of Solar Approved Under Malaysia's Large-Scale Solar Program," *pv magazine*, October 9, 2025. https://www.pv-magazine.com/2025/10/09/over-6-gw-of-solar-approved-under-malaysias-large-scale-solar-program

4 International Monetary Fund, *Indonesia: Country Report No. 24/003* (2024). https://www.imf.org/-/media/files/publications/cr/2024/english/1idnea2024003-print-pdf.pdf

the government, accounting for 92% of the market as of September 2023. To address the need for LCF in infrastructure PPPs, Indonesia has established state-backed entities such as Indonesia Infrastructure Finance (IIF) and the Indonesia Infrastructure Guarantee Fund. IIF was established in 2010 to provide loans (including senior debt, mezzanine, and bridge financing), guarantees, and equity investments to support infrastructure projects.[5] It has total assets of Rp15.1 trillion and net investment commitments of Rp15.8 trillion.[6] Some of its sources of financing include a 2023 issuance of Green Perpetual Notes (Rp335 billion) and a $150 million Sustainability Bond on the Singapore Exchange in 2021, among others. IIF plans to continue scaling up sustainable infrastructure finance in Indonesia through thematic issuance, deepening blended structuring tools, and expanding its advisory services to improve project bankability.[7]

Cameroon: The Nachtigal Hydropower project is a 420 MW run-of-river project developed through a PPP. The plant is fully operational and serves as a good example of LCF mobilization in Africa.[8] An interesting feature of this project is that it mobilized an unprecedented 21-year LCF, in which five local and regional commercial banks provided about a third of the total project debt, amounting to €171 million.[9] Local banks were selected competitively to develop local lending capacity for long-term, limited-recourse infrastructure finance. This local financing was made possible by an International Bank for Reconstruction and Development project-based guarantee and a Multilateral Investment Guarantee Agency (MIGA) political risk guarantee.[10]

5 PT Indonesia Infrastructure Finance, "IIF Holds AGMS for Fiscal Year 2024," April 29, 2025. https://iif.co.id/en/news/iif-holds-agms-for-fiscal-year-2024/

6 PT Indonesia Infrastructure Finance, "Annual Reports," accessed January 13, 2026. https://iif.co.id/en/investor/financial-informations/annual-reports/

7 PT Indonesia Infrastructure Finance, "IIF Highlights Sustainable Infrastructure Financing Through Bond Issuance at the Orange Forum 2025," November 17, 2025. https://iif.co.id/en/news/iif-highlights-sustainable-infrastructure-financing-through-bond-issuance-at-the-orange-forum-2025/

8 World Bank, *Restructuring Paper on a Proposed Project Restructuring of the Electricity Transmission and Reform Project to the Republic of Cameroon* (2025) https://documents1.worldbank.org/curated/en/099063025121015033/pdf/P152755-f71dce77-87cd-4075-9100-8da431cd594a.pdf

9 World Bank, "Hydropower in Cameroon: Made Possible Through Local Banks' Participation & Novel Infrastructure Financing," *World Bank Blogs*, June 5, 2019. https://blogs.worldbank.org/en/ppps/hydropower-cameroon-made-possible-through-local-banks-participation-novel-infrastructure

10 World Bank, *Nachtigal Hydropower Project: Project Appraisal Document* (2018). https://documents1.worldbank.org/curated/en/677811532921465831/pdf/Nachtigal-PAD-final-clean-mark-up-para-105-002-07242018.pdf

Egypt's Approach to Managing Macroeconomic Risks in PPP Contracts

Atter Hannoura, Director of the Central PPP Unit at Egypt MOF, discussed the mechanisms developed in Egypt to address inflation, exchange rate, and interest rate risks in PPPs. Financial risks in PPPs refer to uncertainties or potential adverse events that can impact the financial performance, profitability, and sustainability of a project. These risks arise from various sources and can affect different aspects of a project's financial structure and operations.

Mr. Hannoura emphasized the need for careful risk assessment, risk allocation in PPP contracts, the design of mitigation strategies (such as insurance or hedging), and ongoing contract monitoring and management throughout the project cycle.

Egypt's PPP framework has evolved to include several mechanisms to deal with risk. For example, it provides for the option of price adjustment mechanisms, and, if required, inflation-index and interest-rate adjustments. The PPP framework also allows for selective government support.

In PPP projects, indexation mechanisms are used to adjust payments and other financial aspects of the contract to account for changes in specific economic factors over time, such as inflation and other cost escalations. The indexation mechanisms are typically specified in the contract documents and agreed upon by the public and private partners to manage financial risks.

Interest rate risk can be managed through hedging strategies or by linking interest rates to benchmarks such as the Euro Interbank Offered Rate (EURIBOR). At times, the Government of Egypt has assumed the risk of interest rate changes in PPP contracts to promote stability and attract private investment. The possibility of lower interest rates in the future can be addressed by adjusting the annual payments in accordance with the rules clearly defined in the PPP contract.

An initial adjustment for interest rate changes may be made on the effective date, based on the terms of the financial closure, rather than the financial model submitted as part of the financial bid. Subsequent adjustments may be made annually to reflect changes in local and foreign interest rates. This applies to the project company's outstanding senior debt under the financing agreements.

To mitigate inflation risk, the Egyptian PPP framework permits inflation indexation, linking project revenues, costs, or financial arrangements to changes in the national inflation rate. This helps protect the real value of payments or revenues over the project's duration. When using inflation indexation, the contract includes a base index (e.g., the national CPI) and an annual adjustment rule applicable only to the operating expenses portion of the annual payment.

For foreign exchange rate risks, PPP projects in which revenues and expenses are incurred in different currencies can use hedging instruments or exchange rate indexation in the PPP contract. For this indexation to work, the payments should be separated into two components: a portion paid in Egyptian pounds and another in US dollars.

Finally, Egypt's PPP legal framework permits contract renegotiation and amendment in response to unexpected changes in circumstances, such as extreme macroeconomic shocks that might affect the project. Ultimately, the PPP framework allows the MOF to act as a guarantor of public-party obligations in certain contracts.

Box 2 shows examples of how Egypt has handled inflation, exchange rate, and interest rate risks in PPP contracts.

Box 2: Risk Management in Egyptian PPP Contracts

New Cairo Wastewater Treatment Plant: In this PPP contract, payments were made through a quarterly sewage treatment charge consisting of a capacity charge (which covers CaPEX, debt service, and the internal rate of return) and a variable portion (variable OPEX). The operating portion of the charge (including both fixed and variable OPEX) was indexed annually to the national Producer Price Index.[1] The senior and subordinated debt were indexed to 3-year certificates of deposit issued by four "reference" banks, with index resets occurring every 3 years. This mechanism kept indexation linked to more appropriate instruments, given the limited availability of long-tenor fixed-rate local-currency debt in the country at the time.[2] By having transparent adjustment rules, the government could avoid bidders including large contingencies in their financial proposals to protect against these risks.

Damietta Port Container Terminal II: This terminal, located on Egypt's Mediterranean coast, is positioned as a transshipment and gateway hub[3] with a capacity of 3.3 million twenty-foot equivalent units.[4] The PPP contract was structured as a 30-year build–own–operate–transfer concession, under which the private party was responsible for the terminal superstructure and the public party for the provision of marine and civil infrastructure works. An important anchor for the expected volume of containers was the terminal operator's commitment to divert a portion of its Eastern Mediterranean traffic to the new terminal.[5]

The project cost of $665 million was financed through a $455 million debt package supported by the European Bank for Reconstruction and Development (EBRD), the International Finance Corporation (IFC), the Asian Infrastructure Investment Bank (AIIB), DEG, and Proparco, with

1 Infrastructure Consortium for Africa (ICA), "Case Study on New Cairo Wastewater Project" (2012). https://www.icafrica.org/fileadmin/documents/ICA_sponsored_events/IFC_PPP_Water_Dakar_June2012/Presentations/Training_Day/T%203c_New%20Cairo%20training_Draz.pdf

2 Ibid.

3 Asian Infrastructure Investment Bank, "Egypt: Damietta Port – Container Terminal II" (2023). https://www.aiib.org/en/projects/details/2023/approved/Egypt-Damietta-Port-Container-Terminal-II.html

4 International Finance Corporation (IFC), "IFC and Partners Provide $455 Million to Expand Egypt's Damietta Port, Supporting Trade and Jobs" *IFC Pressroom*, December 21, 2023. https://www.ifc.org/en/pressroom/2023/ifc-and-partners-provide-455-million-to-expand-egypts-damietta-p

5 Hapag-Lloyd, "Press Release: Damietta Alliance Final Financing Contract Signed," December 21, 2023. https://www.hapag-lloyd.com/content/dam/website/downloads/pdf/2023_12_21_Press_Release_Damietta_Alliance_Final_Financing_Contract-Signed_EN.pdf_EN.pdf

the remaining equity provided by the project sponsors. This PPP project did not have a foreign exchange index clause because port operations have a "natural hedge" via hard-currency revenue exposure. The port generates a substantial share of revenue in international currencies (unlike a purely domestic-demand terminal). Even local charges are published in US dollars, and invoices are issued in Egyptian pounds at the current Egyptian pound–US dollar exchange rate. For development finance institution loans, the loans are usually signed with a floating rate (e.g., Secured Overnight Financing Rate (SOFR)/Euro Interbank Offered Rate (Euribor)-based), and swaps are used to fix or cap rates on part of the exposure.[6]

Benban Solar PV Program, Phase II: This program is a large cluster of 11 privately developed, utility-scale solar PV plants implemented under Egypt's Feed-in Tariff Round 2 framework with 25-year power purchase agreements (PPAs).[7] The program was financed by several development finance institutions (including the EBRD, the Netherlands Development Finance Company, IFC, the Islamic Development Bank (IsDB), the Islamic Corporation for the Development of the Private Sector, the Green Climate Fund, and Africa50, among others).[8] Foreign exchange risk was managed through a payment structure in which 30% of the tariff value was calculated at a fixed exchange rate of E£8.88 = $1, and 70% was calculated at the Egyptian pound–US dollar exchange rate on the billing date.[9] This mechanism reduced (but did not eliminate) the project's exposure to Egyptian pound depreciation relative to US dollar-denominated debt service.

Build–Own–Operate Wind Independent Power Producer (IPP) Program: This is a private IPP/PPP model for utility-scale wind farms in which a private company builds, owns, and operates the wind plant and sells electricity to the national off-taker under a long-term contract (20–25 years). The program targeted 2,500 MW of wind power.[10] This program included flagship projects such as the Ras Ghareb Wind Project (262.5 MW), the West Bakr Wind Project (252 MW), and the Red Sea Wind Energy Project (650 MW). All the projects were supported by long-term foreign-currency project finance debt from development finance institutions and commercial lenders (such as IFC, EBRD, and Overseas Private Investment Corporation for West Bakr and the Japan Bank for International Cooperation and others for Red Sea Wind Energy), as well as political risk guarantees (for example, from MIGA for West Bakr).[11] Foreign exchange rate risks were explicitly included in the bidding documents by accepting foreign-currency-denominated PPAs and by confirming central bank guarantees for all build–own–operate projects.[12] The combination of PPA guarantees, debt of development finance institutions, and political risk guarantees was critical for unlocking large-scale wind projects with competitive tariffs that did not require subsidies.[13]

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6 IFC, "Early Warning System, IFC-45868, Damietta Port II" (2024). https://ewsdata.rightsindevelopment.org/projects/IFC-45868/pdf/

7 Asian Infrastructure Investment Bank, "Egypt: Egypt Round II Solar PV Feed-in Tariffs Program" (2017). https://www.aiib.org/en/projects/details/2017/approved/Egypt-Egypt-Round-II-Solar-PV-Feed-in-Tariffs-Program.html

8 Africa50, "Africa50 and Its Partners Announce the Completion of the 390 MW Benban Solar Power Project in Egypt," October 24, 2019. https://www.africa50.com/media/news/article/africa50-and-its-partners-announce-the-completion-of-the-390-mw-benban-solar-power-project-in-egypt-306/

9 International Renewable Energy Agency (IRENA), *Renewable Energy Outlook: Egypt* (2018). https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2018/Oct/IRENA_Outlook_Egypt_2018_En.pdf

10 World Bank, *Project Appraisal Document to the Arab Republic of Egypt for a Wind Power Development Project* (2010). https://www.cif.org/sites/default/files/Wind_Power_Development_IBRD_PAD.pdf

11 International Finance Corporation (IFC), "IFC and MIGA to Support Landmark Wind Farm on Egypt's Gulf of Suez," *IFC Pressroom*, August 8, 2019. https://www.ifc.org/en/pressroom/2019/ifc-and-miga-to-support-landmark-wind-farm-on-egypts-gulf-of-sue

12 World Bank, *Project Information Document: Wind Power Development* (2010). https://documents1.worldbank.org/curated/en/530451468026380836/pdf/PID0Wind0Power0Dev10April022.pdf

13 European Bank for Reconstruction and Development, "US$ 252 Million Loan for 250 MW Wind Farm in Gulf of Suez," August 8, 2019. https://www.ebrd.com/home/news-and-events/news/2019/us-252-million-loan-for-250-mw-wind-farm-in-gulf-of-suez.html

TCX Fund Lessons on Managing Foreign Exchange Risk in Infrastructure Finance

Elif Erkul, Associate Vice President of Sales and Structuring at TCX Fund (The Currency Exchange Fund), presented the fund's operations and practical experiences. TCX Fund is a development finance initiative founded in 2007 to support infrastructure projects in developing countries that face foreign exchange risk. TCX was set up to centralize and pool currency risk management for development actors and to make long-tenor local-currency financing feasible by providing hedges in currencies or maturities not covered by regular market providers.[9]

TCX provides cross-currency swaps and foreign exchange (FX) forwards. Through these products, it offers non-deliverable structures in which cash flows are denominated in local currency but settled in US dollars, creating a "synthetic" local-currency loan from the borrower's perspective. Through its activities, TCX helps build offshore yield curves and price references for illiquid currencies by engaging in repeat long-tenor risk-taking.

Some of TCX's transactions include those in Georgia ($35 million, 9-year Georgian lari loan to a water utility), Argentina ($50 million, 9-year Argentine peso loan for an urban public transport project), and more than $100 million-equivalent in long-term local-currency loans to power utilities in Uruguay, Costa Rica, and Jamaica.[10]

Key Lessons/Innovations: Ms. Erkul highlighted five lessons from TCX Fund's experience in managing FX risk:

- **Treat FX mismatch as a systemic bankability risk:** Currency mismatch should be addressed as a core issue, not a side issue, as financing infrastructure PPPs with hard currency alone is not sustainable.
- **Prioritize local-currency debt service for local-currency revenue projects:** Where project revenues are in local currency, structure financing so debt service is also in local currency, or use hedging to swap hard-currency funding into local-currency obligations to stabilize cash flows.
- **Use blended finance where hedging is costly:** In high-risk currencies, hedging can be expensive, so concessional or blended finance may be needed to make FX risk mitigation affordable and maintain project viability.
- **Address risks that hedging cannot solve:** Develop solutions for risks beyond hedging, such as FX convertibility and transfer challenges or necessary tariff increases.
- **Integrate FX risk mitigation early in project design:** FX mitigation should be built in early as it can heavily influence the financing plan (e.g., tariff structure, indexation choices, or tenor profile).

9 "About the Fund," TCX, accessed January 13, 2026. https://www.tcxfund.com/about-the-fund/

10 TCX, "Bright Ideas: DFIs Up Local Currency Lending" (2019). https://www.tcxfund.com/wp-content/uploads/2019/02/Bright-ideas_-DFIs-up-local-currency-lending_LP-TXF-News.pdf

Global Infrastructure Facility Insights on Managing Exchange Rate Risk in PPPs

João Reye Sabino, Senior Infrastructure Finance Specialist at the Global Infrastructure Facility, discussed a G20/Global Infrastructure Facility/International Monetary Fund (IMF) report (prepared for the G20 Infrastructure Working Group under Brazil's presidency) that focuses on exchange rate risk.[11] The report emphasizes that FX risk is complex and multilayered, reflecting both country-level enabling policies and conditions (e.g., market depth and macroeconomic frameworks) and project-level structuring choices. There is no one-size-fits-all solution because the availability of instruments varies widely across countries. Larger economies may draw on deeper capital markets and more diverse hedging and financial instruments, while less mature markets often lack the long-term yield curves and benchmarks that underpin local-currency pricing and risk management. Some of the lessons and recommendations of the report include:

Key Lessons/Innovations: Mr. Reye Sabino highlighted three lessons from the report on managing exchange rate risk:

- **Use a portfolio of approaches to tackle FX risk:** Effective FX risk management should include "natural hedges" (such as localizing inputs or generating hard-currency revenues, where feasible) alongside contractual and financial instruments.
- **Eliminate currency mismatches over time through local-currency financing and local capital market development:** This is the only truly systemic and durable approach to handling FX risk that is underpinned by robust macroeconomic and fiscal policy credibility.
- **Accelerate local-currency financing by crowding in domestic investors:** At the market and financing levels, the report points to well-designed credit enhancement, guarantees, and insurance (including concessional elements, where justified) to help mobilize first-time local investors.

WAPPP Insights on Dealing with Inflation, Exchange Rate, and Interest Rate Risks in PPPs

Nasser Massoud, Founder and Managing Director of Concept Realisation, representing WAPPP, discussed lessons on managing inflation, exchange rate, and interest rate risks.

Key Lessons/Innovations: Mr. Massoud highlighted four ways to manage these risks for PPPs:

- **Allocate risks to the party best able to manage them:** Risk allocation should follow the basic PPP principle of assigning each risk to the party best able to manage or mitigate it. This process should start with a clear definition of the problem to be solved and with the PPP's cost structure and payment mechanism

11 Global Infrastructure Facility, G20, and International Monetary Fund, *Addressing Exchange Rate Risk in Infrastructure Projects in EMDEs* (2024). https://www.imf.org/en/-/media/files/research/imf-and-g20/2025/g20-gif-imf-report-for-the-g20-infrastructure-working-group-under-the-brazilian-presidency.pdf

(e.g., gap-funding payments, regulated tariffs, diagnosis-related group-based payments, or others), as these determine how inflation, FX, and interest rate shocks affect project viability.

- **Use "fit-for-purpose" inflation indexation:** Inflation is especially problematic in PPPs because many PPP revenues are fixed or regulated, and the private party cannot readily pass cost increases on to the market in the way a typical business might. Dealing with this issue requires indexation and related protections. However, it is important to design "fit-for-purpose" solutions, such as a "basket of indices" that disaggregates costs into components (local, imported, labor, etc.) and uses different indices for each with the closest feasible proxy.
- **Address interest rate risk when local hedging is not feasible:** For interest-rate risk, standard hedging tools (e.g., swaps) are often infeasible in low- and middle-income markets due to shallow markets and short tenors. In these cases, support from IFIs, including hard-currency lending that can be hedged against interest rate variation, can help manage exposure.
- **Keep risk regimes simple to avoid deterring bidders:** Overly complex risk regimes (caps, collars, or overly sophisticated scenario modeling) can raise bid costs and deter bidders. Simplicity improves the probability of closing.

2.2 Ensuring Fiscal Affordability of PPPs

Topic Overview

Given challenging fiscal conditions worldwide, PPPs can be an effective solution as governments can initiate construction without incurring additional debt or drawing on government resources, compared with traditional public investment. PPPs can also be tempting as a way to bypass budget constraints by creating the fiscal illusion of having projects that appear to be "off-budget" but instead create hidden liabilities. However, experience shows that if governments are struggling with conventional public investment management, PPPs are not the solution to weak governance or capacity issues.[12]

PPPs create multiyear fiscal commitments (government commitments in the contract that require payments, such as subsidies, viability gap funding, foregone taxes, and other incentives), as well as contingent liabilities (government commitments that do not require immediate payments but may lead to them, such as guarantees, minimum-revenue obligations, termination payments, and foreign exchange guarantees, among others). Governments therefore need systems to measure, cap, budget, and control their PPP portfolios.[13]

12 International Monetary Fund, *How To Control the Fiscal Costs of Public-Private Partnerships* (2018). https://www.imf.org/-/media/files/publications/howtonotes/howtonote1804.pdf

13 International Monetary Fund, *Mastering the Risky Business of Public-Private Partnerships in Infrastructure* (2021). https://www.imf.org/-/media/files/publications/dp/2021/english/mrbpppiea.pdf

IMF recommends five key measures to ensure fiscal affordability of PPPs:

- Set a formal procedure that requires the MOF, or an equivalent government agency, to confirm the affordability of new PPP contracts before moving forward with the bidding process. For example, South Africa's PPP framework requires National Treasury approval, with an explicit analysis of affordability, at several key steps in the PPP cycle.[14]
- Use a recognized methodology to quantify the expected annual government payments required under the PPP contract, contingent liabilities (analyzed probabilistically or through scenario analysis), and impacts on debt, the deficit, and fiscal space. IMF and World Bank's Public-Private Partnerships Fiscal Risk Assessment Model (PFRAM) is designed for this analysis and is widely used globally.[15] The model is discussed later in this chapter.
- Set quantitative ceilings on national PPP exposure, including annual new commitments, and total firm plus contingent liabilities. In Latin America, several countries, including Colombia, Panama, Paraguay, and Peru, apply these limits as a share of GDP.[16]
- Ensure full disclosure of contingent liabilities and guarantees through an annual report so that the market and potential private sector companies interested in the PPP pipeline can get further assurances on the fiscal management of these guarantees. For example, Chile's budget directorate publishes an annual report of contingent liabilities, minimum income guarantees, and other fiscal risks.[17]
- Budget PPP payments and integrate them into the country's medium-term expenditure framework with explicit appropriations and commitment authorizations. It is also advisable to stress test these obligations against inflation, foreign exchange, and interest rate risks (as discussed in Chapter 2).

Practitioners' Discussion and Case Studies

This workshop in the "PPP Hot Topics" series included overview presentations by Mikel Tejada Ibañez, Senior Infrastructure Finance/PPP Specialist at PPIAF, and Eunice Ajambo, from the United Nations Resident Coordinator Office for Namibia. The workshop also included a panel discussion with Elena Timusheva, PPP Specialist at the World Bank's Infrastructure Finance, PPPs & Guarantees Group; María Paula Vargas, Director of Fiscal Risks, General Directorate of Public Treasury, Ministry of Economy and Finance, Peru; Christine Ng'ang'a, Director of Origination and Structuring, PPP Directorate, Kenya; and Jeffrey Manalo, Deputy Executive Director, Public-Private Partnership Center of the Philippines.

14 National Treasury (South Africa), *Public-Private Partnerships (Budget Review 2019, Annexure E)* (2019). https://www.treasury.gov.za/documents/national%20budget/2019/review/Annexure%20E.pdf

15 International Monetary Fund, *Public-Private Partnerships Fiscal Risk Assessment Model (PFRAM 2)* (2019). https://www.imf.org/external/np/fad/publicinvestment/pdf/PFRAM2.pdf

16 Inter-American Development Bank, *Fiscal Impact of PPPs in Latin America and the Caribbean* (2021). https://publications.iadb.org/publications/english/document/Fiscal-Impact-of-PPPs-in-Latin-America-and-the-Caribbean.pdf

17 Dirección de Presupuestos (Chile), *Informe de Pasivos Contingentes 2024* (2024). https://www.dipres.gob.cl/598/articles-357795_doc_pdf.pdf

World Bank–IMF Insights on PPP Fiscal Risk Assessment

Mikel Tejada Ibañez presented PFRAM, which was developed jointly by the World Bank and IMF, along with lessons learned from its use. PFRAM is a spreadsheet-based analytical tool designed to help governments identify, quantify, and communicate the fiscal costs and risks arising from PPPs, and to strengthen medium- to long-term understanding of the fiscal implications of PPP programs.[18]

PFRAM 2.0 can be used to analyze individual transactions, groups of PPPs, or entire portfolios and help assess the expected timing and magnitude of government payments, the impact on debt and deficits across different timeframes, and contingent liability exposure under various scenarios, including worst-case scenarios.

PFRAM can handle various PPP structures, including user-funded concessions (with or without government subsidies and guarantees), PPPs based on user and government payments, economic and social infrastructure, and greenfield and brownfield projects. However, the model is not designed to produce full financial models of PPPs or to conduct demand analysis or value-for-money evaluations.[19]

A useful characteristic of PFRAM is its structured questionnaire covering 11 risk categories, including governance, construction, demand, financial risks, force majeure, change in law, renegotiation, and termination. This detailed questionnaire is designed to facilitate a disciplined discussion of risks that are hard to price but can be fiscally material. At the end, a heat map is generated to highlight priority areas requiring further analysis and attention.

