Developing Bankable Transport Infrastructure Projects: Case Studies, Experiences and Learning Materials for LLDCs and Transit Countries

Module 4. **Public-Private Partnerships for Infrastructure Development to Improve Transport Connectivity**

These learning materials were developed for capacity building activities to strengthen capacity to develop bankable transport infrastructure projects and transport connectivity in landlocked developing countries and transit countries. The learning materials were commissioned by the United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States (UN-OHRLLS) in collaboration with partners UNESCAP, UNECA, UNECE, UNECLAC, African Development Bank and Asian Development Bank. UN-OHRLLS and partners worked with Mr. Glory Jonga in preparing the training materials. The views expressed do not necessarily reflect those of the United Nations.

The funding for the preparation of these learning materials was made possible through the project led by UN-OHRLLS entitled: Strengthening the capacity of Landlocked Developing Countries under the "Belt and Road Initiative" to design and implement policies that promote transport connectivity for the achievement of the SDGs which is funded by the 2030 Agenda for Sustainable Development Sub-Fund - United Nations Peace and Development Trust Fund.

1.1 Key Objectives of the Module:

- To inform participants of how to use and promote Public-Private Partnerships (PPP) for infrastructure development to improve transport connectivity.

1.2 Introduction to Public Private Partnerships (PPPs)

1.2.1 What is a PPP?

The PPP Knowledge Lab[1] defines a PPP as a long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance. This means that it is a contractual relationship between a government and a private business venture. The business venture delivers and funds public services using a capital asset thereby sharing the associated risks.

PPPs, if implemented well, can help overcome inadequate infrastructure that constrains economic growth, particularly in developing countries. Infrastructure investments are known to accelerate much-needed growth in developing countries and reduce income disparities. But poor infrastructure is often a reflection of several constraints governments face, for example, insufficient public funds, poor planning, weak analysis underpinning project selection, or corruption. Infrastructure assets are also often poorly maintained (WBI 2012).

PPPs can help overcome some of these challenges by mobilising private sector resources, helping improve project selection and on-time and on-budget implementation, and ensuring adequate maintenance. Although initially restricted to public infrastructure in the form of roads, railways, power generation, or water and waste treatment facilities, PPPs have increasingly moved into the provision of so-called “social infrastructure,” such as schools, hospitals, and health services.

1.2.2 Rationale for Supporting PPPs

The rationale for PPPs is based on the claim that PPPs have the potential to close the infrastructure gap by leveraging scarce public funding and introducing private sector technology and innovation to provide better quality public services through improved operational efficiency (World Bank Group (WBG) (no date (n.d.)). Improving the provision of infrastructure and social services through higher levels of efficiency and quality contributes directly to growth and poverty reduction.

[1] The PPP Knowledge Lab was launched in the year 2016 with the goal of making resources on PPPs more accessible to the PPP community and filling a gap in knowledge around infrastructure and PPPs. Emboldened with this goal, the world’s top multilateral development agencies came together to create a central platform of comprehensive information on PPPs.

The Public Sector Finance Perspective of PPPs (WBG, n.d.)

Contrary to intuition, PPPs generally do not provide additional resources for the public sector. Governments can finance their public infrastructure investments just as well as private firms. Only when governments are credit constrained and thus cannot borrow may private finance be superior. When governments do not have credit constraints, the primary effect of private finance in PPP arrangements is that the investment becomes more affordable within annual authority budgets and better matches user benefits, allowing governments to realize infrastructure investments earlier (WBG n.d.).

PPPs mobilize private sector resources to cover the capital expenditure costs up front (or at least most of it) and make the public sector pay during delivery of the services, either through availability payments or usage payments (shadow toll) or a combination thereof. Only if PPPs introduce fees for actual end users do they effectively increase total government revenues and funding. Hence the primary advantage PPPs may offer over traditional public procurement is potential efficiency gains that privately led construction and maintenance may bring, partly offset, however, by higher capital costs of the private investor. The assessment of public sector liabilities triggered by a PPP project is hence of utmost importance. These can amount to substantial direct liabilities, for example, up-front viability gap funding to make projects more commercially viable and the referred usage payment, or contingent liabilities, such as guarantees on particular risk variables, for example, to buffer the traffic demand risk for the private party, compensation payments for uninsurable force majeure, or termination payments.