Key Lessons/Innovations: Mr. Tejada Ibañez offered four lessons from countries that have used PFRAM:

- **Integrate PPP fiscal management into the wider public financial management system:** This should be aligned with the country's PPP governance arrangements to be effective.
- **Sustain political emphasis on fiscal control:** Political leadership should consistently emphasize the importance of fiscal control for PPPs.
- **Match tools to institutional capacity:** More complex modeling is not necessarily better. Tools and methods should match the capacity of institutions to handle them so that they can be reliably and repeatedly used.
- **Implement tools such as PFRAM:** These can ensure PPPs are not seen as an off-balance-sheet program of investments.

18 "PPPs and PFRAM," IMF Infrastructure Governance (PIMA), accessed January 13, 2026. https://infrastructuregovern.imf.org/content/PIMA/Home/PPPs-and-PFRAM.html

19 International Monetary Fund, *PPP Fiscal Risk Assessment Model (PFRAM 2)* (2019). https://www.imf.org/external/np/fad/publicinvestment/pdf/PFRAM2.pdf

United Nations Economic Commission for Africa's Insights on Managing Fiscal Risks in PPPs

Eunice Ajambo of the United Nations Resident Coordinator Office for Namibia discussed the United Nations Economic Commission for Africa (UNECA) publication, *Fiscal Risks in Public-Private Partnerships: A Benchmark Study on Africa.*[20] The infrastructure needs in Africa are enormous. The report estimates that the continent will need between $614 billion and $638 billion per year to achieve the Sustainable Development Goals by 2030. Domestic resource mobilization is the most sustainable way to finance the continent's development. However, fiscal constraints prevent African countries from making the necessary investments, and PPPs have the potential to generate both public benefits and private returns while helping to close the region's infrastructure gap. While the PPP portfolio in the region is substantial (with more than 400 active PPPs at the time of the study), it is concentrated in a few sectors (like electricity and transport) and in a small group of countries (led by South Africa, Nigeria, and Morocco).

The UNECA study is the first comprehensive data-driven benchmarking study of PPPs in Africa. It aims to answer questions about the landscape of PPP frameworks in the region, the fiscal risks associated with PPPs for African countries, the institutional weaknesses that exacerbate those risks, and how fiscal risks can be mitigated and shared equitably among stakeholders.

The study frames fiscal risk through two complementary angles: (i) macroeconomic risks (macro shocks that move debt service, revenue, or demand); and (ii) structural or institutional risks (such as governance, incentives, capacity, and rules that determine whether risks are anticipated and managed). In short, good fiscal risk management is not merely the use of a spreadsheet model but rather the way institutions establish strong governance, rules, and discipline.

Governments can consider a hierarchy of risk mitigation strategies, including avoiding risk (not taking the risk or redesigning the PPP), transferring risk (allocating it to the party best able to manage it), sharing risk (splitting risk bands and dividing gains and losses from the beginning), diversifying risk (through portfolio or pooling approaches), hedging and insuring, reducing risk (through project design and operations), and creating buffers (such as budgetary headroom and contingency reserves).

Key Lessons/Innovations: Ms. Ajambo shared several practical lessons on managing fiscal risks in PPPs:

- **Combine macro and institutional analysis:** Fiscal risk management should combine macroeconomic analysis with institutional analysis, as numbers alone can miss the core drivers of risks, such as the quality of institutions, incentives embedded in the PPP contract, and governance arrangements.
- **Use a strong, context-specific PPP framework:** The most effective fiscal risk management tool is a robust framework that considers sector and country characteristics.

20 United Nations Economic Commission for Africa, *Fiscal Risks in Public-Private Partnerships: A Benchmark Study on Africa* (2021). https://repository.uneca.org/entities/publication/53de9bf7-7088-4deb-b972-94ea2c959702

- **Do not rely on spreadsheets alone:** Fiscal risk management cannot be done only with a spreadsheet, and governments should use a hierarchy of tools to deal with specific risks.
- **Report expected costs and contingent liabilities transparently:** Transparent reporting is critical to avoid surprise fiscal shocks that can derail PPP frameworks for decades.
- **Communicate fiscal risk management measures clearly to bidders:** Bidders should understand what is guaranteed, what is not, and which conditions trigger payment.
- **Invest in contract management capacity:** Contract management capacity is critical, as renegotiations and change orders are a common source of fiscal leakage.

Peru's Approach to Fiscal Affordability and PPP Fiscal Risk Management

María Paula Vargas, who at the time of this workshop was Director General for Macroeconomic Policy and Fiscal Decentralization at Peru's MOF, presented the mechanisms the country uses to ensure the fiscal affordability of PPPs. These mechanisms are presented in Box 3.

The COVID-19 pandemic crisis made contingent liabilities in the Philippines' PPP portfolio more visible, as many claims linked to force majeure were triggered. This prompted the country to move toward a more systematic, portfolio-level fiscal risk monitoring, alongside the more traditional monitoring of individual PPP contract implementation.

PPP Center Insights on Managing Contingent Liabilities

Jeffrey Manalo, Deputy Executive Director of the PPP Center of the Philippines, described the mechanisms that have been put in place.[21] The PPP Center is responsible for monitoring PPP risks and maintains a register of contingent liabilities. The PPP portfolio in the Philippines included about 283 contracts under monitoring (at the time of the workshop), with 54 national-level PPPs subject to more detailed monitoring. Public disclosure is done through a semiannual fiscal risk statement, which is reported in a summarized form.[22]

A dedicated Technical Working Group on Contingent Liabilities, which includes the Bureau of the Treasury, the Department of Finance, the Department of Budget and Management, and the PPP Center, meets regularly to monitor the contingent liabilities in the PPP portfolio and identify additional measures to manage government exposure.[23]

21 "Public-Private Partnership Center of the Philippines," accessed January 13, 2026. https://ppp.gov.ph/

22 Development Budget Coordination Committee (Philippines), *FY 2026 Fiscal Risks Statement* (2025). https://www.treasury.gov.ph/wp-content/uploads/2025/12/FY-2026-Fiscal-Risks-Statement.pdf

23 PPP Center of the Philippines, "Implementing Guidelines: for the Special Provision on the Use of Unprogrammed Appropriations for the Risk Management Program Guidelines" (2025). https://ppp.gov.ph/wp-content/uploads/2025/04/Implementing-Guidelines-SP-on-the-Use-of-UA-for-the-RMP-Guidelines.pdf

Box 3: Fiscal Risk Management of PPPs in Peru

The Peruvian government views PPPs as a key instrument for closing the country's large infrastructure gap, estimated at around S/363 billion (about $108 billion) as of 2019, including short- and long-term needs.[1] The infrastructure gap is concentrated in the transport sector (44%), followed by sanitation (20%). Peru currently has 205 active PPP contracts.[2] The country's private investment promotion agency, ProInversión, awarded contracts for 139 PPP projects between 2002 and 2025, totaling about $36 billion.[3]

Peru classifies its fiscal exposure related to PPPs in three groups. The first group is financial guarantees (explicit and quantifiable), which are unconditional and immediately enforceable assurances provided by the state to support public entities' payment obligations. By the end of 2024, these amounted to approximately $726 million (0.25% of GDP).

The second group is contingent commitments, defined as potential payment obligations that can arise if certain contract-related events occur, such as minimum revenue guarantees (if fee or toll revenues fall below a contractually defined minimum, the state may need to pay the difference) or cost risks (for example, disaster risks for infrastructure, such as landslides on roads).

The third group is contingencies for which the fiscal impacts are known only when they occur, such as early termination of PPP contracts, renegotiations, and disputes going through arbitration or litigation.

Peru's Ministry of Economy and Finance plays an important role ex ante and throughout the implementation of PPP contracts. The Ministry has the following roles under the new PPP law (Ley 32441, September 2025):[4] (i) issues opinions on each PPP regarding firm commitments, contingent commitments, and financial/non-financial guarantees; (ii) issues opinions on contractual modifications (as variations can increase fiscal exposure); (iii) ensures that the total commitments for the PPP portfolio remain within the required fiscal sustainability framework; and (iv) produces annual PPP reports monitoring explicit contingent commitments.

The most important rule to ensure affordability for the country's PPP portfolio is a cap on the present value (PV) of quantifiable firm and contingent commitments, net of project revenues, set at 12% of GDP.[5] This cap is computed in PV terms, not just based on annual cash spending. By the end of 2024, this amount was $7.2 billion, or 2.63% of GDP, well below the limit.[6]

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1 Ministerio de Economía y Finanzas (Perú), *Plan Nacional de Infraestructura Sostenible para la Competitividad 2022 - 2025* (2022). https://www.mef.gob.pe/contenidos/inv_privada/planes/PNISC_2022_2025_V2.pdf

2 Ministerio de Economía y Finanzas (Perú), *"Índice de Contratos APP,"* accessed January 13, 2026. https://www.mef.gob.pe/contenidos/inv_privada/normas/app/Indice_Contratos_APP_PA.pdf

3 ProInversión, *Portafolio PP En Agua Y Saneamiento 2025–2027*. https://info.investinperu.pe/wp-content/uploads/2025/05/PORTAFOLIO-SANEAMIENTO-APP-GWS-PARIS-2025-GUIDO-VALVERDE.pdf

4 Ministerio de Economía y Finanzas (Perú), "Ley N.° 32441" (September 16, 2025). https://www.gob.pe/institucion/mef/normas-legales/7332535-32441

5 Ibid.

6 Ministerio de Economía y Finanzas (Perú), *Informe de Deuda Pública 2024* (2024). https://www.mef.gob.pe/contenidos/deuda_publ/documentos/Informe_Deuda_Publica_2024.pdf

A second interesting feature of Peru's affordability-control system is the detailed guidelines for consistently quantifying contingent commitments that may or may not materialize. This includes an estimate of the probability that a non-financial guarantee will require public resources, with a special focus on the first five years, and a probabilistic model of the contingency.[7]

Annual reporting of PPP contingencies is part of the country's public debt reform. For example, in 2024, the PV of firm commitments was $18.74 billion (or 6.6% of GDP), the PV of quantifiable contingent commitments was $1.82 billion (0.6% of GDP), the PV of revenues was $13.35 billion (4.7% of GDP), and the PV of net commitments (firm plus contingent minus revenues) was $7.2 billion (2.5% of GDP). The transparent calculation and reporting of these numbers give strong confidence in the overall system.[8]

Finally, the system has well-established checkpoints, including those in the project structuring phase (where the fiscal risk is priced and documented),[9] the Ministry of Economy and Finance's review of affordability-related items for each PPP contract, and the integration of multiannual PPP commitments in the multiyear budget programming,[10] the recording of each contract (with its commitments, guarantees, and revenues) in a registry administered by the Ministry of Economy and Finance, and the review and the Ministry's opinion on changes to PPP contracts that could affect fiscal contingencies.[11]

7 Ministerio de Economía y Finanzas (Perú), *Resolución Ministerial N.° 048-2015-EF/52* (2015). https://www.mef.gob.pe/contenidos/inv_privada/normas/RM048_2015EF_52.pdf

8 Ministerio de Economía y Finanzas (Perú), *Informe de Deuda Pública 2024* (2024). https://www.mef.gob.pe/contenidos/deuda_publ/documentos/Informe_Deuda_Publica_2024.pdf

9 Ministerio de Economía y Finanzas (Perú), *Resolución Ministerial N.° 048-2015-EF/52* (2015). https://www.mef.gob.pe/contenidos/inv_privada/normas/RM048_2015EF_52.pdf

10 Diario Oficial El Peruano, "Norma Legal (Referencia: MjQ3MTg0MS0xMjAyNTEyMjQ=)," accessed January 13, 2026. https://epdoc2.elperuano.pe/EpPo/VistaNLSE.asp?Referencias=MjQ3MTg0MS0xMjAyNTEyMjQ=

11 Congreso de la República (Perú), *Ley N.° 32441* (2025). https://www.gob.pe/institucion/mef/normas-legales/7332535-32441

In addition to early review and approval of risk allocations for new PPP contracts, the updated PPP framework in the Philippines emphasizes the use of structured plans that identify all government obligations and specify mitigation measures to avoid contingent losses. An area identified as consistently weak is the capacity of implementing agencies. The country is working to institutionalize PPP units and teams in those agencies and improve their capacity to manage PPP contracts, enforce key performance indicators (KPIs), and handle claims over long contract periods.[24]

Key Lessons/Innovations: Mr. Manalo highlighted four lessons of interest to PPP practitioners:

- **Use strong implementation governance:** Governance arrangements such as a project steering group with high-level representatives from the government and the private partner, supported by technical working groups and a PPP unit or center, can support effective implementation.
- **Codify the use of contract management plans in the PPP regulatory framework:** This can help in keeping a structured record of obligations and provide stability across electoral cycles.
- **Establish a risk management fund or contingent liability fund:** A dedicated fund can help cover penalties and compensation when the government fails to meet obligations.
- **Allow term extensions as an alternative to immediate cash:** Contract provisions that allow extensions of contractual terms in lieu of immediate cash compensation can relieve the pressure on budgets.

Kenya's Insights on Managing Fiscal Commitments and Contingent Liabilities

Christine Ng'ang'a, Director of Origination and Structuring, PPP Directorate, Kenya, described Kenya's approach to managing fiscal risks and contingent liabilities arising from PPPs. The country faces a significant infrastructure investment gap and tight fiscal space. It has pursued PPPs as part of the solution. The National Treasury has put systems in place to test projects for affordability over time, identify and quantify government contractual commitments and contingent liabilities, and ensure those exposures are tracked and disclosed through regular fiscal risk reporting.[25, 26]

All PPP projects first pass through an economic viability and budget affordability analysis by the National Treasury. Then, they are routed to the PPP Directorate for full appraisal (technical, financial, affordability, value for money, and risk profile, including potential contingent liabilities). The latter assessment is fed to Kenya's Debt Management Office to determine whether the government can take on the

24 FAOLEX, "IRR of Republic Act No. 11966," accessed January 13, 2026. https://faolex.fao.org/docs/pdf/phi230546.pdf

25 Government of Kenya, *PPP Fiscal Commitments and Contingent Liabilities (FCCL) Management Framework* (2018). https://pppkenya.go.ke/wp-content/uploads/2020/07/FCCL-Management-Framework-2018.pdf

26 World Bank, "Country Profile: Kenya," PPP Knowledge Lab, accessed January 13, 2026. https://ppp.worldbank.org/country-profile-kenya

exposure and how to track it. Kenya has also institutionalized a Fiscal Commitments and Contingent Liabilities function, with a mandate to evaluate projects for financial risks and contingent liabilities and embed them into the debt and fiscal risk management process.[27]

Kenya explicitly treats many PPP-related exposures as government support measures. These include guarantees, termination-related obligations, and other risk-sharing commitments. The government clearly sets expectations for when and how these support measures may be issued and managed.[28]

Kenya periodically reports the contingent liability risk for its PPP portfolio through its *Annual Public Debt Report*. For example, the fiscal year 2024/25 report indicates that the estimated total exposure related to termination sum payments is KSh203 billion. The report assumes a 5% probability of contract termination and a contingent liability of KSh10.19 billion as of the end of June 2025.[29] The country's PPP Act 2021 reflects an intent to formalize limits and reporting on contingent liabilities assigned to PPPs, strengthening fiscal guardrails at the portfolio level.[30]

At the sector level, Kenya has used specific funding mechanisms, such as the Road Maintenance Levy Fund, to finance availability payments for some road PPPs instead of relying on toll revenues.[31] This earmarking, as part of a broader fuel levy, creates a more predictable funding stream that can improve PPP bankability.

World Bank Insights on Ensuring the Fiscal Affordability of PPPs

Elena Timusheva, PPP Specialist at the World Bank, presented the publication, *Managing the Fiscal Implications of Public-Private Partnerships in a Sustainable and Resilient Manner*.[32, 33] The first volume presents good practices for managing the fiscal implications of PPPs, namely, fiscal commitments and contingent liabilities (FCCL). A central message is that an FCCL framework cannot work in isolation. It is critical that it is embedded in broader public investment management, the overall PPP legal and regulatory framework, and the government's institutional and governance arrangements for PPPs.

Ms. Timusheva described the functional areas around which the good practices were reviewed: analysis (to identify and quantify risks); control (using fiscal risk evidence to approve or shape projects and manage portfolio exposure); budget (how governments plan and fund direct commitments and prepare for contingent liabilities); and reporting (accounting, monitoring, disclosure, and transparency). These functional

27 "Fiscal Commitments & Contingent Liabilities Framework," PPP Kenya, accessed January 13, 2026. https://pppkenya.go.ke/ova_doc/fiscal-commitments-contingent-liabilities-framework/

28 National Treasury (Kenya), *Policy on the Issuance of Government Support Measures in Support of Investment Programmes* (2018). https://newsite.treasury.go.ke/sites/default/files/Policies/Government-Support-Measures-Policy-Final%20%282%29.pdf

29 National Treasury (Kenya), *Annual Public Debt Report 2024–2025* (2025). https://www.treasury.go.ke/sites/default/files/Annual-Public-Debt-Report-2024-2025.pdf

30 Republic of Kenya, *The Public Private Partnerships Act Chapter 430* (2022). https://lawguide.co.ke/wp-content/uploads/Public-Private-Partnerships-Act.pdf

31 Government of Kenya. *Road Maintenance Levy Fund Act* (2022). https://new.kenyalaw.org/akn/ke/act/1993/9/eng%402022-12-31

32 PPIAF, *Managing the Fiscal Implications of Public-Private Partnerships in a Sustainable and Resilient Manner* (2022). https://documents1.worldbank.org/curated/en/099170003082331955/pdf/P1625710e882a60ca0b5520e9a4148d9eb6.pdf

33 PPIAF, *A Compendium of Good Practices on Managing the Fiscal Implications of Public Private Partnerships in a Sustainable and Resilient Manner* (2022). https://ppp.worldbank.org/sites/default/files/2024-07/P16257108f32e70410aaad0b1754886c028.pdf

areas are then translated into 11 key principles covering clear methodological guidance, quantitative and qualitative tools, the use of fiscal affordability and value for money as decision filters, independent and centralized evaluation and monitoring, clear caps on exposure, explicit funding approaches for direct and contingent liabilities, and systematic monitoring, disclosure, and accounting treatment. Ms. Timusheva also highlighted four instruments: project development funds, viability gap funds, infrastructure finance funds, and guarantee funds.

The second volume presents country case studies. For example, Jordan's case highlights reform efforts in budgeting and in standardizing FCCL assessment and monitoring for annual resource planning. Peru's case describes a formal channel for PPP concessionaires to request remedies tied to clearly evidenced COVID-19-related impacts (e.g., term extensions, monetary compensation, toll adjustments, or obligation reductions), while respecting contractual risk allocation and defined procedures for contract modification. Georgia's case notes that revisions to the country's public investment management (PIM) guidance clarified the roles of the MOF and sought to address capacity constraints encountered in implementing the previous framework.

Key Lessons/Innovations: Ms. Timusheva highlighted three key lessons from the case study:

- **Center the MOF in a standardized FCCL workflow:** Put the MOF(especially its budget and debt units) at the core of FCCL the workflow, but keep the PPP unit as the operational coordinator for data, screening, and monitoring.
- **Use structured, evidence-based processes during shocks:** During shocks, use structured, evidence-based renegotiation and relief processes rather than ad hoc deals.
- **Align PPP decisions with PIM:** Consider PPP choices together with PIM planning, clarify gateways, and build line-ministry capacity so that projects are selected and prepared with credible fiscal analysis.

2.3 PPPs for New Technologies

Topic Overview

New technologies are transforming the way in which infrastructure is designed, built, and operated. The pace of technological development is accelerating, and infrastructure assets built today will experience significant impacts. Building infrastructure that is adaptable and able to absorb the efficiencies of new technologies will be the norm in the years to come. PPP contracts with long tenures will be affected by emerging technologies over the course of their duration. This workshop in the "PPP Hot Topics" series analyzed this topic.

New technologies are changing infrastructure in three important ways:

1. **Design and construction:** Data capture for infrastructure optimization, such as drones and light detection and ranging; digital engineering, including building information modeling and geographic information systems (GIS); and AI-assisted scheduling and risk controls are accelerating the design and construction process. Digital twins are gradually being incorporated into infrastructure design, scheduling, and cost assessment.[34]

2. **Operations and maintenance:** Sensors, the Internet of Things, and advanced analytics using AI are transforming predictive maintenance, advanced resilience options, and micro performance data for operations. These new technologies are transforming O&M from a reactive function to a proactive, optimized opportunity to enhance services.

3. **Infrastructure services:** Electrification, automation, and software-defined networks are transforming how infrastructure services are provided and how infrastructure assets are leveraged. Services are becoming more dynamic through new infrastructure that can leverage and respond to variable demand, distributed supply, real-time pricing and dispatch, and decentralized mobility, among other factors.

While these technologies can bring enormous benefits, they also introduce significant risks, including cybersecurity threats, obsolescence, data governance challenges, and a growing gap between those who can access new technologies and those who cannot.[35]

For example, in urban transport, AI-enabled signal control is moving cities away from fixed-timing traffic lights toward real-time optimization.[36] Driverless metro systems are now being used in many cities and on intercity lines, and these trends are expected to accelerate.[37] The integration of new technologies across sectors also introduces new cascading risks. In San Francisco, a major power outage led to a massive traffic disruption when robotaxis stopped operating.[38]

In the energy sector, grid connection requirements are evolving rapidly to accommodate a growing share of renewable energy generation, including wind and solar. Utility-scale battery systems are also evolving rapidly and growing exponentially.[39] Smart grids are becoming indispensable for integrating renewables,

34 McKinsey & Company, "Digital Twins: Boosting ROI of Government Infrastructure Investments," accessed January 13, 2026. https://www.mckinsey.com/industries/public-sector/our-insights/digital-twins-boosting-roi-of-government-infrastructure-investments

35 World Bank, *Strengthening AI Foundations* (2025). https://openknowledge.worldbank.org/server/api/core/bitstreams/d2ac1ea9-b70e-4080-b5de-8b31098e992f/content

36 Austin, P.L., "Want to Fix Road Congestion? Try Smarter Traffic Lights," *TIME*, January 21, 2019. https://time.com/5502192/smart-traffic-lights-ai

37 Railway Gazette International, "Market Analysis: Driverless Metro Market Set to Surge," accessed January 13, 2026. https://www.railwaygazette.com/long-reads/market-analysis-driverless-metro-market-set-to-surge/65819.article

38 Reuters, "Waymo to Update Software After San Francisco Power Outage Snarls Self-Driving Vehiels," December 24, 2025. https://www.reuters.com/business/autos-transportation/waymo-vows-improve-emergency-response-protocols-after-san-francisco-power-outage-2025-12-24

39 Energy Systems Integration Group, *Grid-Forming Battery Energy Storage Systems: Brief for Decisionmakers* (2025). https://www.esig.energy/wp-content/uploads/2025/03/ESIG-GFM-BESS-brief-2025.pdf

electric vehicle (EV) charging, and managing new demand requirements.[40] Low-carbon hydrogen connects renewable energy with transport and shipping, and it has the potential to drastically reshape the sustainable fuels industry.[41]

Telecommunications is seeing some of the fastest and most far-reaching changes, from 5G-Advanced to open architectures, with satellites increasingly becoming part of mainstream service delivery.[42, 43, 44]

When PPP contracts are designed around a specific technology, delivery method, or revenue model, the long duration of the agreement (often 10–30 years) can mean that technological change will render those assumptions and contractual requirements obsolete. This contract rigidity can result in stranded assets, changing or collapsing demand, new capital expenditure (CapEx) requirements, and contract renegotiation or termination.[45]

The European Court of Auditors identified four key challenges related to the impact of technological changes on PPP contracts:

- **Obsolescence:** New standards and cheaper or better alternatives can make the contracted solution obsolete, leading to revenue declines as users shift to better services.
- **Upgrade cycles:** New technologies may require frequent upgrades (e.g., wireless equipment often needs to be changed every 5–6 years), while contracts often assume longer asset lives.
- **Unanticipated change:** If a PPP contract did not anticipate a technological change, the contracting agency may be forced into suboptimal, single-source variations that are complex and costly.

For example, several French local broadband projects used 18–24-year PPP contracts that required extensive wireless coverage and rapid expansion. When the national strategy shifted toward fiber coverage, these local PPP contracts encountered a technological mismatch. This led to overlapping providers, complex renegotiations, and cost increases.[46]

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40 International Energy Agency, "Smart Grids," accessed January 13, 2026. https://www.iea.org/energy-system/electricity/smart-grids

41 International Energy Agency, *Global Hydrogen Review 2025: Executive Summary* (2025). https://www.iea.org/reports/global-hydrogen-review-2025/executive-summary

42 3GPP, "Release 18 – The 5G Standard," accessed January 13, 2026. https://www.3gpp.org/specifications-technologies/releases/release-18

43 O-RAN Alliance, "Open RAN Technical Priority Release 4 Document," June 27, 2024. https://www.o-ran.org/oran-ecosystem-resources/open-ran-technical-priority-release-4-document-june-2024

44 U.S. Congressional Research Service, *Low Earth Orbit Satellites: Potential to Address the Broadband Digital Divide* (2025). https://www.congress.gov/crs-product/R46896

45 European Court of Auditors, *Public Private Partnerships in the EU: Widespread Shortcomings and Limited Benefits* (2018). https://www.eca.europa.eu/lists/ecadocuments/sr18_09/sr_ppp_en.pdf

46 Ibid.

The International Transport Forum (ITF) reviewed cases[47] in which transport assets could become obsolete due to shocks such as the adoption of autonomous and electric vehicles, which may alter capacity requirements or design standards, or climate change risks, which may necessitate relocation, redesign, or major retrofits. ITF argues that obsolescence risk is fundamentally different from other PPP risks because it is generally not insurable under current products, though new options are under discussion.[48] ITF proposes considering the inclusion of buyback options with clearly defined compensation if an asset becomes obsolete.

Practitioners' Discussion and Case Studies

In this workshop of the "PPP Hot Topics" series, four speakers presented their perspectives on how PPPs can support, and be prepared for, new technologies in infrastructure: Jenny Jing Chao, Senior Public-Private Partnerships Specialist at the World Bank; Mariana Carolina Silva Zuniga, Senior Infrastructure Finance Specialist at the Global Infrastructure Facility, hosted by the World Bank; Jyoti Bisbey, Executive Committee Member and Head of Partnerships at WAPPP; and Cristina Albuquerque, Senior Urban Mobility Manager in the WRI Cities Program.

World Bank Insights on Future-Proofing PPP Contracts

Jenny Jing Chao, Senior PPP Specialist at the World Bank, presented the 2022 PPIAF publication, *PPP Contracts in an Age of Disruption*.[49] The publication emphasizes that preparing for disruptive technologies in PPP contracts begins well before the contract stage, starting with project selection and preparation. This requires public-sector agencies, such as the PPP contracting agency or the infrastructure regulatory agency, to understand emerging technology trends in their sector and conduct periodic horizon-scanning exercises. At the same time, private parties need to undertake adequate due diligence to set realistic expectations regarding potential technological changes during the PPP contract period.

Introducing flexibility at the project appraisal and procurement stages can be beneficial. The public sector should encourage bidders to propose appropriate, innovative technological solutions and adaptable designs that can accommodate future changes by incorporating these factors into the scoring criteria. A two-stage bidding process that allows companies bidding for the PPP contract to propose innovations in the design and operation of infrastructure assets and services before the financial stage can help embed new technologies and future change within the PPP contract.

47 International Transport Forum, "Dealing with the Obsolescence of Transport Infrastructure in Public-Private Partnerships," accessed January 13, 2026. https://www.itf-oecd.org/sites/default/files/docs/obsolescence-transport-infrastructure-ppps_0.pdf

48 Environmental Defense Fund, "Driving Decarbonization Through Insurance Innovation," accessed January 13, 2026. https://www.edf.org/driving-decarbonization-through-insurance-innovation

49 World Bank, *PPP Contracts in An Age of Disruption* (2023). https://ppp.worldbank.org/library/ppp-contracts-age-disruption-download-pdf-version

Key Lessons/Innovations: Ms. Chao highlighted five lessons from the 2022 PPIAF report on managing disruption in PPP contracts:

- **Treat major technological upgrades as contract variations:** Structure PPP contracts so significant upgrades can be processed as variations, with commensurate compensation and prior approvals. This can reduce the need for full contract renegotiation.
- **Use incentives to accelerate the adoption of beneficial technologies:** Efficiency and profit-sharing mechanisms can incentivize the private party to adopt new technologies early, benefiting both parties and the public.
- **Increase flexibility to improve bankability:** In infrastructure sectors where technological change is expected to be rapid, more flexible contractual terms may be required, particularly when the economic assumptions underlying the PPP contract are expected to change substantially. Overall, effective contract management is central to managing both the disruptions and opportunities arising from technological change. In addition, well-designed early-stage dispute resolution mechanisms can help address technological disruption. However, it is essential to recognize that the financial models underlying the PPP transaction cannot accommodate unlimited flexibility. A strong, stable foundation, supported by clear risk-mitigation mechanisms grounded in reasonable expectations of technological change, is fundamental to making the PPP project bankable.

Box 4 presents examples of PPPs that have incorporated evolving technologies into their contract documents and management approaches.

World Bank Toolkit Insights on Climate-Smart Technologies and KPIs in PPPs

Mariana Carolina Silva Zuniga, Senior Infrastructure Finance Specialist at the Global Infrastructure Facility, hosted by the World Bank, presented a summary of the World Bank Group's *Climate Toolkit for PPPs*,[50] emphasizing the numerous new technologies being developed to support climate change mitigation and adaptation. For example, the road transport sector is seeing rapid developments in low-carbon pavements, improved drainage designs, solar traffic lighting, e-mobility lanes, and new approaches to adapting to climate-related hazards.

This toolkit is designed to help governments mainstream climate considerations into PPPs across the full project cycle. It views climate-smart PPPs as a systems issue that requires technology choices in design and operations, as well as digital and analytical capabilities throughout the project life cycle, from risk screening and scenario analysis to monitoring and performance enforcement using innovative KPIs.

New technologies for climate-smart PPPs can be grouped into three categories. First are low-carbon design choices, such as energy-efficient lighting, lower-carbon materials, or designs that reduce embodied and operational emissions. Second are resilient technologies, such as heat-resilient specifications, wildfire risk-reduction

50 World Bank PPP Knowledge Lab, "Online Climate Toolkits for PPPs," accessed January 13, 2026. https://ppp.worldbank.org/Online_Climate_Toolkits_for_PPPS

Box 4: Case Studies: New Technologies in PPPs

The 2022 PPIAF publication *PPP Contracts in an Age of Disruption*[1] presents several examples of new technologies in PPP contracts, including the following:

Gas and electricity in the United Kingdom (UK): The UK's climate change commitments and technological developments have been reshaping the country's energy landscape. The Office of Gas and Electricity Markets is the national regulatory authority that oversees private companies providing these services. The agency's mandate is to ensure these companies make smart, efficient investments while keeping tariffs as affordable as possible. A critical question is how to ensure that new technologies for production, transmission, and efficient use are included in private companies' investment portfolios. To address these challenges, the regulatory agency replaced its prior RPI-X price-control model in 2013 with a new framework grounded in RIIO principles.[2] Under this new approach, the revenue formula includes innovation criteria to encourage technology adoption that reduces costs and improves services.[3]

Water desalination in Australia: The Victoria State Government used a PPP to build what was at the time one of the world's most energy-efficient desalination plants and provide 150 billion gigaliters of water to serve Melbourne's population. The plant became operational in 2012. The project was designed using the latest membrane and energy-efficiency technologies at the time.

1 Ibid.

2 Under the old RPI-X model, regulated prices were typically adjusted each year for inflation (measured by the Retail Price Index, RPI) and then reduced by an efficiency factor (the "X"). This approach created strong incentives for companies to cut costs, but it could also encourage short-term fixes or underinvestment. In 2013, the regulator moved to RIIO (short for Revenue = Incentives + Innovation + Outputs), which still limits how much utilities can recover from customers, but places greater emphasis on the outcomes customers value (such as reliability, service quality, and environmental performance) and rewards companies for innovation and efficient delivery over a longer planning horizon.

3 "Ofgem," accessed January 13, 2026. https://www.ofgem.gov.uk

Still, the parties to the contract recognized that the technology landscape was changing rapidly, with the potential for significant future financial and environmental benefits. The contract allows for technology upgrades beyond the minimum required standard to be initiated by the public or the private party (with the approval of the other party). If the public party finances it, it retains the full cost-saving benefit. If the private party finances it, the cost savings are shared with the contracting authority.[4, 5]

Broadband services in Ireland: Ireland's National Broadband Plan was designed to extend high-speed broadband to households in rural areas that cannot be served commercially. In 2019, the government selected National Broadband Ireland under a PPP contract to design, build, operate, and manage the network for 25 years.[6] The contract area was designed to cover over 560,000 connections with a minimum download speed of 500 megabits per second. This area covered approximately 96% of the country and required approximately 140,000 kilometers of fiber-optic cable. The contract requires National Broadband Ireland to ensure the network is "future-proof" at all times. This requires maintaining a 10-year Technology Roadmap and a 10-year Wholesale Product Roadmap, with 5-year review points, and KPIs with incentives to sustain service quality as technology evolves.[7]

Street lighting in the UK: Many municipalities have procured street lighting services through 20–30-year performance-based PPPs. In these contracts, the private partner finances and implements an upgrade program and then maintains and operates the lighting network. These contracts can incorporate technological changes by using output specifications (e.g., lighting performance, response times, and safety) instead of inputs, and a contractual change procedure that allows the government and service providers to implement upgrades without having to reprocure the contract. For example, the borough of Enfield in London has had a street lighting contract since 2006, which has undergone several amendments, enabling the rollout of LED lamps and the renewal of the Central Management System to support the new technology.[8] The most recent contract variation in 2025 permits EV charging points, telecommunications small cells, CCTV, and sensors.[9]

4 Victorian Government (Water and Catchments), "Desalination," accessed January 13, 2026. https://www.water.vic.gov.au/water-sources/desalination

5 Aquasure, *Project Finance: Victorian Desalination Plan* (2011). https://www.scribd.com/document/802890805/VDP-Case-Study

6 Government of Ireland (Department of Culture, Communications and Sport), "National Broadband Plan Contract," accessed January 13, 2026. https://www.gov.ie/en/department-of-culture-communications-and-sport/publications/national-broadband-plan-contract/

7 National Broadband Ireland, "Contract Summary" (2022). https://nbi.ie/wp-content/uploads/2022/02/Contract-Summary..pdf

8 London Borough of Enfield, *Public Reports Pack: 12th-Jun-2019 19.15 Cabinet* (2019). https://enfield.moderngov.co.uk/

9 London Borough of Enfield, "Issue History - KD 5907 - Street Lighting PFI - Deed of Variation," (2025). https://enfield.moderngov.co.uk/mgIssueHistoryChronology.aspx?IId=68260&Opt=2

measures, and coastal protection technologies. Third are operational technologies that improve reliability and response during and after climate shocks, such as early warning systems, predictive maintenance, and preparedness plans.

KPIs in climate-smart PPPs are particularly important because they can specify outputs and resilience performance, such as availability, recovery time, and service continuity. They can also incentivize private operators to introduce and update climate-related technologies over time.

For example, wind and solar technologies may no longer be considered "new" in PPPs. However, it is important to remember that this type of infrastructure is also affected by the increasing magnitude and intensity of climate hazards, such as hurricanes and extreme winds, heat impacts on photovoltaic efficiency, wildfires, and freezing conditions. This means that solar and wind technologies need to be complemented in PPP contracts with climate-risk-informed design and O&M strategies, along with specific KPIs for resilience, as discussed above.

Ms. Silva Zuniga also described how new technological approaches, such as nature-based solutions to enhance infrastructure resilience in PPPs, are not always adopted by private partners unless required in tenders, partly due to perceived delivery risks and time-to-maturity. Better upstream studies and climate and hazard data, combined with clear incentives to use nature-based solutions, can encourage the use of this technological approach in PPPs.

Key Lessons/Innovations: Ms. Zuniga highlighted five lessons from the toolkit:

- **Integrate new climate-related technologies early:** Incorporating climate-related technologies during identification and pre-feasibility can help avoid costly and contentious changes later in the PPP cycle.
- **Specify performance-based KPIs instead of specific technologies:** Using performance-based KPIs can help PPPs stay current on the technological front.
- **Treat climate resilience as a component of project bankability:** Better hazard quantification and resilience design can reduce downtime and improve cash flows.
- **Build resilience into mitigation projects:** Climate-mitigation projects should also incorporate resilience aspects and technologies.
- **Use credible climate data and hazard disclosure:** Reliable climate-related data and hazard disclosures allow bidders to price risk more accurately and propose better solutions.

WAPPP Insights on Standards and Ratings for Technology-Ready PPPs

Jyoti Bisbey, Executive Committee Member and Head of Partnerships at WAPPP, discussed the importance of standards in promoting new technologies in PPPs. For example, the FAST-Infra Label is a labeling framework for sustainable infrastructure designed to help establish it as an asset class. FAST-Infra uses a structured data template to support screening and due diligence through comparable reporting across assets. Its ultimate goal is to improve investor confidence and scale up capital flows into sustainable infrastructure.[51]

Other standards that can promote the use of new technologies in PPPs include: (i) the United Nations Economic Commission for Europe's People-First PPP approach, which is designed to help projects deliver outcomes aligned with sustainable development, balancing people, the planet, and prosperity;[52] (ii) the PPP and Infrastructure Evaluation and Rating System, which can be used to score PPP projects against the Sustainable Development Goals;[53] and (iii) Envision, a project-level sustainability rating system for horizontal infrastructure (such as transport, water, and energy) that incentivizes higher performance goals beyond minimum requirements.[54]

New technologies can play an important role in making small-scale PPPs viable (see Chapter 6). For example, in Serbia, a municipal public lighting PPP project was developed around new LED technology, but did not include detailed specifications in the bidding documents. Instead, the PPP contract focused on performance, using energy savings as a core KPI. In Austria, a solid waste project implemented new technologies for digitized billing, integration with public billing systems, up-to-date disclosure information, and a high-quality customer experience.

Key Lessons/Innovations: Ms. Bisbey highlighted three practical lessons:

- **Treat change as constant:** Design PPPs to be resilient to rapidly changing technology, climate impacts, and system shocks.
- **Put users and data at the center:** Make users and data central to the technological choices, enhancing transparency and customer-facing information to support the long-term acceptability of PPP projects.
- **Recognize regulators as pivotal**: Treat regulators as key actors, even if they are not parties to the PPP contract.

51 FAST-Infra, "Label Documents," accessed January 13, 2026. https://www.fastinfralabel.org/label-documents

52 United Nations Economic Commission for Europe, "Implementing People-First Public-Private Partnerships (PPP) for the UN Sustainable Development Goals" (presentation), accessed January 13, 2026. https://unece.org/fileadmin/DAM/trade/SCTCS_2019/PPTs/7_UNECE_Private_public_partnerships.pdf

53 "UNECE PIERS," accessed January 13, 2026. https://piers.unece.org/

54 Institute for Sustainable Infrastructure, "Envision Is Delivering Results," accessed January 13, 2026. https://sustainableinfrastructure.org/envision/use-envision/

World Resources Institute (WRI) Insights on De-risking Electric Bus PPPs Through Pilots and Performance Data

Cristina Albuquerque, Senior Urban Mobility Manager in the WRI Cities Program, presented a case from Brazil on the use of electric buses (e-buses) in public transport PPP contracts. The decarbonization of public transport in Brazil is a significant challenge, as the country has about 100,000 buses, but at the time of the analysis had fewer than 200 e-buses. WRI has been supporting Brazilian cities in de-risking the transition to e-buses by combining open, real-world operational pilot tests of different e-bus models on actual routes, with structured customer surveys to assess the acceptance of the new technology.[55] The high capital costs of e-buses and uncertainty about their performance under local conditions (including charging infrastructure, performance on hills and low-quality pavement, and maintenance readiness) necessitated these tests and surveys to avoid over-specifying e-bus technology standards.

In Curitiba, the testing process was conducted through a public call for company participation. Real-world testing lasted about 30 days and included daily performance monitoring (through IT systems and manual checks), along with public disclosure of the results.

Seven e-buses from four proponents were tested in regular city operations on real routes. In cities with privately operated bus concessions, this type of operational testing can help define performance-based requirements for PPP contracts, such as availability, reliability, and service delivery, without locking the city into a single proprietary technology pathway over the long term. In addition to the testing, WRI and partners developed QualiÔnibus,[56] a passenger survey methodology designed to be replicable across cities and to inform management decisions, including technology transitions.

Key Lessons/Innovations: Ms. Albuquerque offered five practical lessons from the Curitiba e-bus case study:

- **Use transparent pilots to build understanding and reduce risk:** These allow users to understand new technologies and can help de-risk their use in PPPs.
- **Avoid excessively high technological standards:** Instead, use better baseline data to define the operational performance of new technologies.
- **Do not skip core preparation steps:** Feasibility assessment, pilot testing, and stakeholder engagement are essential when introducing new technologies in PPPs.
- **Localize technologies to real conditions on the ground:** In the case of e-buses, adapt technology choices to local road conditions and operational and institutional arrangements.
- **Engage oversight bodies proactively:** Address questions from oversight bodies, such as regulators and courts, about affordability and technological choices, among other issues.

55 World Resources Institute, "E-Buses: Operational Tests and Customer Surveys Facilitate Transition and Highlight Benefits" (2024). https://www.wri.org/technical-perspectives/e-buses-operational-tests-and-customer-surveys-facilitate-transition-and

56 WRI Brasil, "*Publicações do Programa QualiÔnibus*" (2019). https://www.wribrasil.org.br/publicacoes/publicacoes-programa-qualionibus

3. Accessing Diverse Financing Sources

3. Accessing Diverse Financing Sources

3.1 New Sources of Public Financing for PPPs

Topic Overview

Fiscal constraints on governments in developing countries can hinder the mobilization of public resources needed to build a robust PPP pipeline. Considerations regarding the challenges of increasing user tariffs and fees constitute an additional constraint. This workshop in the "PPP Hot Topics" series discussed other sources of public financing that governments at the national and subnational levels can mobilize to contribute to new PPP projects by enhancing their bankability, reducing the support needed from traditional sources to close the financial viability gap, and attracting more private partners.

Five new sources of public financing that have been used in projects to expand the resources available for PPP projects include:

- Land value capture (LVC) and developer contributions
- Brownfield asset recycling
- "Works for taxes" and similar tax-credit or in-kind tax payment models
- Sector levies
- Carbon pricing or carbon market revenues for green infrastructure PPPs
- Funds from global climate funds

LVC refers to mechanisms that monetize future increases in land and property value resulting from infrastructure that is built or upgraded under a PPP. Box 5 presents examples of this instrument. LVC mechanisms include a range of options, such as property developer contributions, betterment levies, tax increment financing (which brings to the present future increases in the local tax base), and monetization of public land or "air rights" (authorizations to develop higher floors or properties).[57]

In brownfield asset recycling, the government sells or leases assets (for example, existing roads, ports, and airports) to unlock capital that can be reinvested in new infrastructure.[58] For example, India's highway agency monetized existing national highways by awarding a concession in which the private partner paid an upfront lump sum for the right to collect tolls while enhancing and operating the assets.[59] In Australia, the Restart NSW Fund Act of 2011 established a dedicated reinvestment vehicle to channel proceeds from its brownfield asset recycling program into a

57 OECD, *Financing Transportation Infrastructure Through Land Value Capture* (2022). https://www.oecd.org/content/dam/oecd/en/publications/reports/2022/05/financing-transportation-infrastructure-through-land-value-capture_81e09399/8015065d-en.pdf

58 World Bank, "Why Countries Should Implement Asset Recycling, and Where to Get Good Guidance," *World Bank Blogs,* September 22, 2023. https://blogs.worldbank.org/en/ppps/why-countries-should-implement-asset-recycling-and-where-get-good-guidance

59 World Bank, *Asset Recycling Handbook* (2025). https://documents1.worldbank.org/curated/en/099121225081510241/pdf/P502317-a30690cf-3d5e-4ea0-9af0-e210730431bb.pdf

pipeline of priority infrastructure projects. As of 2024, this program had funded more than 817 projects totaling approximately $2.5 billion. These programs tend to work better when proceeds are credibly and transparently ring-fenced, funds are used in a disciplined way, and the public is proactively engaged on the rationale.

Box 5: Case Studies on Land Value Capture for Infrastructure Financing[1]

Urban rail: London's Crossrail project, delivered as the Elizabeth line, was one of Europe's largest urban rail investments, with capital costs of approximately $23 billion.[2] The project used a package of charges on indirect beneficiaries, including commercial property and new developments, to mobilize approximately $1.2 billion. Some of the instruments included a business rate supplement on non-domestic properties, a community infrastructure levy to ensure that new floorspace development contributed to the project through local planning authorities, and a financial mechanism to borrow upfront against future receipts of LVC revenues.[3] The third instrument was central to this successful project, as it enabled the agency to borrow upfront and repay from dedicated LVC revenues, converting future land- and commercial-value receipts into immediate funds for infrastructure construction. Another important lesson is that the three mechanisms, as part of the LVC package, were designed to match different beneficiaries of infrastructure investments.

Broad urban infrastructure programs: The city of Medellín, Colombia, has employed a form of LVC based on a betterment levy to finance urban infrastructure since the late 1930s.[4] It has been used to fund more than 80% of the metropolitan road network. With this mechanism, the contribution from each property is proportional to the benefit received by a program of investments, calculated based on "with" and "without" program estimates.[5] This funding mechanism (called the *contribución de valorización*) is a fee or charge imposed on immovable property linked to new or rehabilitated public works that produce a measurable benefit for that property and therefore increase its value. Property owners contribute this fee because the future infrastructure provides quality-of-life improvements and economic gains. The mechanism relies on public trust that the infrastructure will indeed be built and that the benefits will occur after the project is developed.

The municipality also employs a broader toolkit of LVC mechanisms to align instruments with different channels of value creation. It has also created a dedicated fund with well-defined legal and administrative workflows that provide stability across election cycles.[6] The success of LVC in Medellín is based on strong property information in the

1 Jeff Delmon, "Land Value Capture," in *Innovative Funding and Financing for Infrastructure* (Cambridge University Press, 2024). https://www.cambridge.org/core/books/innovative-funding-and-financing-for-infrastructure/land-value-capture/E68FD3160D95408CF8DE3EA27822A205.

2 Ibid.

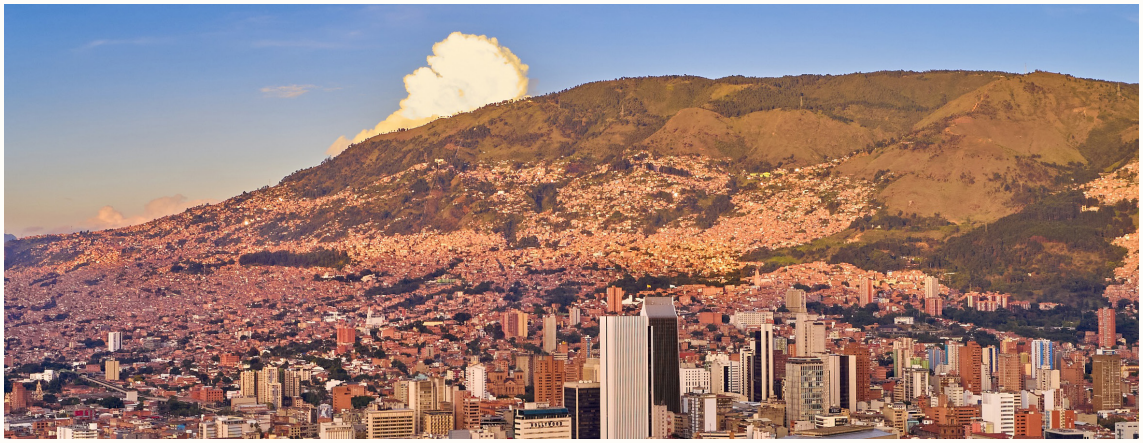
3 Greater London Authority, "MD3333: Crossrail Business Rates Supplement Approval and Policies 2025–26," accessed January 13, 2026. https://www.london.gov.uk/who-we-are/governance-and-spending/promoting-good-governance/decision-making/mayoral-decisions/md3333-crossrail-business-rates-supplement-approval-policies-2025-26

4 Lincoln Institute of Land Policy, *Contribución de valorización o mejoras en Colombia. Análisis de la experiencia colombiana* (2013). https://www.lincolninst.edu/app/uploads/2024/04/borrero-wp14ob1sp-full_0.pdf

5 "*Valorización*," Alcaldía de Medellín, accessed January 13, 2026. https://www.medellin.gov.co/irj/portal/medellin?NavigationTarget=contenido%2F793-Valorizacion

6 Alcaldía de Medellín, *"Fondo de Valorizacion del Municipio de Medellin (FONVAL),"* accessed January 13, 2026. https://www.medellin.gov.co/irj/go/km/docs/wpccontent/Sites/Subportal%20del%20Ciudadano/Hacienda/Secciones/Plantillas%20Gen%c3%a9ricas/Documentos/2012/Presentaci%c3%b3n%20Subsecretar%c3%adafoval.pdf

cadastre system, valuation capacity, and dispute-resolution mechanisms.[7] Finally, the LVC mechanism is grounded in broad engagement with diverse stakeholders (households and businesses) to ensure that calculations are understood, influence zones are clearly defined, and benefit assessments are perceived as fair.