1.2.3 Types of PPPs

There are several different types of public-private partnership contracts, depending on various aspects such as the type of project (for example, a road or an airport), level of risk transfer, investment level and the desired outcome. Some types of PPPs include:

- **Build-Own-Operate (BOO):** BOO projects can be likened to the actual privatisation of a facility because often there is no provision of transfer of ownership to the host government. At the end of a BOO concession agreement, the original agreement may be renegotiated for a further concession period.
- **Build-Operate-Transfer (BOT):** The facility is paid for by the investor but is owned by the host. The investor maintains the facility and operates during the concession period.
- **Build-Own-Operate-Transfer (BOOT):** Ownership of the facility rests with the constructor until the end of the concession period, at which point ownership and operating rights are transferred free of charge to the host government.
- **Build-Transfer-Operate (BTO):** The private sector finances a facility and, upon completion, transfers legal ownership to the public sector. The agency then leases the facility back to the private sector under a long-term lease. During the lease, the private sector operates the facility.
- **Design-Build-Finance-Operate (DBFO):** The private sector partner finances the project and is granted a long-term right of access of about 30 years. The DBFO partner is given specified service payments during the life of the project.

Figure 4.1: Various types of PPPs

Public-Private Partnership (PPP)					
Contract Type	**Design-Build-Finance-Operate (DBFO)**	**Build-Transfer-Operate (BTO)**	**Build-Operate-Transfer (BOT)**	**Build-Own-Operate-Transfer (BOOT)**	**Build-Own-Operate (BOO)**
Construction	Private Sector	Private Sector	Private Sector	Private Sector	Private Sector
Operation	Private Sector	Private Sector	Private Sector	Private Sector	Private Sector
Ownership	Public Sector	Private Sector during construction then Public Sector	Private Sector during Contract then Public Sector	Private Sector during Contract then Public Sector	Private Sector
Who pays?	Users or Offtaker	Users or Offtaker	Users or Offtaker	Users or Offtaker	Users or Offtaker
Who is paid?	Private Sector	Private Sector	Private Sector	Private Sector	Private Sector

Source: https://youssef-serghini.weebly.com/types-of-ppp.html

1.2.4 Advantages of PPPs as a source of financing project

According to a Canadian report (Government of Quebec, 2004), PPPs present numerous advantages both for the public partner and the private partner. The private partner is likely to get access to new sectors and achieve more business activity, enjoy better margins and get more long-term revenues.

PPPs are advantageous because of the following.

- Improved service quality through the use of contracts and the public partner is able to specify the level of service quality required to be offered to the public. The private sector may also have special expertise and technology that will result in improved service quality.
- May lead to higher quality and timely provision of public services.
- Lower project costs may be incurred since PPP projects usually encompass a wide range of activities – design, construction etc., all in one project rather than being separated into its different parts. Therefore, better overall solutions are possible to accomplish and the chance to exploit scale economies increases.
- Risk sharing in that PPP projects are often designed so that each specific risk associated with the project is borne by the partner best suited to handle this risk. For example, since PPP projects typically give the private sector a greater responsibility for project design, construction, service obligations and financing, there is a net transfer of risk from the public sector to the private sector. Likewise, the public sector would then take care of aspects such as political issues and regulations.
- If the public sector is unable to finance all the projects that are considered to be socio-economically beneficial then the private sector can participate in the financing of some projects, thereby ensuring earlier and quicker construction.
- PPPs are seen as an instrument that combines the relative strength of government and private provision in a way that responds to market failure but minimizes the risk of government failure. Private sector actors in PPPs can use their management skills and capacity for innovation to improve efficiency and quality standards.

- Efficiency gains play an important role in increasing value for money through PPPs. Governments pay a fee to the private partner for the services provided (for example, in terms of usage fees and availability payments), which the private sector uses to pay operating costs and interest charges and to repay debt and return on equity. In cases where efficiency increases offset the higher financing costs of the private sector, the PPP may have a higher value for money and hence be the preferred option for the government. Such efficiency effects may include improved analysis during project selection, better planning, on-time and on-budget implementation, improved construction expertise, and adequate maintenance (WBI 2012).
- PPP projects presume long-term commitment from all parties, which may create locking and reduced flexibility.

If implemented well, PPPs can therefore help overcome inadequate infrastructure, which constrains economic growth, particularly in developing countries. PPP's should however be implemented thoughtfully considering the potential challenges presented in the following sub-section.