Riverfront development and resilient infrastructure: The city of Ahmedabad, India, implemented the Sabarmati Riverfront Development Project to restore public access to the Sabarmati River, improve flood management, expand the sewerage network, and catalyze redevelopment of the city's central area. The investments along over 10 km of riverfront resulted in approximately 185 hectares of reclaimed land and a complementary set of urban amenities, including parks, walkable pathways, and recreational spaces.[8] The LVC framework[9] included three main mechanisms: (i) the sale of development rights and lease of land (the use of these options enlarged the buyer pool and helped earn trust in the project); (ii) the sale of a small portion (about 15%) of the reclaimed land to fund the development and management of the riverfront;[10] and (iii) ongoing revenues from leases and commercial concessions to monetize the enhanced public space created by the riverfront investments. These mechanisms were complemented by initial loans to launch the investments and build trust among the investor community that the project was indeed moving forward.[11] The resettlement costs for low-income households in the project area were covered by complementary state and central government sources.[12] Equity considerations are critical for ensuring that affordable and inclusive access to the project's benefits is addressed from the outset. Finally, the proceeds from the LVC mechanisms were ring-fenced to ensure that these resources were used for debt service and asset management rather than for the municipality's recurring budgets.

7 World Bank, *Recomendaciones para la Implementación de Instrumentos de Gestión de Suelo y Financiación Urbana en Colombia* (2020). https://documents1.worldbank.org/curated/en/593081593607238124/pdf/Recomendaciones-para-la-Implementacion-de-Instrumentos-de-Gestion-de-Suelo-y-Financiacion-Urbana-en-Colombia.pdf

8 Sabarmati Riverfront Development Corporation Limited, *Sabarmati Riverfront Land Disposal Policy* (2024). https://sabarmatiriverfront.com/img/pdf/Sabarmati-Riverfront-Land-Disposal-Policy-2024.pdf

9 Ministry of Housing and Urban Affairs (India), *Value Capture Finance Policy Framework* (n.d.). https://mohua.gov.in/upload/whatsnew/59c0bb2d8f11bVCF_Policy_Book_FINAL.pdf

10 Global Facility for Disaster Reduction and Recovery, *"Land Value Capture,"* accessed January 13, 2026. https://www.gfdrr.org/sites/default/files/publication/Land%20Value%20Capture.pdf

11 "Land Value Capture for the Sabarmati Riverfront Regeneration (Ahmedabad, India)," Cities Climate Finance Leadership Alliance, accessed January 13, 2026. https://citiesclimatefinance.org/financial-instruments/cases/land_value_capture_for_the_sabarmati_riverfront_regeneration_in_ahmedabad_india

12 Global Facility for Disaster Reduction and Recovery, "Land Value Capture - Bangkok Case Study," accessed January 13, 2026. https://www.gfdrr.org/sites/default/files/events/crp-bkk1-lvc-case-study-3.pdf

In the "works for taxes" modality, private firms can finance public works through tax-credit certificates. Firms use their implementation capacity and the foregone future taxes (rather than a cash transfer) to develop infrastructure projects. Examples include a 2008 program in Peru that supported rural electrification, irrigation, transport, and other sectors, and a 2017 program in Colombia that developed infrastructure in post-conflict regions. These programs have focused on small-scale infrastructure.[60] It is essential to ensure that such projects align with national or subnational government investment programs.

Sector levies, often applied to the revenues of private infrastructure service operators, can also be used to fund facilities that provide capital subsidies or output-based payments to expand services in areas where commercial returns are weak (e.g., rural broadband coverage). India's Digital Bharat Nidhi was designed to charge a service levy to fund competitive agreements with operators to extend service to uncovered rural villages.[61]

Carbon-related mechanisms, such as revenues from emissions trading systems, carbon taxes, or international carbon-reduction transactions, can be used to finance green investments. For example, the European Commission reports that auction revenues from its emissions trading system have been partially used to support low-emission transport investments.[62] Current challenges in carbon markets need to be considered when evaluating this option for future PPP projects.

Finally, global and national climate funds can provide additional public funding for infrastructure PPPs. Each fund has its own rules and requirements, and while funding can be limited, they are a useful additional source for green infrastructure PPPs. For example, the Green Climate Fund (GCF) partially financed the Aqaba–Amman Water Desalination and Conveyance project in Jordan with a $220 million loan and a $75 million grant to support climate adaptation investment in the water-scarce region.[63] In Senegal, the GCF provided $88 million to mobilize private participation in rural solar electrification through mini-grids.[64] The Global Environment Facility has provided grants for PPP projects such as the Ain Beni Mathar integrated solar combined-cycle project in Morocco,[65] among many others. In Brazil, the National Climate Fund (Fundo Clima) provided loans, operated through the national development bank BNDES, to support wind energy, biogas, urban mobility, and bus fleet electrification programs.[66]

60 NAP Global Network, "Works for Taxes Scheme" (2024). https://napglobalnetwork.org/innovative-financing/works-for-taxes-scheme/

61 International Telecommunication Union, "*The Universal Service Obligation Fund (USOF) in India: An Overview,*" accessed January 13, 2026. https://www.itu.int/ITU-D/treg/related-links/links-docs/USOF-India.pdf

62 "Auctioning of Allowances," European Commission (EU ETS), accessed January 13, 2026. https://climate.ec.europa.eu/eu-action/carbon-markets/eu-emissions-trading-system-eu-ets/auctioning-allowances_en

63 Green Climate Fund, "Jordan Aqaba-Amman Water Desalination and Conveyance Project (AAWDCP)," accessed January 13, 2026. https://www.greenclimate.fund/project/fp288

64 Ibid.

65 Global Environment Facility, "Integrated Solar Combined Cycle Power Plant (Formerly Solar Based Thermal Power Plant)," accessed January 13, 2026. https://www.thegef.org/projects-operations/projects/647

66 Brazil's BNDES Approves 1.2bn in Climate Fund Spending," *Argus Media*, accessed January 13, 2026. https://www.argusmedia.com/en/news-and-insights/latest-market-news/2631220-brazil-s-bndes-approves-1.2bn-in-climate-fund-spending

Practitioners' Discussion and Case Studies

In this workshop in the "PPP Hot Topics" series, Lorena Meco, Program Officer at PPIAF, and Jeffrey Delmon City, Senior PPP Specialist at the World Bank, presented an overview of the topic. This was followed by a panel featuring Nana Dwemoh Benneh, Chief Executive Officer of the Ghana Infrastructure Fund, and Euna Shim, Senior Markets Development Advisory Specialist at ADB's Office of Markets Development and Public-Private Partnership. The speakers shared perspectives and experiences on new public sources of funding for PPPs.

World Bank Insights on Value Capture for Infrastructure Finance

Jeff Delmon, Senior PPP Specialist at the World Bank, presented the concepts of land, commercial, and programmatic value capture, drawing on his book, *Innovative Funding and Financing for Infrastructure*.[67] He emphasized that infrastructure finance cannot be reduced to the simple sum of two factors: user payments at the levels people can afford and government subsidies to cover the financing gap. There is an important source of "hidden" project finance: the value that infrastructure itself can create through land value enhancement and commercial opportunities. Infrastructure financing can extend beyond tariffs and public budgets and leverage other sources to fund capital and long-term operations, maintenance, and upgrades.

The first tool discussed was LVC. Infrastructure services, such as transport, energy, and water, can generate significant increases in the land and property values of plots. LVC is a series of policy and financial instruments to capture some of these increases and share them in the financing of new or upgraded infrastructure. In addition to increasing fiscal space to fund capital projects, this incentivizes efficient land use and builds community support for the projects by making benefits transparent and tangible.

Approaches used to implement LVC include: (i) selling public land to build infrastructure services in the area; (ii) using land as a public contribution to the PPP project equity; (iii) using land as collateral, where it is transferred to a development entity that can borrow against it to finance infrastructure assets; (iv) land pooling, where landowners contribute part of their land for infrastructure and receive a smaller but higher-value serviced plot in the same area; (v) development-right tools, where government allows additional floor area or height, or changes the land use, in exchange for fees or in-kind support; and (vi) joint ventures, in which government and private stakeholders co-develop infrastructure to benefit both commercial interests and the public.

Key Lessons/Innovations: Mr. Delmon highlighted four lessons from the book involving LVC cases worldwide:

- **Actively engage with stakeholders:** LVC is more effective when stakeholders (landowners, developers, and communities) are consulted and engaged, and when they clearly understand the project's benefits.

67 Jeff Delmon, "Land Value Capture," in *Innovative Funding and Financing for Infrastructure* (Cambridge University Press, 2024). https://www.cambridge.org/core/books/innovative-funding-and-financing-for-infrastructure/land-value-capture/E68FD3160D95408CF8DE3EA27822A205

- **Establish clear rules and processes:** Clear rules for charges, streamlined approval processes, and risk management are indispensable for project success.
- **Strengthen institutional capacity and coordination:** Success depends on strong capability for planning, property assessment and monitoring, coordination among fiscal, planning, and judicial entities, and political leadership.
- **Maintain a transparent, reliable cadaster:** A well-functioning land and property cadaster that supports transparency in land sales is central to successful LVC transactions.

Overall, LVC should not be seen as a single financial instrument but as a package of policy and financial tools to help governments, particularly municipalities, leverage the created land value to finance infrastructure assets and services. Box 5 presents some successful examples of LVC approaches.

In addition to LVC instruments, governments can also proactively work with the private sector to increase value through rezoning and development rights that lead to higher-density transit-oriented development. For example, the development of Japan's intercity rail and metro systems was coordinated with real estate development, which helped finance the infrastructure and led to improved urban planning around stations. In addition to larger-scale transit-oriented development, there are also "micro-capture" opportunities, such as commercial space above or below transit stations, retail and parking under urban parks, advertising on infrastructure assets and networks, and naming rights.

Ghana Infrastructure Investment Fund Insights on Public Finance for PPPs

Nana Dwemoh Benneh, Chief Executive Officer of the Ghana Infrastructure Investment Fund (GIIF), presented the Fund's history and achievements, as well as approaches to access new sources of public financing for PPPs. Box 6 presents a summary of this case study. In addition to an overview of GIIF, Mr. Benneh discussed possible ways in which carbon markets can mobilize additional resources for PPPs. Currently, voluntary carbon markets (often relying on established measurement, reporting, and verification [MRV] standards and registries) and the emergence of an international carbon market under the United Nations Framework Convention on Climate Change (UNFCCC) are the two avenues available to access carbon market funds.

Box 6: Case Study on the Ghana Infrastructure Investment Fund

Ghana established the Ghana Infrastructure Investment Fund (GIIF) in 2015 with an anchor equity investment of $345 million, with a mandate to identify, develop, invest in, mobilize, and manage a diversified portfolio of infrastructure assets while mobilizing private capital.[1] GIIF was established by Parliament as a body corporate, thereby giving it independence in performing its mandate while remaining accountable to the Minister of Finance for achieving its objectives and complying with its legal obligations.[2]

1 "Ghana Infrastructure Investment Fund," accessed January 13, 2026. https://giif.gov.gh/

2 Republic of Ghana, *Ghana Infrastructure Investment Fund Act*, 2014 (2014). https://www.odekro.org/Images/Uploads/Ghana%20Infrastructure%20Investment%20Fund%20Act%2C%202014.pdf

The Fund is authorized to provide a suite of products, including debt, equity, mezzanine, and credit enhancement instruments. Its focus is on the development of economic and social infrastructure projects.

GIIF has invested approximately $365 million across 13 transactions, with total project costs of around $3.6 billion, corresponding to a leverage of around 1:10.[3] Some of the projects supported by GIIF include the following:

- The Takoradi Port Expansion was supported by a $63 million loan from GIIF. This port has a 25-year build–operate–transfer concession, and its first phase, with a total budget of $210 million, has been completed. The integrated container and multipurpose terminal is planned to provide two terminals along a 1.5-kilometer quay.[4]
- Atuabo Gas Plant, with a first-phase 31-MW power plant at Atuabo that converts flared gas into electricity, was supported by GIIF financing of $30 million.[5]
- The Kotoka International Airport's Terminal 3 construction and rehabilitation, along with the upgrading of other airports managed by Ghana Airports Company Limited, were supported by GIIF financing through a $30 million loan. The terminal has the capacity to handle 5 million passengers per year and to process 1,250 passengers per hour.[6]

GIIF is authorized to draw on a variety of funding sources, including budget funding, proceeds from state equity disposals, capital-market borrowing, multilateral and bilateral development institutions, fees and investment income, and repayments, among others.

In addition to the Government of Ghana's contribution, GIIF has raised an $85 million, 10-year credit facility with Agence Française de Développement, and a $75 million, 12-year credit facility with AfDB.[7]

3 Ghana Infrastructure Investment Fund (GIIF), *GIIF Investor Presentation (June 2024)* (2024). https://giif.gov.gh/wp-content/uploads/2024/11/GIIF_Investor_Presentation_June-2024.pdf

4 Ministry of Finance (Ghana), *2024 Annual Report on Public-Private Partnership Projects* (2024). https://mofep.gov.gh/sites/default/files/reports/economic/2024-Annual-Report-on-Public-Private-Partnership-Projects.pdf

5 Ghana Infrastructure Investment Fund (GIIF), *GIIF Investor Presentation (June 2024)* (2024). https://giif.gov.gh/wp-content/uploads/2024/11/GIIF_Investor_Presentation_June-2024.pdf

6 "Kotoka International Airport," Ghana Airports Company Limited, accessed January 13, 2026. https://www.gacl.com.gh/kotoka-international-airport/

7 Ghana Infrastructure Investment Fund (GIIF), *GIIF Investor Presentation (June 2024)* (2024). https://giif.gov.gh/wp-content/uploads/2024/11/GIIF_Investor_Presentation_June-2024.pdf

ADB Insights on Carbon Markets for Infrastructure PPPs

Euna Shim, Senior Markets Development Advisory Specialist at ADB's Office of Markets Development and Public-Private Partnership, discussed the current state of carbon markets and their potential as an additional funding source for infrastructure PPPs. Currently, there are two types of carbon markets: voluntary markets and those based on UNFCCC Article 6. Voluntary carbon markets are based on recognized standards (e.g., Verra and the Gold Standard), and carbon credits are sold to companies for offsets. There is now a renewed effort under Article 6 of the UNFCCC. The role of governments is critical in these latter markets, as only they can establish the national regulatory framework and authorize carbon accounting and the sale of their scarce carbon assets.

Infrastructure PPPs can be designed, built, and operated to generate carbon savings that can be sold. However, revenue models and uncertainty remain significant, and additional experience and support for investors are needed (including feasibility study support, concessional financing elements, and profit-sharing arrangements, among others).

Key Lessons/Innovations: Ms. Shim offered four lessons from experience on carbon markets and infrastructure PPPs:

- **Develop the legal and institutional foundations:** Establish a transparent and credible legal and regulatory framework, and develop the corresponding institutional arrangements (such as a carbon registry) and related capacities to support a nascent national market and scale it up over time.
- **Establish a credible emissions baseline and accounting linked to the nationally determined contribution:** These help governments understand any surplus or deficit and the corresponding possible carbon credits that could be sold.
- **Identify niches where the additionality of carbon emissions reductions is clear and easy to measure:** This supports carbon credits for infrastructure PPP projects, such as mangrove planting or ecological rehabilitation of mines.
- **Use established MRV methods:** Avoid reinventing standards unnecessarily, as there are several widely accepted MRV methodologies that, when used, can enhance the marketability and credibility of carbon credits generated.

Examples of PPPs that have been able to tap the carbon credit market include:

- **Belo Horizonte (Brazil):** A municipal solid-waste landfill outsourced landfill gas capture and electricity generation to a private operator under a 15-year PPP. The arrangement included the design, financing, and installation of landfill gas wells and a collection system; operation of gas capture and electricity generation systems; and management of carbon credit MRV.[68] The municipality received an advance payment and a revenue-linked fee of about 6% of electricity sales.[69]

68 International Renewable Energy Agency (IRENA), *Waste to Energy for More Effective Landfill Site Management—Belo Horizonte, Brazil* (2013). https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2013/Jan/IRENA-cities-case-3-Belo-Horizonte.pdf?hash=B27D0309C7BA87141A36F5ADA05405E6BB6F66E6&la=en&utm

69 Bioenergy International, "Construction Underway for Asja's Largest Landfill Gas Project in Brazil," accessed January 13, 2026. https://bioenergyinternational.com/construction-underway-for-asjas-largest-landfill-gas-project-in-brazil/?utm

The relative ease of collecting MRV information for landfill gas and the close link between carbon credits and operational performance made this transaction viable.

- **Chacabuquito (Chile):** A run-of-river hydroelectric power project developed by a private company, with a capacity of 25 MW and an annual generation of 160 gigawatt-hours (GWh), generated roughly 1 million tons of carbon dioxide equivalent (tCO_2e) in certified emission reductions. These were purchased by the World Bank's Prototype Carbon Fund over the first 15 years.[70]
- **Metrobus (Mexico City, Mexico):** The Metrobus rapid transit system in the Insurgentes Corridor of Mexico City included about 20 km of exclusive bus lanes and 24 stations. The city financed corridor infrastructure and operating contracts with privately owned bus operators.[71] Carbon credits were generated through shift in transportation mode from individual cars and taxis to the bus system. The World Bank–managed Spanish Carbon Fund purchased the credits. The project was registered under the Clean Development Mechanism, with an estimated annual reduction of more than 46,000 tCO_2e.[72] By 2014, the project had generated more than 364,000 tCO_2e in credits and sold them at \$5/tCO_2e.[73]

World Bank Insights on City Creditworthiness and Municipal Finance

Lorena Meco, Program Officer at PPIAF, presented the World Bank's City Creditworthiness Initiative (CCI), designed to help cities unlock more sustainable infrastructure finance.[74] When central governments face fiscal constraints, one way to expand public resources for PPPs is to partner with subnational governments. The majority of large cities in developing countries struggle to access commercial capital on reasonable terms because of weak own-source revenues, limited transparency and reliability of their accounts, and uncertain intergovernmental transfers.

CCI helps cities diagnose their financial position and institutional constraints using a standardized self-assessment tool[75] and identify priority reforms toward more reliable financial statements, improved revenue administration and expenditure control, and more transparent debt policies and plans.[76] Furthermore, CCI supports cities in building a bankable pipeline through stronger capital investment planning and better-prepared projects. Cities can then combine municipal borrowing and thematic bonds (such as green, climate, social, or sustainability bonds), LVC

70 World Bank, *Project Appraisal Document on a Proposed Purchase of Emissions Reduction by the Prototype Carbon Fund from the Hidroelectrica Guardia Vieja, S.A. (Republic of Chile) for the Chacabuquito Hydroelectric Power Project* (2002). https://documents1.worldbank.org/curated/en/216701468238465171/pdf/535030PAD0P07410number0Chacabuquito.pdf

71 World Bank, *Project Appraisal Document: Mexico City Insurgentes Bus Rapid Transit System Carbon Finance Project* (2005). https://documents1.worldbank.org/curated/en/331701468286249490/pdf/340480MX0PAD1P0826560buff0cover01PUBLIC1.pdf

72 UNFCCC Clean Development Mechanism, "Project 4945: BRT Metrobus Insurgentes, Mexico," accessed January 13, 2026. https://cdm.unfccc.int/Projects/DB/AENOR1309257514.77/view?utm

73 World Bank, *Implementation Completion and Results Report on Carbon Finance Operation to Metrobus for the Mexico City Insurgentes Bus Rapid Transit System* (2017). https://documents1.worldbank.org/curated/en/380921589560128028/pdf/Mexico-City-Insurgentes-Bus-Rapid-Transit-System-Carbon-Finance-Project.pdf

74 World Bank, "City Creditworthiness Initiative: A Partnership to Deliver Municipal Finance," accessed January 13, 2026. https://www.citycred.org/

75 "City Creditworthiness Initiative," accessed January 13, 2026. https://www.citycred.org/

76 World Bank, *Financial Sustainability – Romania, Reimbursable Advisory Agreement between the Municipality of Constanța and the International Bank for Reconstruction and Development* (2020). https://documents1.worldbank.org/curated/en/858361613996336794/pdf/Deliverable-4-1-1-Financial-Sustainability.pdf

instruments, guarantees, blended finance, and PPPs into a combined financing and delivery strategy for municipal infrastructure services.

Key Lessons/Innovations: Ms. Meco highlighted four practical lessons from CCI:

- **Sequence reforms realistically:** Cities should set a sequence of reforms and instruments depending on where they are in their institutional development, and not all cities should start with credit ratings and bonds.
- **Strengthen the subnational debt framework and fiscal rules:** Without a clear subnational debt framework and rules for transparency and fiscal prudence, it is difficult to implement financial mobilization instruments at the city level.
- **Ground plans in honest baselines and credible revenue generation plans:** These are indispensable to build trust in the market for borrowing and PPP transactions.
- **Consider pooling to improve scale and diversification:** Pooling across different municipalities (for example, in a regional or metropolitan area) can improve the scale of PPPs and diversify financing options.

3.2 PPP Project Preparation Funds

Topic Overview

The likelihood of good results from an infrastructure PPP contract is related to the level of preparation. Scoping, feasibility, technical, financial, economic, environmental, and social studies, as well as legal advisory work, bid documents, contract design, and procurement support, are expensive. Contracting agencies do not always have the funding mechanisms to prepare these reports promptly and to a high standard. Many countries address this challenge by establishing PPP project preparation funds (PPFs) or facilities to finance the upstream work required to bring PPPs to market.

In many cases, these funds are not simply a source of funding but also help standardize processes and terms of reference and assist implementing agencies embarking on a PPP transaction.[77] This support can significantly reduce time-to-market, lower the cost of advisory consulting services, and enhance investor confidence by improving document quality and building a strong reputation for the system. All these factors can increase the volume and quality of bankable PPP projects.

Effective PPP project preparation funds have solid criteria and evaluation processes to increase the proportion of projects that reach the market. Many are structured as revolving funds, under which all or a portion of project preparation costs are recovered from the winning bidder upon financial closure. The Global Infrastructure Hub cautions that recovery levels can be low during the initial years of the fund, so the government needs to be ready to provide higher levels of support until the pipeline of projects coming to market is strong.[78]

77 Global Infrastructure Hub, *Leading Practices in Governmental Processes Facilitating Infrastructure Project Preparation* (2019). https://www.gihub.org/resources/publications/leading-practices-in-governmental-processes-facilitating-infrastructure-project-preparation/

78 Ibid.

Good governance models for these funds separate approvals (what is funded) from delivery (the contracting agency). They are often managed by a central PPP agency or center under a multi-sectoral governing board chaired by the MOF. Funding is provided by the central government, donors, and multilateral development bank contributions,[79] as well as cost recovery and success fees.

These funds also need to consider potential risks, such as a "PPP bias," where projects that would be more effectively implemented as public projects are pushed toward a PPP model, a "donor bias" where the source of funding influences the type of projects supported, and a "study bias," where the fund supports many studies but very few deals.[80]

Practitioners' Discussion and Case Studies

This workshop in the "PPP Hot Topics" series included an overview presentation by Mikel Tejada Ibañez, Senior Infrastructure/PPP Specialist at PPIAF, and a practitioners' panel discussion with Atter Hannoura, Director of the Central PPP Unit, Egypt MOF; Syed Afsor Hassan Uddin, Principal Investment Solutions Specialist, AIIB; Ekow Coleman, Principal Infrastructure Investment Officer, Infrastructure Partnerships Division, AfDB; Ireen Musonda-Habasimbi, Director of Public Investment Planning, Ministry of Finance and National Planning, Zambia; and Johnson Mwawasi Kilangi, Director, Taita Taveta Investment & Development Corporation.

World Bank Lessons on Designing Effective Project Preparation Funds

Mikel Tejada Ibañez, Senior Infrastructure Finance/PPP Specialist at PPIAF, discussed the World Bank's experience with these funds, as presented in the 2024 publication, *Project Development Funds: A Primer.*[81] Mr. Ibañez emphasized the positive effect of the funds on infrastructure agencies considering PPPs, as they provide the funding and capacity these agencies lack. More effective funds are not established in a vacuum; they are part of broader government reforms and institutional building aimed at strengthening the PPP-enabling environment.

Mr. Ibañez highlighted three functional needs that shape the legal and operating structure of project preparation funds, namely, the ability to: (i) hold funds across multiple years, as PPP preparation generally goes beyond annual budget cycles; (ii) procure and retain high-quality advisors, as these are difficult to procure using standard lower-cost procurement; and (iii) receive and retain reflows from success fees after projects reach financial closure.

Global experience indicates that government budget allocations are the primary funding source for these funds. While donor and multilateral development bank (MDB) funding can supplement funding, it may also introduce additional complexity and requirements.

79 Inter-American Development Bank, *Filling the Infrastructure Investment Gap: The Role of Project Preparation and Structuring Facilities* (2019). https://publications.iadb.org/publications/english/document/Filling_the_Infrastructure_Investment_Gap_the_Role_of_Project_Preparation_and_Structuring_Facilities_en_en.pdf

80 Ministry of Housing and Urban Affairs (India), *Scheme and Guidelines for India Infrastructure Project Development Fund (IIPDF)* (n.d.), accessed January 13, 2026. https://mohua.gov.in/upload/uploadfiles/files/Guideline_Scheme_IIPDF.pdf

81 World Bank, *Project Development Funds* (2024). https://documents1.worldbank.org/curated/en/099053124132550754/pdf/P179271-a64e304b-e2ef-480c-92d8-d6c646824c90.pdf

The funds do not require large amounts of seed funding. An initial allocation of $20 million can demonstrate results with a solid initial pipeline and reveal actual needs for replenishment.

Global experience indicates that success fees often cover less than half of the fund's annual needs because not all prepared projects reach financial closure, and many are halted during preparation if studies indicate that the project is not feasible (a benefit of an effective fund). Furthermore, the success fee to be paid by the winning bidder will include these costs and will ultimately be reflected in the proposed tariff or fee.

Key Lessons/Innovations: Mr. Ibañez highlighted five factors for the success of project preparation funds:

- **Build demand through active engagement:** Create demand for PPP projects by working closely with contracting authorities, providing guidance, and supporting the identification of potentially eligible projects.
- **Use agile procurement for advisors:** Speed up procurement and improve quality through consistency by using approaches such as prequalification requirements and panels.
- **Clarify roles, responsibilities, and decision-making:** Define clear responsibilities between the fund and the contracting authority (which manages the advisors and is ultimately responsible for the timeliness and quality of deliverables) and clarify how decisions are made.
- **Treat contracting authorities as clients:** Recognize that the fund's success depends on the contracting authorities.
- **Continuously improve the fund's design:** Strengthen effectiveness over time by incorporating lessons learned from experience.

Box 7 presents good case studies from around the world. Box 8 presents a deep dive into the project preparation fund recently developed by Egypt.

Box 7: Project Preparation Funds: Good Practices

Philippines: The PPP Center manages the Project Development and Monitoring Facility[1] as a revolving fund. It employs a structured review of consultant deliverables and prequalified panels of consultants and advisors to enhance quality and speed of delivery while maintaining competition. The PPP Center has supported 45 PPP projects.

India: The India Infrastructure Project Development Fund typically funds up to 75% of development expenses, with the remainder provided by the contracting authority. Costs are recovered from the successful bidder, and the fund uses milestone-based disbursements. These three elements are considered good governance practices for funds.[2]

Indonesia: The Ministry of Finance's Project Development Facility is integrated with viability gap funding (VGF) and a PPP guarantee scheme, forming a coordinated toolkit. Day-to-day implementation, including the procurement of consultants, support for contracting agencies, and capacity building, is carried out by MOF-linked state-owned enterprises such as PT Sarana Multi Infrastruktur and the Indonesia Infrastructure Guarantee Fund, with the aim of simplifying procurement through enhanced flexibility. Projects only receive funding support after they have completed market sounding and can demonstrate investor interest.[3]

South Africa: The Development Bank of Southern Africa[4] operates a project preparation and transaction support facility (and a regional comparator, the SADC Project Preparation Development Facility) that uses standardized appraisal, transparent selection, and disciplined use of preparation grants.

1 PPP Center of the Philippines, *PDMF Guidelines* (2023). https://ppp.gov.ph/pdmf-guidelines/

2 Ministry of Housing and Urban Affairs (India), *Scheme and Guidelines for India Infrastructure Project Development Fund (IIPDF)* (n.d.), accessed January 13, 2026. https://mohua.gov.in/upload/uploadfiles/files/Guideline_Scheme_IIPDF.pdf

3 Global Infrastructure Hub, "Project Preparation in Indonesia: How Has the Government Attracted Private Participation?," 2019. https://www.gihub.org/articles/project-preparation-in-indonesia-how-has-the-government-attracted-private-participation/

4 "Project Preparation," Development Bank of Southern Africa, accessed January 13, 2026. https://www.dbsa.org/solutions/project-preparation

Box 8: The Egypt Project Preparation Facility

As discussed in this chapter, high-quality project preparation undertaken at speed is a core factor in the success of PPPs. This project preparation includes feasibility analyses (including risk identification and quantification) conducted in accordance with robust international standards. The quality of this project preparation is essential for structuring bankable PPPs that can attract more bidders and lenders, thereby improving competition and financing for the project. High-quality preparation in middle-income countries for typical medium- to large-scale PPPs ($100 million–$500 million investment) requires $1 million–$5 million for the preparation of feasibility studies and PPP transaction documents. A country like Egypt, which has a pipeline of multiple projects under preparation simultaneously, requires substantial funding.

Egypt initially used project preparation support from multiple MDBs, such as the World Bank, EBRD, AfDB, IFC, ADB, or IsDB. However, each institution has its own rules and procedures, and the application, approval, and mobilization of funding can take between 6 and 12 months. The procurement and mobilization of consultants can take an additional 6–18 months. These timelines do not align with expectations from the public and government leaders seeking faster solutions, given the immense infrastructure needs of developing countries.

Other donors can also provide support, but generally at smaller levels (less than $500,000), which are insufficient individually to fund a full transaction. Bundling these small grants into a single project-preparation package can be time-consuming.

Egypt's approach to addressing the two challenges above was to work with a single "custodian" MDB to establish an anchor fund to which other donors and interested MDBs could contribute.

In September 2025, Egypt MOF and EBRD, with support from the Ministry of Planning, Economic Development, and International Cooperation, launched the €10 million Egypt Project Preparation Facility (EPPF).[1]

The EPPF has three objectives: (i) to create a more streamlined and efficient PPP delivery environment in Egypt; (ii) to support the preparation and implementation of PPP projects, with an emphasis on bankability and readiness to tender; and (iii) to align PPP infrastructure with the United Nations Sustainable Development Goals and internationally recognized environmental and social standards.[2] The EPPF will support PPPs in utilities, transport, and other infrastructure sectors, including net-zero carbon buildings, sustainable logistics and dry ports, and water efficiency and desalination.

1 European Bank for Reconstruction and Development, "EBRD Promotes Sustainable Infrastructure in Egypt Through PPPs," *EBRD News*, September 15, 2025. https://www.ebrd.com/home/news-and-events/news/2025/-10-million-to-promote-private-and-public-sector-participation-i.html

2 Ibid.

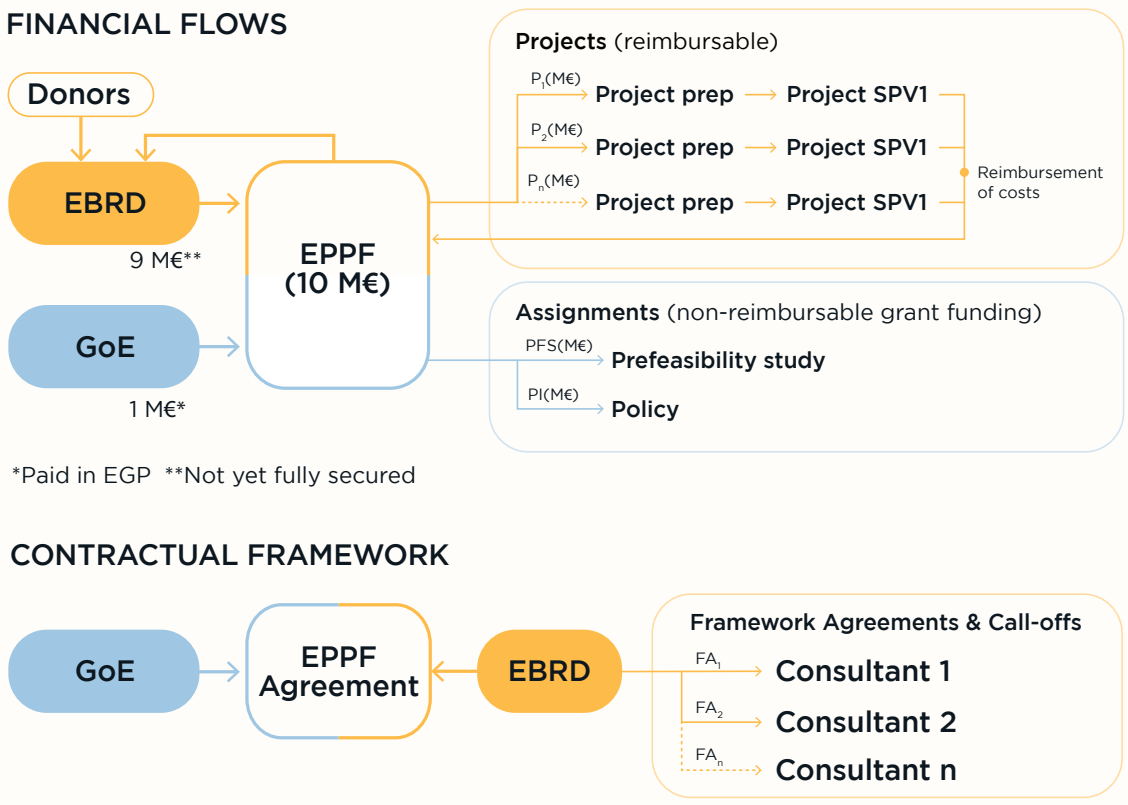
The Government of Egypt has provided an initial contribution of €1 million, while EBRD has mobilized €9 million, including contributions from the High-Impact Partnership on Climate Action (HIPCA), which is supported by the Republic of Korea, the Netherlands, and Spain. The EPPF has an initial target of around 10 projects, starting with two in the first year of operations.

A distinctive feature of the EPPF is the use of framework agreements and call-offs with specialized consultants, which reduces the contracting lead time from the typical 15 months to approximately 8 weeks while adhering to EBRD procurement policies. In addition, the EPPF will operate with a cost-recovery reimbursement mechanism, where winning bidders of PPP projects reimburse the facility for project preparation costs.[3]

Figure 2 presents an overview of the EPPF framework, including financial flows, use of funds, the project cycle, and consulting framework agreements.

3 Ministry of Finance (Egypt), "Finance Minister Launches Initiative to Establish Fund for Feasibility Studies and Transaction Advisors in PPP Projects," accessed January 13, 2026. https://mof.gov.eg/en/posts/media/68c68f96c878cd00084ac22c/Finance%20Minister%20Launches%20Initiative%20to%20Establish%20Fund%20for%20Feasibility%20Studies%20and%20Transaction%20Advisors%20in%20PPP%20Projects

Figure 2: Overview of the EPPF Framework



EBRD = European Bank for Reconstruction and Development, EGP = Egyptian pound, EPPF = Egypt Project Preparation Facility, FA = framework agreement, GoE = Government of Egypt, M = million, P = project, SPV = special-purpose vehicle.

Source: EBRD workshop presentation.

Egypt has been working ahead of the EPPF launch to have a series of PPP projects ready for support so that funds can be utilized without delay. A project preparation facility that sits unused for 1–2 years is generally seen as a failure and risks cancellation.

AIIB Insights on PPP Project Preparation Funds

Syed Hassan Uddin, Principal PPP Specialist at AIIB, discussed his experience setting up and managing a PPP Project Development Facility in Bangladesh. He noted that preparing PPP projects is substantially more expensive than preparing conventional projects and typically spans multiple budget cycles. This makes it difficult to rely on annual ministry budgets, leading to stops and starts in the preparation process and failed handoffs from pre-feasibility studies to transaction work.

Bangladesh's facility began as a government-funded vehicle ($25 million), with rules later amended to allow donor co-financing. A key design choice was whether to consider contributions as a grant or a reimbursable loan. Mr. Uddin recommended the grant option to avoid excessive risk aversion and to ensure that more complex projects are still explored, while using success fees to create a revolving element and reduce the need for future fiscal injections. To avoid discouraging small projects, success fees should be managed on a portfolio basis, with discretion to cross-subsidize smaller transactions by recovering higher fees from larger ones.

Key Lessons/Innovations: Mr. Uddin highlighted six practical lessons from Bangladesh's experience:

- **Locate control within the central PPP unit to help maintain pace and coherence:** Control of PPP project preparation facilities should be with the central PPP unit. Transparency can be safeguarded through an inter-ministerial committee overseeing procurement.
- **Use the facility to strengthen the enabling environment:** While project preparation is the key function of these funds, it is also important to support the development of the country's enabling environment in areas such as institutional development, policy and regulatory work, communications, capacity building, and investment promotion.
- **Use pre-qualified consultant panels to speed up procurement:** It is useful to establish framework panels of pre-qualified consultants to avoid repeating full request-for-quotation and request-for-proposal cycles and save months per procurement.
- **Match capitalization timing to pipeline readiness:** The fund manager should proactively consider the timing of capitalization versus pipeline readiness to avoid either idle funds or project delays due to a lack of funding.
- **Secure strong procurement capacity:** The complexity of procurement in the fund can be substantial, and this requires a strong procurement function inside the PPP unit.
- **Sustain political support with a clear strategy and measurable targets:** Securing political support requires the PPP unit to continuously advocate through a strategic vision with quantifiable targets linked to national investment goals. At the beginning, the fund's focus on rapid pipeline development and disciplined execution is critical.

AfDB Insights on Project Preparation Facilities and Good Practices

Ekow Coleman, Principal Infrastructure Investment Officer at AfDB's Infrastructure Partnerships Division, described the infrastructure project preparation facilities that AfDB hosts and works with. These include the NEPAD Infrastructure Project Preparation Facility (NEPAD-IPPF); a transaction advisory services team (PEP TAS) that supports member countries; and the Alliance for Green Infrastructure Africa, a $500 million facility that AfDB delivers with various partners (including the African Union and Africa50), which includes a project preparation pillar and a

project development pillar. AfDB also collaborates with the World Bank's Global Infrastructure Facility to co-finance project preparation. In addition, AfDB is developing an Africa PPP Development Fund, dedicated more specifically to PPP preparation, to complement these facilities and scale up its work on PPPs.

The NEPAD-IPPF was established around 2002 to support regional infrastructure projects in energy, water, transport, and ICT. While the facility initially focused on public-sector-financed projects, it now includes a PPP window. Eligible activities include project definition; pre-feasibility and feasibility studies; detailed engineering; environmental and social impact studies; climate risk assessments; project structuring, including PPP transactions; and capacity building and knowledge work.

The facility has commitments of about $119 million, and its studies have mobilized multibillion-dollar downstream financing. The typical process includes pipeline sensitization, funding requests, strategic alignment and technical screening, approval memos, grant agreements, implementation supervision, and completion. More recently, the facility introduced a reimbursable grant window, especially for PPP-type projects, to recycle funds.

Key Lessons/Innovations: Mr. Coleman highlighted five lessons for PPFs:

- **Define governance and the institutional home early:** Countries should decide these early on, as these choices will shape how the fund operates for years to come.
- **Decide whether the fund supports PPPs exclusively or takes a mixed approach (PPPs plus traditional public projects):** Each option has pros and cons: a dedicated PPP facility will provide greater focus and specialization.
- **Clarify the operating rules and systems:** Clarity on access rules, contributions, the risk management framework, and monitoring and evaluation systems is critical to success.
- **Prioritize projects on merit, not politics:** Avoiding politically driven project selection in favor of economic viability and social impact is fundamental to building a strong reputation with the market and potential private-sector bidders.
- **Map existing facilities before launching:** It is good practice for countries to conduct a scoping assessment of existing facilities and their requirements so projects are positioned to access them, even before starting operations for a national PPF. Many resources are available to help countries build a PPP pipeline.

Zambia's PPP Journey and Lessons for Establishing a Project Preparation Fund

Ireen Musonda-Habasimbi, from Zambia's MOF and National Planning, presented the country's recent journey with PPPs. Recognition of the high costs that weak PPP preparation can impose led Zambia to begin establishing a PPP facility. Because many existing project preparation facilities prioritize regional projects, there was a gap in support for high-quality national PPP projects in Zambia. The country faced three important challenges: the high cost of feasibility work; limited capacity in line

ministries and within the PPP function to structure bankable deals; and too many projects failing to reach financial close.

Zambia enacted a new PPP Act in 2023, which included a provision to establish a PPF. The PPF's objectives include providing funding for early project development and feasibility studies, building capacity within the PPP office and other government stakeholders, and financing transaction advisors to structure bankable projects.

The PPF was established to receive donations and grants from cooperating partners, annual budget appropriations from the government, and small fees for solicitation documents. It sits within the MOF but is operationalized by the PPP office, aligned with public finance management rules, and with the necessary autonomy balanced by accountability and transparency requirements.

Key Lessons/Innovations: Ms. Musonda-Habasimbi highlighted four practical lessons for other countries:

- **Align technical viability with the political economy:** Without strong political buy-in, the PPF may be viewed as a cost rather than an enabler of bankable projects.
- **Avoid shortcuts in the pursuit of quick wins:** Moving too quickly amid poor project preparation undermines bankability.
- **Avoid parallel, fragmented preparation funds:** Countries should avoid running separate and disconnected preparation funds for PPPs versus traditional projects.
- **Build a prepared project pipeline:** A PPF can be beneficial to the government and its leadership if it establishes a bank of prepared projects aligned with national plans and reduces ad hoc rush jobs and the rework of expensive studies.

Kenya's Subnational PPF Experience and Lessons from Taita Taveta

Johnson Mwawasi Kilangi, Director of the Taita Taveta Investment & Development Corporation, Kenya, described a PPF focused on supporting subnational governments. Kenya's 2010 constitution created 47 county governments, and the PPP Act of 2021 recognizes counties as contracting authorities. Building on this opportunity, the county of Taita Taveta established an investment corporation, with the county as the sole shareholder, to serve as a credible legal vehicle for contracting with the private sector and attracting expertise. Currently, Taita Taveta is pursuing a water PPP to address acute water scarcity among its population, despite nearby freshwater resources. A project implementation team, comprising the county government, the investment corporation, and the water service provider, is now seeking funding from development partners to prepare the PPP documentation.

Key Lessons/Innovations: Mr. Mwawasi Kilangi shared five practical lessons from working with subnational entities:

- **Do not wait passively for national funding:** Identify needs early and package projects to attract external preparation support.
- **Assemble the right team:** Put together a capable project team, including strong PPP champions.

- **Prioritize stakeholder engagement:** Engage stakeholders to manage expectations.
- **Manage political pressure through clear timelines:** Explain timelines to political and community leaders, as thorough preparation is essential.
- **PPPs can work for smaller counties:** Even smaller counties can pursue PPPs successfully. Taita Taveta hopes to develop a replicable playbook for other counties.

3.3 Building Bankability of PPPs

Topic Overview

This workshop focused on practical experiences aimed at enhancing the bankability of PPPs. A PPP transaction is generally considered bankable if it meets four conditions. First, it has a reliable and credible revenue stream coming from user tariffs at affordable levels and/or government payments at reasonable levels. Second, the PPP contract allocates risks transparently and fairly to the parties, private or public, that can manage them most effectively, and it includes supplementary mechanisms, such as guarantees or hedging, to reduce overall risk. Third, the contract includes a credible dispute-resolution mechanism and the necessary government arrangements to address disputes, including a PPP contract management team with sufficient experience and support to serve as a reliable interlocutor for the private party. Finally, there are realistic mechanisms and a work plan to resolve all issues related to document review and approval (including the environmental and social impact assessment and supplementary documents), land acquisition for the project's right-of-way, engagement with other government agencies (like utilities or municipalities), and construction permits, among others.

Governments can take proactive actions to help achieve the above requirements to make a PPP contract bankable, including:

- Develop a robust screening process to check for affordability, fiscal affordability under stress, the realism of demand projections, and delivery of key requirements (land, permits, and coordination with other government agencies).
- Contract a credible team of advisors in all aspects of PPP project preparation and engage a strong government agency (like a PPP unit or center) to manage the process.
- Develop a solid and credible pipeline to signal to the market the government's commitment to PPPs.
- Use global tools like the Global Infrastructure Hub's PPP Risk Allocation Tool[82] to distribute risks.
- Avoid using tools such as viability gap funding, guarantees, and foreign exchange liquidity management tools to cover unreasonable risks that could be reduced through government actions.
- Develop a procurement process that screens out low-quality bids (with strong prequalification criteria, penalization of overly optimistic bids, and requirements for committed financing plans).

82 Global Infrastructure Hub, "PPP Risk Allocation Tool: Introduction," accessed January 13, 2026. https://ppp-risk.gihub.org/introduction/

This list is necessarily partial. The remainder of the chapter presents a summary of practical advice from practitioners across regions on how to make PPP projects more bankable.

Practitioners' Discussion and Case Studies

The workshop included presentations by Atter Hannoura, Director of the Central PPP Unit, Egypt MOF; Rupinder Kaur Rai, Public-Private Partnerships Specialist, World Bank; Jimmy Pannett, Program Lead, Renewable Energy Integration Program, Climate Investment Funds; Alan Narayadu, Senior Underwriter, Extractive and Energy Sector, Multilateral Investment Guarantee Agency (MIGA), World Bank; Andrew Yu Han, Senior Investment Specialist, Private Sector Facility, Green Climate Fund; and Paolo Craviolatti, Transaction Adviser, Dar, representing WAPPP.

Egypt's Insights on Strengthening PPP Bankability

Atter Hannoura, Director of the Central PPP Unit, Egypt MOF, provided an overview of key factors that enhance the bankability of PPP transactions and lessons from Egypt's experience. A key message from his presentation was that PPP bankability is not solely the private sector's responsibility but a shared responsibility among government, private sponsors, and banks. Unquantified or poorly allocated financial risks (interest rate, foreign exchange, inflation, revenue, demand, construction, operations and maintenance, refinancing, regulatory, political, or force majeure risks) can quickly make a project "unbankable." Bank risk departments carefully assess these risks, and a major weakness in any area can stop a PPP deal.

Key Lessons/Innovations: Mr. Hannoura offered four lessons for strengthening PPP bankability:

- **Quantify and allocate risks clearly:** Leaving risks unquantified, vague, or unallocated is generally a deal breaker. Lenders need clear risk allocations and mitigation mechanisms. The latter should include objective formulas for indexation (inflation, foreign exchange, and interest rates, where appropriate) to reduce ambiguity and disputes.
- **Assess each project on its own merits:** Each project must be assessed separately, as the conditions and macro risks at the time of a new PPP transaction may differ significantly from those in previous contracts.
- **Engage banks early through structured market sounding:** This helps ensure the project baseline and financial structure can be financed, even if changes are made later based on feedback received during the tendering process.
- **Use targeted guarantees for government-pay projects:** Consider targeted and credible guarantees, both commercial and payment, to unlock bankability.

World Bank Insights on Hybrid PPPs and Viability Gap Funding

Rupinder Kaur Rai, Public-Private Partnerships Specialist at the World Bank, described hybrid PPPs, in which the government uses support mechanisms, such as viability gap funding (VGF) supported by concessional financing (e.g., from multilateral or bilateral financiers), to bridge the funding gap needed to achieve the bankability of PPP transactions. There are three common types of hybrid PPP models: (i) CapEx VGF, in which a capital subsidy is provided to make the project bankable; (ii) OPEX VGF, in which an operating subsidy is provided to close an operating affordability gap; and (iii) split structures, where the project is broken down into discrete components delivered by different parties.

One example is the Dakar bus rapid transit (BRT) system in Senegal, which includes an e-bus PPP component. This project uses a split-component structure that includes publicly financed infrastructure (busways, stations, depots, and non-motorized transport works) largely funded through development finance, including support from the World Bank and the European Investment Bank. This is paired with a private concession for electric bus fleet financing, operations, and maintenance, supported by a targeted operational subsidy to close the viability gap.[83] The concessionaire finances and operates a fleet of 121 electric buses and maintains the infrastructure.

Another example is the As-Samra Wastewater Treatment Plant Expansion in Jordan. This is a build–operate–transfer PPP where the private operator mobilized private finance to cover part of the funding needs, but public concessional and grant funding was blended in as VGF to close the bankability gap and enable long-tenor, local-currency project finance.[84] The funding included $110 million in private financing ($102 million in debt from Jordanian banks) and $8 million in equity. The Millennium Challenge Corporation provided a $93 million grant, and the Government of Jordan contributed $20 million. The fee payments during the PPP contract period are guaranteed through a reserve account backed by an MOF guarantee, which was critical to making the project bankable.[85]

Key Lessons/Innovations: Ms. Rai highlighted four lessons on hybrid PPPs:

- **Balance value for money, affordability, and bankability:** The goal of hybrid PPPs is to find the "sweet spot" among these objectives. A PPP that is bankable but not affordable (or affordable but not bankable) is not sustainable.
- **Choose the model based on project context:** Each transaction needs a separate analysis, and the same country may require different models (CapEx subsidy, OPEX subsidy, or component splitting) depending on the sector, risks, and market maturity.
- **Consider splitting components in less mature PPP markets:** This can help capture efficiencies from engaging the private sector while keeping risks manageable for all parties.

83 World Bank, "Dakar BRT Project" (2024). https://thedocs.worldbank.org/en/doc/7cf9e47d61ee696deed007dc8613e110-0360012024/original/Senegal-Dakar-BRT-pilot-project-121124-jp.pdf

84 World Bank, "Blended Financing for the Expansion of the As-Samra Wastewater Treatment Plant in Jordan" (2016). https://documents1.worldbank.org/curated/en/959621472041167619/pdf/107976-Jordan.pdf

85 Ibid.

- **Unlock mitigation benefits:** Hybrid PPPs can unlock climate mitigation benefits when the structure matches the project economics (the Dakar BRT example above shows how a hybrid PPP design can support higher-quality public transport and carbon mitigation actions at the same time).

Climate Investment Funds Insights on Using Concessional Finance to Scale Bankable Green PPPs

Jimmy Pannett, Program Lead, Renewable Energy Integration Program, Climate Investment Funds (CIF), presented examples of how climate finance can enhance the bankability of PPPs. A key message was that an effective way to scale bankable clean-energy investments (including PPPs and PPP-like programs) is to combine private capital with targeted concessional finance that absorbs early risks, closes viability gaps, and improves the risk-return profile until markets gain enough experience and credibility. CIF, a multilateral climate fund established in 2008 that works through MDB partners, provides this targeted concessional finance to enhance the bankability of green energy projects.[86]

Some of the instruments used by CIF to crowd in finance and make PPP projects more bankable include blended finance credit solutions through development banks and financial institutions, liquidity facilities, contingent lines, guarantees, subordinated debt, and VGF-type support for nascent technologies. The expected leverage targets for CIF to mobilize additional financing from MDBs, governments, and the private sector are about 1:10 in middle-income settings and 1:5 in low-income settings.

One example Mr. Pannett discussed was CIF's Renewable Energy Integration program, a platform designed to address system-wide constraints to integrating high shares of renewables.[87] The program has supported several PPP initiatives. In Brazil, it is supporting the Port of Pecém's development as a green hydrogen hub, using concessional finance to accelerate the development of shared and enabling infrastructure.[88] In Türkiye, it is providing concessional funding, helping test business models and near-commercial technologies (e.g., storage and EV charging) to support grid digitalization and renewable integration.[89] In India, it is providing VGF-style support, with as much as 40% of CapEx to accelerate early uptake of battery storage and mobilize additional funding from MDBs and private sources.[90]

86 "Climate Investment Funds," accessed January 13, 2026. https://www.cif.org/

87 "Renewable Energy Integration Program," Climate Investment Funds, accessed January 13, 2026. https://www.cif.org/topics/renewable-energy-integration

88 Climate Investment Funds "Green Hydrogen: Why Brazil's Port of Pecém Is a Beacon of Innovation" (2025). https://www.cif.org/news/green-hydrogen-why-brazils-port-pecem-beacon-innovation

89 Climate Investment Funds, Clean Technology Fund, *Renewable Energy Integration (REI) Fact Sheet: Türkiye* (2024). https://www.cif.org/sites/cif_enc/files/knowledge-documents/rei-factsheet-turkiye_221024.pdf

90 Climate Investment Funds, *CTF/TFC.33/05: India (REI) Investment Plan* (2025). https://www.cif.org/sites/cif_enc/files/2025-04/ctf_tfc.33_05_rei_india_investment-plan_02072025.pdf

Key Lessons/Innovations: Mr. Pannett highlighted three lessons from these examples:

- **Target concessional finance to binding constraints:** Concessional finance has the greatest impact when it addresses the key constraints that limit the scale-up of climate-friendly solutions.
- **Use de-risking instruments to improve bankability:** This can be achieved through instruments such as guarantees, subordinated debt, and liquidity lines.
- **Build credible performance datasets to reduce risk premiums:** Transparent, credible project- and sector-level performance datasets on technical and financial issues can lower the perceived risk premiums charged by the market and improve the bankability of new projects.

World Bank Group Guarantee Platform Insights on De-risking Infrastructure PPPs

Alan Narayadu, Senior Underwriter at MIGA, presented an overview of the World Bank Group's guarantees. These instruments provide credit enhancement and political risk mitigation that help countries and infrastructure PPP sponsors mobilize private capital, extend maturities, and reduce financing costs.

In 2024, the World Bank Group launched the one-stop Guarantee Platform to bring together guarantee products from the World Bank, IFC, and MIGA, improving speed, simplicity, and integrated offerings to clients. The platform's core "risk buckets" are: (i) credit guarantees for loans to the public and private sectors; (ii) trade finance guarantees; and (iii) political risk insurance against non-commercial risks for PPPs.[91]

Infrastructure PPPs frequently depend on payments and support from governments or state-owned enterprises, are exposed to regulatory and tariff changes, and face country- and political-risk premiums that are priced conservatively by potential commercial lenders. Guarantees can protect against such risks, thereby improving debt terms and conditions and broadening the lender base.[92]

Key Lessons/Innovations: Mr. Narayadu highlighted the following lessons and practical recommendations on the use of guarantees in infrastructure PPPs:

- **Use guarantees to support bankable contracts:** Guarantees are most useful when PPP contracts are explicit and bankable, particularly for termination and compensation clauses.
- **Focus coverage on core political risks:** The most common political risks for infrastructure PPPs that guarantees can cover include breach of contract, expropriation, transfer restriction, and war or civil disturbance.
- **Recognize the appeal of non-honoring products for banks:** Non-honoring products can be particularly attractive to banks due to Basel capital requirements.

91 World Bank, "World Bank Group Guarantee Platform Goes Live," press release, *July* 1, 2024. https://www.worldbank.org/en/news/press-release/2024/07/01/world-bank-group-guarantee-platform-goes-live

92 World Bank, "Guarantees Program," accessed January 13, 2026. https://www.worldbank.org/en/programs/guarantees-program.print

Box 9: Case Studies of Guarantees Supporting Infrastructure PPPs

Nigeria: The Azura-Edo Independent Power Project is a privately developed, greenfield gas-fired generation project designed to add large, dispatchable capacity to Nigeria's grid as part of the country's power-sector reform roadmap. The project is structured around a long-term, take-or-pay Power Purchase Agreement (PPA) in which the government acts as a bulk buyer from generators, then resells to electricity distribution companies. The PPA was complemented by a Put-Call Option Agreement with the MOF that provides structured termination payment assurance, a payment security mechanism based on a standby letter of credit, and a World Bank partial risk guarantee.[1] In parallel, the project had a MIGA guarantee for specific commercial lenders (covering transfer restriction and inconvertibility, expropriation, war and civil disturbance, and breach of contract) and for the project developer for equity.[2] The two instruments, the partial risk guarantee and the MIGA guarantee, were part of a blended de-risking package, as they address different risk buckets.

Jordan: The Queen Alia International Airport is Jordan's main airport. The government entered into a PPP to expand and modernize the airport under a 25-year concession without a sovereign guarantee. A MIGA guarantee (covering breach of contract, expropriation, transfer restriction and inconvertibility, and war and civil disturbance) was instrumental in this change in the operating structure of an infrastructure asset critical to the country.[3]

1 World Bank, Project Appraisal Document on a Proposed Series of Partial Risk Guarantees for the Federal Republic of Nigeria in Support of Independent Power Generation Projects and Privatized Generation and Distribution Companies for the Power Sector Guarantees Project (PSGP) (2014). https://documents1.worldbank.org/curated/en/923801468297567676/pdf/826640PAD0P120010Box385177B00OUO090.pdf

2 Multilateral Investment Guarantee Agency, "Nigeria: Azura– Edo IPP (Case Study)," accessed January 13, 2026. https://www.miga.org/case-study/nigeria-azura-edo-ipp

3 Multilateral Investment Guarantee Agency, "Queen Alia International Airport," accessed January 13, 2026. https://www.miga.org/project/queen-alia-international-airport

This transaction was interesting because the initial PPP contract allowed IsDB and commercial banks to mobilize follow-on capital to later expand facilities and services.[4] Important lessons from this case include: (i) a strong bid response and value offering to the government were the result of a transparent bidding process and credible transaction advisory services; (ii) the MIGA guarantee was seen as valuable to institutional investors considering minority stakes in operating infrastructure concessions; (iii) airport PPPs need flexibility to handle demand uncertainty, as in this case, the airport growth was higher than the original forecast, which required the concessionaire to access new financing and proceed with a larger expansion; and (iv) political risk guarantees can facilitate secondary market ownership for later equity transactions in mature assets under PPP contracts.[5]

Serbia: The municipality of Belgrade sought to remediate legacy pollution at the Vinča landfill and developed an infrastructure PPP for waste disposal, recycling, and an energy-from-waste facility to convert municipal waste into electricity and heat.[6] The project's total funding of $350 million was structured as non-recourse project finance with loans from IFC, the Development Bank of Austria (OeEB), and EBRD.[7] A MIGA guarantee was provided for up to €97.16 million against political risks relevant to equity and debt mobilization.[8] The facility began operations in 2024, processing 340,000 tons per year (about 70% of Belgrade's municipal solid waste) and supplying electricity to 30,000 households and heat to 60,000 households.[9] Key lessons learned from this PPP project include: (i) MIGA guarantees can also be useful at the subnational level, where a city is a party to the PPP; (ii) guarantees work well when they complement a project-finance stack where IFI lenders bring tenor and standards that improve the overall quality of a project and its credit; (iii) guarantees are beneficial for new sectors (such as solid waste) and new countries; and (iv) guarantees are more effective when they are considered from the beginning and when contract terms and dispute resolution are credible, with clear triggers.

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4 World Bank, "Looking Back: Was the Queen Alia International Airport PPP a Success?" *World Bank Blogs*, February 28, 2017. https://blogs.worldbank.org/en/ppps/looking-back-was-queen-alia-international-airport-ppp-success

5 "MIGA-14068 (Project Document)," Rights and Development (EWS), accessed January 13, 2026. https://ewsdata.rightsindevelopment.org/temp/tmp_LA67_/MIGA-14068.pdf

6 Global Infrastructure Hub, "Belgrade Waste-to-Energy PPP (Case Study)," accessed January 13, 2026. https://www.gihub.org/innovative-funding-and-financing/case-studies/belgrade-waste-to-energy-ppp

7 International Finance Corporation, "Belgrade WtE (Project Disclosure: SII/37838)," accessed January 13, 2026. https://disclosures.ifc.org/project-detail/SII/37838/belgrade-wte

8 Multilateral Investment Guarantee Agency, "Serbia: Waste-to-Energy," accessed January 13, 2026. https://www.miga.org/project/serbia-waste-energy

9 ITOCHU Corporation, "Launch of Commercial Operation of Belgrade Waste Management Public-Private Partnership Project, Republic of Serbia," press release, July 26, 2024. https://www.itochu.co.jp/en/news/press/2024/240726.html

Understand the limits of breach-of-contract coverage: Guarantees against breach of contract are beneficial for infrastructure PPPs, as contracts are typically long-dated. However, breach-of-contract coverage can only backstop what the government has explicitly committed to. If agreements are vague, incomplete, or misaligned with commercial reality, the guarantee cannot remedy these weaknesses. Contracts that are prepared to deal with breach of contract typically include clear termination regimes and termination-payment formulas; explicit treatment of debt service, breakage and unwinding costs, and equity return recovery; and unambiguous obligations to avoid having to retroactively fix vague conditions and requirements.

Mr. Narayadu also offered the following recommendations for guarantees to be made as effective as possible in supporting infrastructure PPPs:

- **Define expropriation compensation up front:** For expropriation risk, it is essential to define the compensation basis upfront in the contract (either book value or other valuation definitions), as the guarantee will be anchored to the net book value for equity investments.[93]
- **Specify valuation terms for war and civil disturbance:** The valuation approach in the contract is critical for war and civil disturbance protection, as the compensation will usually be linked to the policy terms (e.g., the lesser of the replacement cost versus the repair cost).[94]
- **Combine letters of credit with guarantees for payment delays:** A letter of credit from a commercial bank to support payment delays can be supplemented by a guarantee that will pay if the delay persists beyond the terms of the letter of credit, so that the PPP project can continue operating without delays.
- **Use Basel II-compliant non-honoring guarantees where relevant:** Guarantees covering non-honoring of sovereign financial obligations are important as they can be designed to be Basel II-compliant, enabling banks to receive the necessary capital relief to support the infrastructure PPP.[95]
- **Do not treat guarantees as a substitute for good drafting:** Guarantees can strengthen and support infrastructure PPPs, but they cannot substitute for weak contract drafting. The PPP agreement must precisely define the obligations, triggers, cure periods, and payment mechanisms; provide credible dispute-resolution and enforcement mechanisms (especially relevant for beginning of contract); and align termination payments and compensation with market requirements (for lenders and equity holders).

Box 9 presents several case studies where World Bank Group guarantees have supported infrastructure PPPs.

93 Multilateral Investment Guarantee Agency, "Expropriation," accessed January 13, 2026. https://www.miga.org/product/expropriation

94 Multilateral Investment Guarantee Agency, "War and Civil Disturbance," accessed January 13, 2026. https://www.miga.org/product/war-and-civil-disturbance

95 World Bank, *MIGA's Non-Honoring of Sovereign Financial Obligations Product* (2011). https://documents1.worldbank.org/curated/en/323651468337285219/pdf/632420BRI0MIGA00Box0361508B0PUBLIC0.pdf

Green Climate Fund Insights on Climate Action in PPPs

Andrew Yu Han, Senior Investment Specialist, Private Sector Facility, GCF, discussed the support that GCF provides to PPPs for climate action. It finances country-driven climate interventions aligned with nationally determined contributions and national adaptation plans. To scale climate action beyond the initial public sector–led projects with high levels of grant funding, GCF created the Private Sector Facility. Through it, GCF provides a full suite of financial instruments (e.g., grants, concessional loans, equity, and guarantees) to de-risk climate investments, crowd in co-financing from public and private sources, and enhance the bankability of projects. The PPP proposals are reviewed by GCF through five investment criteria: impact potential, paradigm shift, sustainable development, country ownership, recipient needs, efficiency and effectiveness.

For example, GCF approved a financing framework with EBRD to accelerate private investment in renewable energy in Egypt. The program targets utility-scale renewable generation and associated grid integration improvements. GCF provided a concessional loan of $150 million through EBRD, which in turn put $350 million into the facility to mobilize equity contributions from private sector participants. The program is expected to lead to an additional 1,400 GWh/year of renewable electricity generation and as much as 800,000 tCO_2e/year of avoided emissions.[96]

In another example, GCF approved an IFC-led facility spanning 12 countries to scale climate-resilient water infrastructure. This facility combines upstream PPP project structuring support with concessional financing to enhance the bankability of PPP projects and mobilize commercial capital. The facility targets resilient water investments (e.g., treatment, reuse, conveyance, efficiency, and climate-proofing) in a sector where utility credit constraints often make PPP projects unbankable. The total facility financing is $1.3 billion, including a contribution of $258 million by GCF ($150 million in senior loans, $100 million in subordinated loans, and $8 million in reimbursable grants), with the remainder provided by IFC and other institutions through senior and subordinated loans. The facility is expected to improve water services for 17.7 million people.[97]

Key Lessons/Innovations: Mr. Han highlighted four recommendations for countries interested in mobilizing GCF resources to make PPP projects bankable:

- **Use GCF readiness support to build a pipeline:** GCF readiness support can help prepare PPP pipelines, including strengthening the enabling environment and coordinating capacity across government agencies.[98]
- **Develop platforms, not one-off deals:** Working through platforms can reduce transaction costs and scale up PPP pipeline delivery (as shown in the examples above).

96 Green Climate Fund, *Funding Proposal FP039: EBRD (Egypt)* (2017). https://www.greenclimate.fund/sites/default/files/document/funding-proposal-fp039-ebrd-egypt.pdf

97 Green Climate Fund, *Funding Proposal GCF-IFC Scaling Resilient Water Infrastructure (RWI) Facility* (2024). https://www.greenclimate.fund/sites/default/files/document/funding-proposal-fp254.pdf

98 Green Climate Fund, "Readiness and Preparatory Support," accessed January 13, 2026. https://www.greenclimate.fund/readiness

- **Align PPP structuring with nationally determined contributions or national adaptation plan priorities:** These must be clearly linked, as they are not a formality in the GCF application process.
- **Embed environmental and social requirements:** PPPs must be designed to meet the stringent GCF requirements on environmental and social protection (including gender and indigenous people's considerations) from the start.

WAPPP Insights on Strengthening PPP Bankability in Sub-Saharan Africa

Dr. Paolo Craviolatti, representing WAPPP at the workshop, presented a practitioner's perspective on the bankability of PPP projects in sub-Saharan Africa (excluding South Africa, given its more advanced PPP framework and economic development). Dr. Craviolatti presented some of the trends he has observed in the region in recent years, such as fewer PPP projects coming through public tenders, as many are unsolicited proposals; cumbersome PPP framework procedures that are discouraging agencies from considering this option; high levels of debt and constrained fiscal space; and greater consideration of projects with separated components for implementation (e.g., engineering, procurement, and construction with government financing, and longer-term performance-based O&M PPPs).

Key Lessons/Innovations: Dr. Craviolatti highlighted five practical recommendations for strengthening the bankability or PPPs:

- **Optimize project selection with robust economic analysis and prioritization:** Robust economic appraisal of potential PPP projects that includes focused prioritization to lower the CapEx requirements is indispensable for discussions with the MOF and MDBs. Applying value engineering to retain the project's required functionality while cutting costs is critical, as these savings can make the PPP project bankable.
- **Test project finance and modality early:** Project finance testing and analysis of project modality (conventional PPP or other structures) should be done at the pre-feasibility stage. The financial model should drive the PPP structure and procurement choice.
- **Address upstream causes of bankability failure:** Bankability failures often start upstream due to weak economic justification, weak affordability realism, and late-stage attempts to force-fit PPP solutions due to fiscal constraints.
- **Avoid overreliance on availability payments:** Heavy reliance on availability payments can backfire politically and become fiscally unsustainable. It is crucial to test alternatives that preserve affordability.
- **Simplify PPP frameworks to enable bankable PPP projects:** When PPP rules are overly burdensome, they can create incentives to circumvent them, reducing transparency, quality, and project bankability.

4. Innovative Sectors

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4.1 Innovations in Transport PPPs

Topic Overview

The transport sector is experiencing rapid changes in PPPs, driven by innovations in contract design, the adoption of digital technologies, and technological advances. A workshop in the "PPP Hot Topics" series showcased examples of new approaches in transport PPPs.

With rapid technological change, some countries are adopting collaborative procurement approaches, including hybrid PPP pipelines, in which contractors are involved earlier in staged processes to facilitate innovation capture, improve risk management, and inform design inputs before committing to a final delivery structure and price. In Australia, this approach is being used in transport contracts that involve complex digital systems, integration across systems, and resilience requirements related to climate change risks.[99]

In the urban public transport sector, some cities are contracting private operators to provide electric bus services, paying per kilometer and via viability gap payments, rather than buying buses themselves. For instance, India has established two national schemes for e-buses through OPEX/gross cost PPP contracting, including a central payment security mechanism to protect operators against defaults by local public transit authorities.[100, 101] Recent BRT PPPs combine a publicly funded corridor with a concession agreement for the operation and maintenance of BRT services, requiring digital integration of fares and system transfers, as well as transparent KPIs linked to improved quality of service and related outcomes. For example, the Dakar BRT in Senegal has reduced rush-hour vehicle travel time from 95 to 45 minutes, and weekday ridership has already reached 60,000 passengers after opening.[102]

In the railway sector, modern concessions are innovating by incorporating comprehensive performance requirements (such as availability, punctuality, safety, cleanliness, feeder integration, and customer feedback) through data-driven asset and performance monitoring. For example, the Gautrain Management Agency in South Africa has a detailed monitoring system for the concession's performance that focuses on innovation through enforcement. As a result, punctuality improved to 94% and availability to 98% in last year's performance report.[103]

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99 Australian Government, *National Alliance Contracting Guidelines (NACG): Guidance Note 6 (GN6)* (2015). https://www.infrastructure.gov.au/sites/default/files/migrated/infrastructure/ngpd/files/NACG_GN6.pdf

100 Press Information Bureau (Government of India), "Implementation of E-Buses Scheme," December 6, 2024. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2081560

101 International Council on Clean Transportation, "Electrifying India's Buses: Insights from Public Deployment and Case Study of Private Intercity Operators," August 24, 2025. https://theicct.org/publication/insights-from-public-deployment-and-case-study-of-private-intercity-operators-aug25/

102 World Bank, *Implementation Status & Results Report: Dakar Bus Rapid Transit Pilot Project (P156186)* (2025). https://documents1.worldbank.org/curated/en/099100125171039446/pdf/P156186-09845e2c-8f26-4aeb-8553-d832bcfa7258.pdf

103 Gautrain Management Agency, *Integrated Annual Report 2024/25* (2025). https://gma.gautrain.co.za/performance/Shared%20Documents/GMA%20Annual%20Report%202024-25.pdf

Box 10: An Innovative Private Contract Model for Electric Buses in Africa: The Case of BasiGo

Public transport in East Africa is privately owned and fragmented, neither municipally operated nor structured as a traditional PPP concession. For example, Nairobi has about 20,000 privately owned buses and *matatus* (informal small buses)[1] and about 272 registered bus cooperatives.[2] According to the TomTom global traffic database, Nairobi ranks 70th in congestion and 86th in travel time.[3] It is estimated that congestion in the Nairobi metropolitan area costs $1 billion a year in lost productivity.[4]

Furthermore, diesel is the dominant fuel for bus and matatu transport. As Kenya imports all of its transport fuel, the sector is subject to volatility in fuel prices and foreign exchange rates. Diesel bus emissions are a major source of air pollution in Nairobi, with concentrations 4.2 times the level recommended by the World Health Organization in 2019.[5]

Mr. Bhattacharya highlighted three key factors that underpin the strong fundamentals of electric bus viability in Kenya. First, the electricity generation mix is very clean (with more than 90% renewable sources, mainly geothermal and hydro).[6] Second, according to Kenya's energy regulator, the Energy and Petroleum Regulatory Authority, a large off-peak surplus (primarily geothermal) results in "energy curtailment," in which plant output is reduced during low-demand hours to maintain grid frequency. In fiscal year 2024, more than 800 GWh of electricity was curtailed (close to 6% of total energy generated).[7] This

1 BBC News, "The Technology: Modernising Kenya Matatus," October 7, 2013. https://urban-africa-china.angonet.org/sites/default/files/resource_files/technology_modernising_kenya_matatus_-_bbc_07_oct_2013.pdf

2 *Business Daily* (Kenya), "City Halts Issuing of New Licences for Matatu Saccos," September 20, 2020. https://www.businessdailyafrica.com/bd/corporate/companies/city-halts-issuing-of-new-licences-for-matatu-saccos-2280198

3 "Nairobi Traffic," *TomTom Traffic Index*, accessed January 13, 2026. https://www.tomtom.com/traffic-index/nairobi-traffic

4 Bloomberg, "Traffic Jams in Kenya's Capital Bleed $1 Billion From Economy," September 24, 2019. https://www.bloomberg.com/news/articles/2019-09-24/traffic-jams-in-kenya-s-capital-bleed-1-billion-from-economy#xj4y7vzkg

5 Clean Air Fund, "Nairobi and Air Pollution," accessed January 13, 2026. https://www.cleanairfund.org/clean-air-africas-cities/nairobi-and-air-pollution/

6 International Energy Agency, *Kenya 2024 – Energy Review* (2025). https://www.iea.org/reports/kenya-2024/executive-summary

7 Energy and Petroleum Regulatory Authority (EPRA), *Energy & Petroleum Statistics Report FY 2023–2024* (2024). https://www.epra.go.ke/sites/default/files/2024-10/EPRA%20Energy%20and%20Petroleum%20Statistics%20Report%20FY%202023-2024_2.pdf

situation presents an opportunity to lower the cost of charging bus batteries during off-peak hours. Third, high bus utilization, with routes in Nairobi covering between 70,000 km and 100,000 km/year. Replacing one diesel bus with an electric bus can displace approximately 20,000 liters of imported diesel fuel per year with 50 MWh of domestically generated electricity, avoid more than 50 tCO_2/year, and reduce local air pollution.

However, the capital cost and the difficulty of accessing local finance are two major barriers. Electric buses can be twice as expensive as comparable diesel buses. According to the Central Bank of Kenya, in 2022, the average interest rate on loans to micro, small, and medium-sized enterprises was 15.5% at commercial banks and 27% at microfinance banks.[8] Furthermore, in a 2024 survey, 70% of micro, small, and medium-sized enterprises reported difficulties accessing formal credit.[9]

BasiGo addresses these challenges by combining state-of-the-art electric bus assembly designed for African conditions, a technology-enabled pay-as-you-drive leasing model, and access to a convenient and reliable charging and bus service network.[10]

To tackle the high upfront cost of electric buses, BasiGo acts as an asset manager and charging infrastructure provider that offers a mileage-based operating lease model (with an upfront deposit). This arrangement provides leasing drivers with bus rental (while BasiGo owns the bus), charging infrastructure in the company's depots (and partner stations to reduce "charging anxiety"),[11] scheduled service and maintenance covered by the company (with an uptime guarantee of more than 90% per month), insurance and daily operations support, and digital monitoring and analytics that allow for asset monitoring.

Mr. Bhattacharya described four key factors behind the success of this model: a dedicated e-bus assembly line in Kenya that produces about eight buses per month; a charging network at company depots distributed across the city, with more depots being added, including at partners' locations; trained maintenance teams with a well-managed spare parts inventory and battery equipment-authorized servicing; and a proprietary asset management and telematics platform to track route performance, revenues, downtime, and maintenance.

Since its inception in 2021, BasiGo has deployed more than 130 electric buses across Kenya and Rwanda, with more than 1.44 million km driven, 9 million passengers carried, and more than 3,000 tCO_2e avoided.[12] The company maintains up-to-date impact metrics at www.basi-go.com.

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8 Central Bank of Kenya, *2022 Survey Report on MSME Access to Bank Credit* (2023). https://www.centralbank.go.ke/uploads/banking_sector_reports/170784843_2022%20Survey%20Report%20on%20MSME%20Access%20to%20Bank%20Credit%20-%20May%202023.pdf

9 Tiriongo, S., R. Njino, and H. Mulindi, *Access to Bank Finance by MSMEs: Size and Turnover Effects* (2025). https://www.econstor.eu/bitstream/10419/316412/1/192363769X.pdf

10 Reuters, "How Homegrown Startups Are Boosting E-Mobility in Africa," May 9, 2024. https://www.reuters.com/sustainability/society-equity/how-homegrown-startups-are-boosting-e-mobility-africa-2024-05-09/

11 BasiGo, "BasicGo Expands Charging Infrastructure with a New Station at the Revamped Shell Athi River Service Station," October 23, 2024. https://www.basi-go.com/in-the-news/onsosdpngcn1bx5b2rxjk2hyuu1phv

12 Proparco, "Proparco Announces Investment in BasiGo to Accelerate Electric Bus Adoption in East Africa," November 26, 2025. https://www.proparco.fr/en/news/proparco-announces-investment-basigo-accelerate-electric-bus-adoption-east-africa

Leasing bus operators have responded positively to this model. The electric buses have generated up to 30%–70% higher net income compared to diesel buses due to higher uptime, growing e-bus popularity among passengers, higher reliability (with more than 97% uptime reported), and lower operations and maintenance costs.[13]

The BasiGo model has been operating without direct subsidies from the Kenyan or Rwandan governments. This is possible due to unsubsidized diesel prices, preferential EV charging tariffs during off-peak hours, and the high mileage achieved in the Nairobi private bus market.

BasiGo has been able to mobilize funding from a variety of sources, including a $42 million Series A package comprising $24 million in Series A equity (led by Africa50 in 2024) and $17.5 million in debt facilities, notably a $10 million debt facility from the U.S. International Development Finance Corporation[14] and a $7.5 million British International Investment debt facility.[15] In November 2025, Proparco completed an equity investment in BasiGo.[16]

Finally, Mr. Bhattacharya described the carbon finance opportunities of BasiGo's electric bus operations. By aggregating carbon emissions reductions from multiple individual bus operations, the company has developed a project for the voluntary carbon market, which is already certified in Kenya and is in the process of certification in Rwanda.

13 Africa50, "BasiGo," accessed January 13, 2026. https://www.africa50.com/our-funds/projects/basigo/

14 U.S. International Development Finance Corporation, "U.S., Kenya Advance Shared Priorities — Surpassing $1 Billion in DFC Exposure, Intent to Open Nairobi Office," May 23, 2024. https://www.dfc.gov/media/press-releases/us-kenya-advance-shared-priorities-surpassing-1-billion-dfc-exposure-intent

15 British International Investment, "A Cleaner Future for Public Transport," *BII Annual Report 2024* (2024). https://ar2024.bii.co.uk/a-cleaner-future-for-public-transport/

16 Proparco, "Proparco Announces Investment in BasiGo to Accelerate Electric Bus Adoption in East Africa," November 26, 2025. https://www.proparco.fr/en/news/proparco-announces-investment-basigo-accelerate-electric-bus-adoption-east-africa

As the impacts of climate change intensify, long-term transport PPPs need to incorporate climate considerations into contract design and performance indicators. For example, the A7 national motorway PPP in the Netherlands was procured as a design–build–finance–maintain contract with climate change at its core, explicitly requiring design considerations for sea-level rise, more extreme storms, and increased freshwater discharge requirements.[104] The resilience features of the PPP (pumps, barriers, sluices, and armoring) must be maintained and upgraded throughout the contract period, adapting to changing conditions and risks.[105]

104 Rijkswaterstaat, *Afsluitdijk* (brochure) (2021). https://theafsluitdijk.com/wp-content/uploads/sites/3/2021/01/19038-RWS-Afsluitdijk_brochure_ENG_DIGI_DEF_DV.pdf

105 European Investment Bank, "Environmental and Social Data Sheet – Netherlands Flood Defense PPP," accessed January 13, 2026. https://www.eib.org/attachments/registers/77264097.pdf

Practitioners' Discussion and Case Studies

This workshop in the "PPP Hot Topics" series included presentations by Eric Lancelot, Lead Transport Specialist at the World Bank; Jit Bhattacharya, Co-founder and CEO of BasiGo; Radhika Behuria, Social and Gender Specialist at ADB; and Sithembiso Mkwanazi, Senior Manager, Performance Monitoring and Evaluation at the Government Technical Advisory Centre, National Treasury, South Africa.

World Bank Insights on PPPs in the Road Sector

Eric Lancelot, Lead Transport Specialist at the World Bank, presented an innovative approach to road maintenance through performance-based PPPs. The objective is to shift from a reactive maintenance approach, in which assets are repaired only after deterioration, to a proactive maintenance program that aligns incentives for the private sector with improved road quality.

In performance-based PPP contracts, the private partner is paid based on service levels and results, not on inputs. Under these arrangements, the road agency delegates asset management responsibility to the private sector under a long-term contract, with payments tied to performance indicators.[106] These contracts are designed for toll-free roads, and the private sector does not provide significant financing for the contract. Even if the government remains the payer, proactive maintenance can deliver considerable life-cycle savings and smoother budget expenditure profiles.

This type of contract has been shown to improve consistency in road conditions, reduce total costs for equivalent or better outcomes, and increase predictability for road agencies managing large networks, with proven results over the years in countries such as Brazil.[107]

However, these innovative contracts require a mindset shift in road agencies that are more accustomed to specifying inputs and technical solutions for private contractors. Performance-based contracts require full delegation to the private sector to determine how to meet contract performance requirements. The road agency needs to build capacity to monitor KPIs related to outcomes.

New generations of these performance-based road maintenance PPP contracts are also including road safety and disaster resilience among their objectives and KPIs, including recent examples in Brazil[108] and Panama.[109]

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106 World Bank, "Performance-Based Contracts: Promoting Quality Road Maintenance and Economic Efficiency," *World Bank Blogs*, April 3, 2023. https://blogs.worldbank.org/en/transport/performance-based-contracts-promoting-quality-road-maintenance-and-economic-efficiency

107 World Bank, *Performance-Based Contracts in the Road Sector: Towards Improved Efficiency in the Management of Maintenance and Rehabilitation — Brazil's Experience* (2010). https://documents.worldbank.org/en/publication/documents-reports/documentdetail/465041468017465167/performance-based-contracts-in-the-road-sector-towards-improved-efficiency-in-the-management-of-maintenance-and-rehabilitation-brazils-experience

108 World Bank, "World Bank Supports Mato Grosso do Sul's Drive for Safer, Greener, and More Resilient Roads," press release, April 10, 2025. https://www.worldbank.org/en/news/press-release/2025/04/10/world-bank-supports-mato-grosso-do-sul-s-drive-for-safer-greener-and-more-resilient-roads

109 World Bank, *Support to Panama PPP Program Development for Recovery Project (P174535): Restructuring Paper* (2025). https://documents1.worldbank.org/curated/en/099060525135533637/pdf/P174535-9d427ecc-f2bd-4b70-a656-44da3e1dca64.pdf

Key Lessons/Innovations: Mr. Lancelot offered five lessons for practitioners in the road sector:

- **Shift to proactive, service-level asset management:** Road agencies should move from an approach that fixes roads only after they have failed to proactive, service-level-driven asset management. Performance-based PPP contracting can help in this shift. However, this requires delegating road network management to the private sector while the public sector focuses on monitoring and enforcing KPIs.
- **Focus on life-cycle efficiency gains:** In performance-based road maintenance PPP contracts, the benefits come from life-cycle efficiency gains through better maintenance, reduced need for reconstruction, and lower unit costs for transportation. Understanding these gains requires a mindset shift within government.
- **Integrate safety and resilience as core objectives:** The next frontier of maintenance PPP contracts needs to internalize road safety and resilience to disasters and climate change shocks.
- **Use longer contract terms with credible commitments:** Moving from 5-year PPP contracts to 10–20 year contracts can strengthen the private sector's incentives for sustained performance and enhanced investments in disaster resilience. However, monitoring and payment commitments need to be robust and credible.
- **Build buy-in through rigorous evidence:** Strong monitoring and evidence on efficiency and performance are crucial for building political and institutional buy-in.

BasiGo Insights on Scaling Up Electric Buses

Jit Bhattacharya, CEO and Co-founder of BasiGo, an African e-mobility company with operations in Kenya and Rwanda, presented the company's trajectory, business model, and results. BasiGo is helping to accelerate electric bus adoption in East Africa. Box 10 describes this case study.

South Africa's Insights on Transport PPP Innovation

Sithembiso Mkwanazi, Senior Manager, Performance Monitoring and Evaluation at the Government Technical Advisory Centre, National Treasury, South Africa, presented examples of innovation in South Africa's transport PPPs. Mr. Mkwanazi is part of the Government Technical Advisory Centre. This National Treasury entity provides on-demand technical and transactional support to the government for major infrastructure procurements, including PPPs. It also produces practical guidance documents and provides capacity building on PPPs.[110]

The first case discussed was the Gautrain rapid rail PPP, an 80-km high-speed commuter rail serving the Johannesburg–Pretoria corridor. It was one of South Africa's first mega-scale transport PPPs. The PPP contract also included feeder bus services. The system was developed in phases (an airport link in June 2010

110 "GTAC (Government Technical Advisory Centre)," accessed January 13, 2026. https://www.gtac.gov.za

and the broader network by 2012).[111] The services provided met and exceeded KPIs soon after opening, with average availability and punctuality of 99.5% and 98.6%, respectively, across all trips scheduled for the 2016/17 financial year.

Key Lessons/Innovations: Mr. Mkwanazi highlighted three innovations from the Gautrain rapid rail PPP:

- **Bundled rail and feeder services:** Combined responsibilities for rail and bus feeder services to stations improved usability and ridership.
- **Strong and disciplined contract management capability:** This was at the core of the value-for-money delivery of the project.[112]

Box 11: Gender Innovations in the ADB's Transport PPP Portfolio

GreenCell electric bus project (India): ADB (with parallel co-financing from AIIB and the Climate Innovation and Development Fund) has provided a blended finance package to GreenCell Express to deploy 255 battery-electric buses for intercity services and associated charging infrastructure. The project was designed to serve more than 5 million passengers annually across 56 intercity routes in India.[1] The Climate Innovation and Development Fund will support the deployment of a solar-powered battery energy storage system to further reduce annual emissions by approximately 15,000 tons.[2]

1 Asian Development Bank, *GreenCell Electric Bus Financing Project* (2022). https://www.adb.org/sites/default/files/project-documents/55288/55288-001-rrp-en.pdf

2 Carandbike, "GreenCell Gets Over Rs 450 Crore Sanction to Deploy 255 Electric Buses in India" (2022). https://www.carandbike.com/news/greencell-gets-over-rs-450-crore-sanction-to-deploy-255-electric-buses-in-india-3203697

111 Global Infrastructure Hub, "Gautrain Rapid Rail Link," *Managing PPP Case Study*, accessed January 13, 2026. https://managingppp.gihub.org/case-studies/gautrain-rapid-rail-link/

112 Gautrain Management Agency, "GMA Case Study: PPP Contract Management," accessed January 13, 2026. https://gma.gautrain.co.za/Style%20Library/Branding/Doc/GMA%20Case%20Study_PPP%20Contract%20Management_S.pdf

According to the project's Gender Action Plan,[3] access to safe and secure mobility options is a key priority for Indian women, given its importance in facilitating freedom of movement and participation in the labor force.[4]

The project was designed with several gender-responsive features to ensure safer transport services for women. To achieve this outcome, the project was designed to equip all buses and three bus depots with women-friendly safety features (such as panic buttons linked to a control/command response and other onboard security measures). In addition, all bus drivers and cabin hosts would be trained in safety response protocols, with particular attention to the needs of women passengers, and in awareness-raising activities on gender-inclusive initiatives and practices for the company's staff, contractors, and business partners.

Peshawar Sustainable Bus Rapid Transit (BRT) Corridor Project (Pakistan): ADB and the Agence Française de Développement provided $587 million in financing to support the city of Peshawar's first integrated BRT corridor. The 26-km BRT was designed to benefit 500,000 people, close to one-quarter of the city's population. At the time of project preparation, traffic conditions on key arterial roads were severe, with average peak-hour travel speeds as low as 11 km/hour.[5] The BRT reduced travel time between the city's east and west sides from 2 hours to under 45 minutes.[6]

According to project documents, Peshawar had a very low percentage of female passengers in public transport due to safety considerations. Women were reported to walk an average of 2 kilometers per day or to use more expensive private transportation. The impacts on female labor participation were significant. To address these challenges, the project designed a Safe Travel Program, which included measures such as helpline signage and announcements, segregated areas for women, staff training in handling harassment reports, and adequate lighting at stations and in surrounding areas. These measures resulted in a substantial increase in women's ridership, from a baseline of 15% in the old bus system to 30% in 2024.[7]

The project went beyond measures to increase female ridership and promoted economic opportunities for women, including the allocation of at least 15% of commercial spaces in stations to women entrepreneurs and a target of 10% of women in staff positions within the BRT and among contractors.[8]

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3 Asian Development Bank, "Gender Action Plan – GreenCell Electric Bus Financing Project," accessed January 13, 2026. https://www.adb.org/sites/default/files/project-documents/55288/55288-001-gap-en.pdf

4 IFC, *Uber India Gets Women Moving* (2020). https://documents1.worldbank.org/curated/en/410841614012743763/pdf/Uber-India-Gets-Women-Moving.pdf

5 Asian Development Bank, "Report and Recommendation of the President: Islamic Republic of Pakistan: Peshawar Sustainable Bus Rapid Transit Corridor Project" (2017). https://www.adb.org/sites/default/files/project-documents/48289/48289-002-rrp-en.pdf

6 Asian Development Bank, "Zu: Peshawar Bus Rapid Transit System Transforming Lives," accessed January 13, 2026. https://www.adb.org/news/videos/zu-peshawar-bus-rapid-transit-system-transforming-lives

7 The News (Pakistan), "Annual Report Released: BRT Daily Passenger Count Exceeds 345" (2025). https://www.thenews.com.pk/print/1267349-annual-report-released-brt-daily-passenger-count-exceeds-3-45-000

8 Asian Development Bank, "Gender Action Plan (GAP): Peshawar Bus Rapid Transit System," accessed January 13, 2026. https://www.adb.org/sites/default/files/project-documents/48289/48289-002-gap-en.pdf

Davao Public Transport Modernization (Philippines): ADB, together with the ASEAN Infrastructure Fund and the Green Climate Fund, provided more than $1 billion to support the country's largest road-based public transport project at the time. The project was designed to support the purchase of about 1,100 electric and Euro 5-standard diesel-fueled buses for the city of Davao, the third-largest city in the Philippines. Private operators would manage these buses under performance-based contracts. The project would also include 1,000 bus stops with bright lighting and shelters. When fully operational, the bus system was designed to serve about 800,000 passengers per day.[9]

During project design, several gender challenges were identified, including low female labor participation (with an estimated 2:1 ratio of men to women employed in the city), inconvenient transport options for women's travel patterns that would require them to take shorter trips during the day, and unsafe and insecure public transport, as women frequently face sexual harassment on the street and on buses.[10]

In response to these challenges, the project was designed to incorporate universal-access standards to explicitly account for women's needs in buses and stations (e.g., wheelchair bays, safer boarding concepts, and improved stop environments).[11] The Information and Technology Services package, including real-time passenger information and automated fare collection, was designed to enhance reliability and perceived safety.[12] Finally, the project included training for bus drivers and operators on gender sensitivity. To date, more than 6,000 drivers have gone through the program.[13] At the organizational level, the PPP contractor is required to have gender-inclusive workplace policies and practices. The project's targets require that at least 10% of skilled and unskilled positions in civil works and at least 10% of security personnel at all stations and terminals be held by women.[14]

9 Asian Development Bank, "Report and Recommendation of the President: Republic of the Philippines: Davao Public Transport Modernization Project" (2023). https://www.adb.org/sites/default/files/project-documents/45296/45296-006-rrp-en.pdf

10 Ibid.

11 Asian Development Bank, "Philippines: Project Implementation Support and Institutional Strengthening for Road-Based Public Transport" (2022). https://ewsdata.rightsindevelopment.org/files/documents/07/ADB-45296-007.pdf

12 Urban SDG Knowledge Platform, "Davao Public Transport Modernization Project," accessed January 13, 2026. https://www.urbansdgplatform.org/upload/csd/DPTMP%20Impact%20%28DAVAO%20BUS%20PROJECT%29-combined.pdf

13 City Government of Davao, "Davao Bus Social Dev't Program Reaches More Than 6K PUJ Drivers, Operators" (2025). https://davaocity.gov.ph/transportation-planning-traffic-management/davao-bus-social-devt-program-reaches-more-than-6k-puj-drivers-operators/

14 Asian Development Bank, "Gender Action Plan (GAP): Davao Public Transport Modernization Project," accessed January 13, 2026. https://www.adb.org/sites/default/files/project-documents/45296/45296-006-gap-en.pdf

- **Early planning for re-concessioning once the contract comes to an end in 2025, including a system to fund assets across concessions using a special purpose vehicle and a lease structure.** This helps avoid forcing the incumbent concessionaire to take on long-tenor debt with limited contract time left or distorting investment incentives when demand growth is strongest.[113]

The second case was the PPP contract launched by the Passenger Rail Agency of South Africa for the Rolling Stock Fleet Renewal Programme. The objective is to replace an aging metro commuter fleet and build a local rail manufacturing capability. In October 2013, the agreement was signed to design, manufacture, and deliver 600 commuter trainsets (3,600 vehicles/coaches), including the construction of a local manufacturing facility.[114] This PPP project can be described as a long-term, performance-linked rolling stock supply and support program (including spares, maintenance, and technical support). This approach is innovative because it shifts key risks to the private party for design, manufacturing, delivery, spares, and technical support, while operations remain with the public party.[115] Another interesting innovation is the industrial localization required in the contract, with the first trains fully manufactured in South Africa in 2017, with more than 65% local production value for each coach, and a structured approach to developing local suppliers.[116]

ADB Insights on Gender-Responsive Transport and PPPs

Radhika Behuria, Social and Gender Specialist at ADB, presented lessons learned on gender mainstreaming in the ADB transport and PPP portfolio,[117] along with the main recommendations from two ADB publications: *A Toolkit for Promoting Gender Equality in Public-Private Partnerships*[118] and *Enhancing Gender Equality in Infrastructure Development.*[119]

A key message from Ms. Behuria's presentation was that transport systems are rarely gender neutral because women's and men's travel patterns differ, largely shaped by gender roles and caregiving responsibilities. Women's trips tend to be more complex (shorter, more frequent, multi-destination, and multimodal), and often depend on last-mile connectivity. Transport systems, largely designed without the engagement of women, are frequently not designed to meet their needs.

113 Development Bank of Southern Africa, "GMA Gautrain Phase 1 Expansion," accessed January 13, 2026. https://www.dbsa.org/case-studies/gma-gautrain-phase-1-expansion

114 Alstom, "PRASA and Gibela (Led by Alstom) Sign Historic Agreement for the Supply of Modern Commuter Trains in South Africa," accessed January 13, 2026. https://www.alstom.com/press-releases-news/2013/10/prasa-and-gibela-led-by-alstom-sign-historic-agreement-for-the-supply-of-modern-commuter-trains-in-sa

115 Department of Trade, Industry and Competition (South Africa), "PRASA's Rolling Stock Fleet Renewal Programme – Economic Development Achievements" (2019). https://www.thedtic.gov.za/wp-content/uploads/PRASA.pdf

116 Gibela Rail Transport Consortium, "Gibela," accessed January 13, 2026. https://www.gibelaconsortium.co.za/

117 Asian Development Bank Institute and Asian Development Bank, *Gender-Transformative Approaches in Infrastructure PPPs: Lessons from the Transport Sector* (2025). https://www.adb.org/sites/default/files/publication/1032711/adbi-gender-transformative-approaches-infrastructure-ppps-lessons-transport-sector.pdf

118 Asian Development Bank, *A Tool Kit for Promoting Gender Equality in Public-Private Partnerships* (2023). https://www.adb.org/sites/default/files/publication/924806/tool-kit-promoting-gender-equality-public-private-partnerships.pdf

119 Asian Development Bank, *Enhancing Gender Equality in Infrastructure Development: Theories of Change, Indicators, and Sector Strategies* (2023). https://www.adb.org/sites/default/files/publication/934986/gender-equality-infrastructure-development.pdf

The transport systems in many developing countries have additional barriers for women and girls: the transport sector is often male dominated (in the workforce and decision-making roles of transport agencies), cultural norms can restrict women's use of public mobility options, safety is not always prioritized, and safe options are often unaffordable for women from low-income households.

Key Lessons/Innovations: Ms. Behuria emphasized four areas where transport projects can be more gender-responsive:

- **Improve access and connectivity:** Access options should include last-mile connectivity and micro-mobility, ease of transfer across modes, and universal design.
- **Ensure fares are affordable and reflect caregiving needs:** Design fare structures with travel patterns and caregiving-related trips in mind.
- **Strengthen safety and security measures:** Use measures such as lighting, surveillance, signage, harassment-reporting channels, and, in some contexts, transport options or spaces exclusively for women.
- **Improve reliability and information:** The use of digital tools and other means of communicating route information, frequencies, and delays is a core factor in building confidence among female users. Transport projects can go further and be gender-transformative by shifting underlying norms, agency, and decision-making power, thereby enabling women to have greater influence over the design and governance of mobility services.

PPP projects in transport can, at times, more easily integrate gender considerations because contracts and performance indicators can embed requirements, incentives, and monitoring systems. While experience in this area remains nascent, evidence from good-practice examples indicates that gender-responsive transport PPP projects can generate substantial social benefits and improve financial sustainability by expanding and retaining the user base and increasing overall customer confidence and project support.

Three cases were presented to illustrate how gender can be integrated into design, operations, and organizational practices. Box 11 presents the specific innovations and results. The examples show that women should not be viewed solely as a vulnerable group but also as users who are essential to the ridership and sustainability of PPP operations, as well as employees, managers, suppliers, and entrepreneurs in the transport value chain.

4.2 Small-Scale PPPs

Topic Overview

Not all infrastructure services can be bundled into the large-scale PPP contracts discussed in other chapters of this publication. Smaller assets and service areas, often at the municipal or subnational levels, require a different approach to engaging the private sector in service provision through small-scale PPPs (SSPPPs).

SSPPPs share core characteristics with their larger-scale equivalents, such as performance-based contractual arrangements that delegate to a private party the delivery of an infrastructure service, with risk allocations and payments linked to the availability and quality of the service, supported by transparent and verifiable performance indicators. WAPPP, one of the co-sponsors of the "PPP Hot Topics" workshop series, recently prepared the document *Guidelines for Small-Scale Public-Private Partnerships.*[120]

SSPPPs are characterized by smaller deal sizes, limited asset bases, and limited geographical coverage. The types of contracts used for SSPPPs are varied, ranging from leasing and management contracts, small concessions, and performance-based service contracts (like those used for energy service contracts).[121]

While SSPPPs are the only practical way to engage the private sector in certain infrastructure services, it is important to note their differences from large-scale PPPs and incorporate practical measures to address their specific challenges. For example:

- Due to their small scale, the fixed cost of PPP preparation in legal, technical, financial, safeguarding, and procurement areas can be much larger than the benefits. This challenge calls for as much streamlining and standardization of documents and processes as possible.[122]
- A bundling and aggregation strategy that combines several small assets or geographical areas (multiple buildings, municipalities, or communities) can attract better-qualified bidders and increase the chances of success.[123]
- As the market for companies interested and able to implement SSPPPs is thin, procurement needs to be flexible and targeted, including prequalification of SSPPPs, standardized and simplified requests for proposal and contracts, and procurement timetables and support to help small and medium-sized enterprises access these opportunities.

120 World Association of PPP Units & Professionals (WAPPP), *SSPPPs Guidelines* (2025). https://wappp.net/wp-content/uploads/2025/07/SSPPPs-Guidelines-21-July-2025.pdf

121 United Nations Economic Commission for Europe (UNECE), *Toolkit for Structuring Private Sector Participation (PSP) Contracts for Small Scale Water Projects* (2014). https://unece.org/fileadmin/DAM/ceci/documents/2014/water_and_sanitation_October/Toolkit_for_PSP_for_small_scale_water_projects.pdf

122 European Bank for Reconstruction and Development, *EBRD PPP Regulatory Guidelines Collection* (2024). https://www.ebrd.com/content/dam/ebrd_dxp/assets/pdfs/legal-reform/infrastructure-and-natural-resources/public-private-partnerships-and-concessions/volume-2/volume2.pdf

123 U.S. Department of Energy, *Energy Savings Performance Contracting for Small Projects* (2021). https://www.energy.gov/sites/default/files/2021-10/ESPC-Small-Projects.pdf

- The performance indicators should be much simpler than for large-scale PPPs so that contracting agencies with limited capacity can supervise them, and the monitoring and reporting costs remain manageable.[124]
- SSPPPs use a broader range of financing instruments, such as vendor finance, direct finance, leasing, and local bank loans. These contracts should avoid difficult-to-achieve financial requirements or complex financial engineering, as is common in large-scale PPPs. Simple payment mechanisms that give certainty to the private operator and its lenders are critical.[125]
- Information based on existing assets, customers, or service areas can be limited (for example, street lighting needs asset inventories and condition surveys, and small-scale water systems need asset and customer information). Insufficient or low-quality information can increase the risk (or the bidders' prices) of the transaction.[126]
- A single SSPPP may not attract sufficient interest from the private sector, but a program of SSPPPs with standard contracts and replicable pipelines that can be viewed as a future market opportunity will be considered more positively by private bidders and lead to better prices and transactions.

Practitioners' Discussion and Case Studies

This workshop in the "PPP Hot Topics" series was moderated by Ziad-Alexandre Hayek, President of WAPPP, and included a panel discussion with Jyoti Bisbey, Executive Committee Member, WAPPP; Syed M. Zaidi, Senior Director, Alternative Capital Partnerships, Alberta Infrastructure; Arun Kumar, Principal Investment Officer, AfDB; Thiago Grego, Vice President and Director of Finance, Institute of Planning and City Management, Belo Horizonte; and Abduqodir Yoqubov, Deputy Director, PPP Development Department, Ministry of Economy and Finance, Uzbekistan.

WAPPP Insights for Small-Scale PPPs

Jyoti Bisbey, Executive Committee Member at WAPPP and Climate Advisor to the International Sustainable Resilience Center, presented early findings from the WAPPP publication *Guidelines for Small-Scale Public-Private Partnerships*, which was published in July 2025.[127] The Guidelines aim to fill a critical gap: conventional PPP approaches focus on large infrastructure projects, whereas SSPPPs require simpler, more flexible approaches that still ensure due diligence, transparency, and public value. They are designed for the municipal and subnational levels, where many SSPPPs that provide community-focused services are developed.

The SSPPP Guidelines identify four significant bottlenecks: (i) high proportional project preparation costs relative to project size, especially if governments apply

124 United Nations Economic Commission for Europe (UNECE), *Toolkit for Structuring Private Sector Participation (PSP) Contracts for Small Scale Water Projects* (2014). https://unece.org/fileadmin/DAM/ceci/documents/2014/water_and_sanitation_October/Toolkit_for_PSP_for_small_scale_water_projects.pdf

125 U.S. Department of Energy, *Energy Savings Performance Contracting for Small Projects* (2021). https://www.energy.gov/sites/default/files/2021-10/ESPC-Small-Projects.pdf

126 World Association of PPP Units & Professionals (WAPPP), *SSPPPs Guidelines for Small-Scale Public-Private Partnerships* (2025). https://wappp.net/wp-content/uploads/2025/07/SSPPPs-Guidelines-21-July-2025.pdf

127 Ibid.

the complete appraisal requirements needed in large PPPs; (ii) legal and institutional frameworks designed for large PPPs with centralized approvals or thresholds and steps that municipalities cannot afford or have the capacity to implement; (iii) too few private parties with the experience, qualifications, or capacity to handle reporting, compliance, and contract governance; and (iv) smaller revenue bases and affordability constraints, as they do not serve large populations in major cities or economic centers.

An important contribution of the SSPPP Guidelines is the simplified life-cycle guidance they provide, including:

- Project identification and preparation based on the principle of "screen smarter, study lighter, and approve faster," using basic eligibility criteria followed by a more detailed set of decisive factors.
- Risk-based due diligence using bundled appraisal at the portfolio level (for example, for an economic zone or town) with project-level checks only for incremental risks.
- Streamlined approvals with clear delegation of as many aspects as possible to the subnational level.
- Standardized bidding documents and evaluation criteria with simplified requirements and reasonable bid securities, predictable timelines, and flexibility in thin markets.
- Standardized contracts that allow replication and bundling and attract repeat bidders.
- Financing mechanisms adapted to what local markets can realistically supply.
- Transparency and anti-corruption measures under simplified processes.
- Supportive contract management focused on solving implementation challenges, handling variations fairly, and using practical and fast dispute resolution mechanisms.

Key Lessons/Innovations: Based on a global review of practices, Ms. Bisbey offered nine practical lessons from the Guidelines:

- **Improve subnational frameworks and tools:** Strengthen SSPPP legal frameworks and project operating procedures at the subnational level, and equip municipalities with financial tools, risk management strategies, and standardized processes to align SSPPPs with national policies without overburdening them.
- **Delegate approvals with appropriate thresholds:** Decentralize approval authority to subnational governments, as this ensures faster, context-appropriate project implementation, while maintaining central authority for decisions above reasonable financial thresholds.

- **Embed community engagement throughout the life cycle:** Ensure community engagement that includes not only users but also community leaders, businesses, and civil society organizations throughout the entire process, from planning to operation, as this ensures diverse needs are identified and any concerns can be addressed promptly and effectively.
- **Create institutional capacity at the subnational level:** This can be done, for example, through PPP units and should be commensurate with program size and complexity while avoiding duplication if higher-level PPP support is readily available.
- **Standardize contracts and bundle small projects:** This reduces administrative burdens and improves efficiency.
- **Design incentives and financing mechanisms to attract more interest from the private sector.**
- **Use new technology and data-driven tools:** Adopt and integrate innovative technology and data-driven tools to improve efficiency, risk management, and transparency. Blockchain and e-procurement can streamline bidding processes and contract payments, for example.
- **Consider dynamic risk allocation between public and private partners and simple performance-based incentives:** This can help drive innovation by the private sector.
- **Embed sustainability:** Ensure long-term environmental, social, and economic impact so SSPPPs contribute meaningfully to the Sustainable Development Goals at the local level.

Box 12 presents case studies highlighted in the Guidelines from different sectors and regions that demonstrate the effectiveness of the SSPPP model in delivering infrastructure services at the subnational level to users that large-scale PPPs cannot reach.

Box 12: Case Study: SSPPPs in Action

Kenya: Smallholder irrigation in Kenya, as in many other developing countries, is constrained by high pump costs, limited rural credit, and high diesel fuel prices. Solar-powered irrigation can address these problems but requires careful management to ensure sustainable abstraction of groundwater resources. A small-scale private provider, SunCulture, founded in 2013, delivers these solutions tailored to smallholder farmers in Kenya. SunCulture's flagship product is the AgroSolar Irrigation Kit, which combines solar-powered pumping with high-efficiency drip irrigation.[1] The company also provides farmers with a "Pay-as-You-Grow" financing model with more affordable monthly payments.

These solutions have reportedly increased crop yields by up to 300% while reducing water use by 80%.[2] The company reports sales exceeding 45,000 units. It has mobilized blended finance from diverse sources, such as $5 million from WaterEquity, a global asset manager focused on water and sanitation, $4 million from British International Investment, through a carbon financing scheme aimed at reducing the pumps' upfront cost, and $27 million from international private investors.[3]

Serbia: The municipality of Požega has used an SSPPP for a public lighting program, under which the private party upgrades the lights to LED and maintains the system. The private party finances the capital expenditures, and the municipality pays a fee that is partly or fully covered by energy savings.[4] In Požega, the program replaced approximately 3,870 luminaires, with expected energy savings of around 84% from the modernization.[5] This example has been replicated in many municipalities worldwide, ranging from Vila Velha (Brazil), with a 20-year concession,[6] to Guadalajara (Mexico), with a lease-to-own model,[7] and Bhubaneswar (India), with an energy performance SSPPP contract.[8]

Colombia: The national government's policy in 2007 tried to deal with the high fragmentation and weak capacity of municipalities to provide water supply services by defining *Planes Departamentales de Agua (PDA)* (State Water Plans) as a strategy to accelerate coverage, improve service quality, and bring more professional management to water services. The strategy also articulated a blended finance approach with multiple funding sources and credit-enabling mechanisms.[9]

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1 "SunCulture," Energy Startups, accessed January 13, 2026. https://www.energystartups.org/startup/sunculture

2 "SunCulture," accessed January 13, 2026. https://sunculture.io/

3 Launch Base Africa, "Kenya's SunCulture Lands $5m for Its Solar-Powered Water Pumps," September 11, 2025. https://launchbaseafrica.com/2025/09/11/kenyas-sunculture-lands-5m-for-its-solar-powered-water-pumps/

4 "*Javni Poziv (Public Call) – Požega*," City of Požega, accessed January 13, 2026. https://www.pozega.org.rs/admin/uploads/dokislike/javnenabavke/Javni%20poziv%20engleski%20PO%C5%BDEGA.pdf

5 Radio Luna, "*Bez održavanja uz uštede oko 20 miliona godišnje*," April 2, 2019. https://www.radioluna.info/bez-odrzavanja-uz-ustede-oko-20-miliona-godisnjeaudio/

6 "*Vila Velha – Iluminação Pública,*" BNDES, accessed January 13, 2026. https://www.bndes.gov.br/wps/portal/site/home/transparencia/desestatizacao/projetos-encerrados/vila-velha-iluminacao-publica

7 ESMAP (World Bank), "Proven Delivery Models for LED Public Lighting: Guadalajara, Mexico (Lease-to-Own Delivery Model Case Study)" (n.d.). https://www.esmap.org/sites/esmap.org/files/DocumentLibrary/Guadalajara%20-%20Proven%20LED%20Delivery%20Models8_Optimized_Final.pdf

8 IFC, "Public-Private Partnership Stories: India—Bhubaneswar Street Lighting" (2020). https://www.ifc.org/content/dam/ifc/doc/2020/2020-india-bhubaneswar-street-lighting-ppp-brief.pdf

9 Government of Colombia (DNP), "CONPES 3463" (2007). https://www.minvivienda.gov.co/sites/default/files/normativa/3463%20-%202007.pdf

The strategy outlines practical, SSPPP-related options, such as hiring specialized operators through competitive tenders and multi-municipal PPP schemes, to achieve economies of scale and attract stronger firms. In small municipalities, the service delivery model ranges from a simple management contract for an existing water system (where the operator is paid upon the achievement of performance targets, and the government finances capital expenditures separately) to a full concession (where the long-term operator commits to an investment plan and operations).[10] The program has led to hundreds of small and medium-sized projects nationwide.[11]

India: The national rooftop solar program aims to install 40 GW of cumulative grid-connected renewable energy capacity.[12] As part of the program, public buildings (including government offices, schools, and hospitals) have a separate program to leverage their large roof areas and predictable daytime loads. This is delivered through two common SSPPP models. The first is through a renewable energy service company that finances, builds, owns, and maintains the solar energy equipment, while the public building provides rooftop space and purchases the power at an agreed-upon tariff.[13] In the second model, the developer leases the rooftop space and pays rent; the developer then installs and operates the solar power equipment and sells the energy to the grid.[14] India's Ministry of New and Renewable Energy maintains a portal that hosts standardized documents to support the scaling up of the program.[15] Bundling (by district, university campus system, or all buildings for a state agency) creates bankable opportunities and competition.[16]

10 Ministerio de Vivienda, Ciudad y Territorio (Colombia), "*Anexos 1 a 4 – Metodología Planes de Aseguramiento*" (2022). https://minvivienda.gov.co/sites/default/files/2022-01/2.-anexos-1-a-4-metodologia-planes-de-aseguramiento.pdf

11 "*Planes Departamentales de Agua*," Ministerio de Vivienda, Ciudad y Territorio (Colombia), accessed January 13, 2026. https://www.minvivienda.gov.co/viceministerio-de-agua-y-saneamiento-basico-planes-departamentales-de-agua

12 "Grid Connected Solar Rooftop Programme," Ministry of New and Renewable Energy (India), accessed January 13, 2026. https://mnre.gov.in/en/grid-connected-solar-rooftop-programme/

13 "Solar Power Plant on Govt Buildings (RESCO Mode)," HAREDA, accessed January 13, 2026. https://hareda.gov.in/gcrt-resco-mode/

14 PACE-D Technical Assistance Program, *Utility-Centric Business Models for Rooftop Solar Projects* (2018). https://solarrooftop.pmsuryaghar.gov.in/knowledge/file-60.pdf

15 Ministry of New and Renewable Energy (India), "National Rooftop Solar Portal," accessed January 13, 2026. https://api.solarrooftop.gov.in/grid_others/knowledge

16 Solar Energy Corporation of India (SECI), *RTSPV 2112 kW Result* (2024). https://www.seci.co.in/uploads/news/1749201136_RTSPV_2112_kW_result_website_upload.pdf

Uzbekistan's Insights on Scaling Small-Scale PPPs in the Social Sector

Abduqodir Yoqubov, Deputy Director, PPP Development Department, Ministry of Economy and Finance, Uzbekistan, discussed the large number of SSPPPs implemented in the country, especially in the water, student dormitory, and health sectors. While private partners in large-scale PPPs often have strong qualifications and experience, the same is not always true for SSPPPs (typically under $1 million). In Uzbekistan, the national PPP unit is fully delegated to manage SSPPPs, but there is no clear implementation framework, and MDBs have limited experience supporting these smaller transactions. Uzbekistan's experience so far has been generally positive, with substantial innovations at the project level. However, bundling projects into programs has not been easy due to equity constraints for local entrepreneurs. An interesting challenge has been coordinating intergovernmental agencies to use abandoned or unused government buildings for commercial purposes, which has required well-structured agreements. Finally, the government has provided minimum-demand guarantees for social-sector SSPPPs (health and education), with good results.

Brazil's Federal Support Fund for Scaling Small-Scale PPPs

Thiago Grego, Vice President and Director of Finance, Institute of Planning and City Management, Belo Horizonte, described how Brazil has had 20 years of its PPP law, with a slow start during the first 10 years, followed by a rapid scale-up thereafter. In the early years, municipal capacity was insufficient for PPPs. Inconsistencies between federal and municipal-level regulations for SSPPPs were typical in some sectors. To address these constraints, the federal government set up a fund to support SSPPPs. The fund helps entrepreneurs develop high-quality project proposals through funding and technical assistance.

AfDB Insights on De-risking Small-Scale PPPs

Arun Kumar, Principal Investment Officer at AfDB, highlighted three key barriers to SSPPPs: high perceived risk, high preparatory costs, insufficient data, and weak project assessments. He also emphasized the importance of reducing risks for SSPPPs, and the role that governments can play in: (i) improving sectoral policies; (ii) facilitating cross-institutional coordination (for land availability, environmental and social study approvals, etc.); and (iii) providing guarantees for specific and targeted risks. For SSPPPs, it is important to understand what the private sector brings: expertise, funding, and value for money. Private entrepreneurs engaging in these small projects need to be clear on obligations and responsibilities for a higher probability of success.

Alberta's Insights on Bundled Projects

Syed M. Zaidi, Senior Director, Alternative Capital Partnerships, Alberta Infrastructure, highlighted the risk of creating small-scale, unregulated monopolies that could harm consumers. In Alberta, Canada, municipalities have been exploring bundling projects across sectors, such as community centers and gyms with dual functions. Finally, because governments can borrow at generally lower rates than the private sector, CapEx costs can be shared.

5. Conclusions and Summary Lessons

5. Conclusions and Summary Lessons

The discussions across the eight workshops were rich with experiences and lessons from PPP practitioners. Each chapter has presented advice from speakers on a range of topics. This summary section cannot do justice to the depth of insights. Nevertheless, it is an attempt to bring together the common themes raised in each workshop.

5.1 Managing Risk

Inflation, Exchange Rate, and Interest Rate Risks in PPPs

Infrastructure PPPs are sensitive to macroeconomic and financial shocks, and to the consequent crises of high inflation, currency depreciation, and high interest rates. Many PPP contracts have not survived these shocks. The workshop that discussed these topics highlighted three key lessons for managing these risks:

- **Local-currency finance takes time:** Local-currency finance can reduce some risks, but it should not be treated as a single-transaction issue. Instead, it is a system-building agenda that should include interventions in credit and capital markets, along with supplementary actions.
- **Risk assessment and allocation are essential:** Governments need to conduct a careful upstream risk assessment, with a thoughtful allocation of risks in PPP contracts, and the design of mitigation strategies (such as insurance or hedging). Proactive contract monitoring and management are critical for managing these risks when they materialize.
- **Foreign exchange mismatch is important:** Foreign exchange mismatch between PPP costs and revenues should not be seen as a minor issue, but as a systemic bankability risk.

Ensuring Fiscal Affordability of PPPs

While PPPs can be seen as a solution to mobilize resources for infrastructure amid challenging fiscal conditions worldwide, they can also create multiyear fiscal commitments (for example, linked to subsidies or viability gap funding) and contingent liabilities (when government guarantees are provided or minimum-revenue obligations are included in contracts). Practitioners highlighted the following lessons:

- **Use formal MOF approval procedures:** Countries should have a formal MOF approval procedure to ensure the affordability of new PPP contracts, both in terms of fiscal commitments and contingent liabilities. This should include full and transparent disclosure, which also helps potential private partners assess risk in future contracts.
- **Match analytical tools to institutional capacity:** More sophisticated modeling of contingent liabilities and fiscal commitments is not necessarily better if the capacity and experience of national institutions are not commensurate with the tools used.

- **Tailor fiscal risk management to the relevant context:** Fiscal risk management should not be a box-checking exercise. Instead, context-specific PPP frameworks that account for sector- and country-specific characteristics are key.

PPPs for New Technologies

PPP contracts are also subject to risks associated with rapid technological changes. As many infrastructure assets have long lives, a typical PPP contract may assume they will not need updating. This assumption can be wrong, and if the PPP contract does not anticipate technological changes, the contracting agency may be forced to accept suboptimal, single-source, complex variations at high cost. Practitioners discussing this topic offered the following lessons:

- **Use two-stage engagement to embed innovation:** During the bidding process, a two-stage process allows potential private partners to propose innovations in the design and operation of the infrastructure assets and services before the financial stage of the procurement process. This can embed emerging technologies and reduce future changes.
- **Include early dispute resolution:** Well-designed, early-stage dispute resolution mechanisms in the PPP contract can help address technological disruption more easily and at a lower cost.
- **Use efficiency and profit-sharing incentives:** Efficiency and profit-sharing mechanisms can encourage private partners to explore and propose new technologies earlier, benefiting users and all contract parties.

5.2 Accessing Diverse Financing Sources

New Sources of Public Financing for PPPs

Limited fiscal resources, combined with constraints on increasing user tariffs and fees, require creative approaches to accessing diverse financing sources for PPP contracts. The workshop on this topic discussed options such as land value capture, brownfield asset recycling, mobilizing subnational financing, sector levies, carbon market revenues, and global climate funds. Some of the lessons from the discussions included:

- **Make land value capture work through rules and transparency:** Early consultation with all stakeholders, dissemination of the project's benefits, and clear rules for charges are key ingredients in making land value capture mechanisms effective. A well-functioning land and property cadaster that supports transparency in land sales is equally important.
- **Build a strong foundation for carbon markets:** Nascent national carbon markets require a transparent and credible legal and regulatory framework, strong capacities and institutional arrangements (such as a carbon registry), and an emissions baseline. When the additionality of carbon emissions reductions is clear and easy to measure, infrastructure PPP projects can more easily benefit from carbon markets.

- **Support cities with debt rules and credible baselines:** Countries need a subnational debt framework and clear rules for fiscal prudence at different levels of government to allow cities to explore subnational financing instruments, such as bonds. The first step for cities is to establish credible baselines and revenue-generation plans that build market trust in borrowing and PPP transactions.

PPP Project Preparation Funds

Many countries have found that mobilizing funding for high-quality PPP preparation on an ad hoc basis is slow and expensive. PPP project preparation funds have proven to be an effective tool for readily available project preparation funding. They have also helped standardize processes, maintain a pool of highly qualified consultants, and support contracting agencies throughout the PPP cycle. Global experiences on PPP project preparation funds discussed at the workshop provided the following lessons:

- **Separate funding approvals from contracting agencies:** Good governance calls for separating funding approvals from the contracting agency to ensure unbiased reviews of proposals. At the same time, these funds need to be aware of potential "PPP bias," in which projects that can be implemented more effectively as public projects are pushed into PPPs.
- **Prepare for low recovery levels for revolving funds:** Funds designed to be revolving, with recovery fees from successful transactions, have seen low recovery levels in their initial years, so governments should be ready to provide substantial initial funding.
- **Build demand, acquire strong advisors, and aim for continuous improvement:** Successful funds actively engage with contracting agencies, have an agile approach to procuring high-quality advisors, and continuously improve their operations by incorporating lessons from experience.

Building Bankability of PPPs

The best way to attract diverse sources of funding is to have bankable PPPs with credible revenue streams, transparent and fair risk allocation, credible dispute-resolution mechanisms, and realistic inter-agency mechanisms to bring a project to a fruitful conclusion. Practitioners suggested the following recommendations to make PPP transactions bankable:

- **Use robust screening and testing:** Apply a thorough screening process to check for affordability, fiscal affordability under stress, and the realism of demand projections.
- **Assess risks and avoid masking issues:** Do not leave risks unquantified, vague, or unallocated. Avoid using guarantees, viability gap funding, or foreign exchange liquidity management tools to cover risks that can be reduced through government actions.
- **Engage banks early through structured market sounding:** Use structured market sounding to ensure a project's financial structure can be financed. This structure should demonstrate value for money, affordability, and bankability. A PPP that is bankable but not affordable, or vice versa, will not be sustainable.

5.3 Innovative Sectors

Innovations in Transport PPPs

The transport sector is experiencing rapid change driven by innovations in PPP contract design, the adoption of digital technologies, and new service delivery models linked to the sharing economy. These innovations require contracting agencies to stay up to date on the latest developments and opportunities to deliver the best services to transport users. The following are some of the key lessons shared in the workshop devoted to this topic:

- **Shift from input-based to performance-based models:** Transport agencies have the opportunity to use new technologies and service delivery models to change the structure of PPP contracts from input-based to performance-based, in new areas such as road maintenance, railway operations, and enhanced resilience to a rapidly changing climate.
- **Explore the use of disaggregated contracts:** Urban mobility PPPs can be structured as disaggregated contracts with small-scale providers of buses, using advanced technologies for monitoring, payment, leasing options, and many other innovations.
- **Make transport projects gender responsive:** Transport projects can better serve women and girls through access options that include last-mile connectivity and micro-mobility, ease of transfer across modes, universal design, and use of digital tools for information sharing and safety.

Small-Scale PPPs

Not every infrastructure service can be delivered by, or bundled into, large-scale PPP contracts. Smaller infrastructure assets and service areas, often in cities or rural areas, require services to be delivered through small-scale PPPs. Discussions proposed the following key lessons:

- **Streamline and standardize processes:** Small-scale PPPs need as much streamlining and standardization as possible to tackle the high fixed costs of PPP preparation relative to their size.
- **Bundle projects to attract interest from bidders:** Governments can bundle and aggregate several small assets or geographical areas to attract better-qualified bidders, as part of a comprehensive strategy to demonstrate the viability of these transactions to communities and private sector providers.
- **Use supportive contract management:** Implement contract management approaches focused on solving implementation challenges, handling variations fairly, and using practical and fast dispute resolution mechanisms.

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The Multilateral Cooperation Center for Development Finance (MCDF) promotes high-quality connectivity infrastructure investment in developing countries through partnerships. MCDF advances this mission by providing grants and information and knowledge sharing to facilitate the application of International Financial Institution standards and good practices in cross-border connectivity projects to ensure they support sustainable development. MCDF's activities focus on project preparation, capacity building, and information sharing across four key connectivity sectors: transport, energy, telecommunications, and transboundary water resource management.

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