1.2.5 Challenges with PPPs in Transport

It is worth nothing that private sector engagement in infrastructure projects is not traditionally a natural fit because PPPs bring together parties with such diverging interests and end goals. While the Principal-Agent incentive theory (i.e. the principal (often government) introduces a set of incentives in order to increase the agent's (private sector) efficiency), conflicting interests can still exist:

- The agent could act contrary to its instructions because the principal's instructions are not in their interests, for example by increasing profit margins despite cost-effectiveness being in the principal's best interests (also known as moral hazard).
- The principal could select an ill-suited agent (adverse selection), which causes problems with project implementation.
- The private sector could be more experienced and have superior knowledge of terms and conditions from previous projects (knowledge asymmetry), compared to the government entity, which has limited PPP experience. This asymmetry could result in reduced access to information as the private sector's engagement in project delivery and operations grows.

Therefore, mitigating against such outcomes in order to enhance congruency of goals involves the publication of best practices guidelines and manuals, making use of knowledgeable transaction advisors and ensuring that costs to the public sector are market related. Additionally, devising a robust monitoring regime can also assist in mitigating 'shirking' during the project implementation.

Some critics have also noted that there is a tendency towards over-engineered and legally complicated agreements because PPPs are risky undertakings. PPPs are thus criticised for their high transaction costs, the long-term and rigid nature of contracts, the difficulty in finding private investors to partners with, and the increased difficulty for local firms and financiers to participate in PPP projects.

1.3 PPPs in Transport

PPPs can be an effective way to build and implement new transport infrastructure or to renovate, operate, maintain or manage existing facilities. In both hard (physical) and soft (operations) infrastructure areas in need of intervention in LLDCs, PPPs can be a beneficial way to solve critical transportation problems. PPPs can play a role in all modes of transport – be it aviation, road, rail, inland water ways or other and this module reviews use of PPPs in aviation, road, and rail sectors.

1.3.1 Aviation/Airport PPPs

Overview

Airports provide access to and interlink regional, national and international markets. Investment in airport infrastructure is essential to economic development, job creation, attracting foreign investment and creating new commercial opportunities for the local economy. Traditionally, airports were owned, managed and operated by the public sector but there has been a worldwide trend towards private sector involvement with varying degrees of private ownership and management, including the use of PPP models (PPP Knowledge Lab, n.d.).

Starting in the mid-nineties, a wave of ownership and management reform of airports took place in many countries around the world. For Governments, private sector involvement represented an effective way of updating infrastructure and improving services without expending fiscal resources. At the same time, airports were no longer seen as public utilities but as commercial enterprises, presenting new opportunities for funding development. When done right, private investment in airports can root out inefficiency, introduce customer-oriented management styles, and introduce a business-like approach to billing and collection (PPP Knowledge Lab, n.d.).

Aeronautical and non-aeronautical revenues

Airport revenues can be separated into two distinct sources: aeronautical and non-aeronautical. Aeronautical revenues, also known as air-side revenues, are all those associated with the essential services provided by an airport, namely the provision of runways and taxiways (landing fees), the provision of a parking stand at the apron (aircraft parking fees), the provision of a boarding bridge (boarding bridge fees) and the facilitation of a terminal building (passenger facility/service charge).

Non-aeronautical revenues, also known as land-side revenues, can be further divided in two subgroups: commercial revenues (from the rental of spaces or collection of royalty payments from retailing, duty free shops, food and beverage, aircraft parking, advertising, etc.) and ancillary revenues (collected as access charges to service providers at the airport, such as in-flight catering companies, ramp handling companies, fuelling companies, rental of spaces to airlines, etc.).

Each of these revenue streams require varying degrees of regulation. Aeronautical services are the most heavily regulated. While strict regulation limits the potential for improved efficiency of aeronautical revenues, these fees are generally US dollar based, making for valuable foreign exchange revenues. By contrast, non-aeronautical revenues face regulation depending on the service. Generally, commercial services are the least regulated given that market forces act as a regulator. That said, some of these services, like parking, can be considered a public access issue and as a result are regulated carefully. Ancillary services are also generally subject to some type

of regulation in order to ensure that the access costs are capped, as they are transferred to the airlines (PPP Knowledge Lab, n.d.).

Given the complexities of the revenue landscape, regulation must be well defined and provide investors with a clear expectation of how fees and charges will evolve throughout the term of their involvement. This will include the definition of regulatory targets and the criteria for adjusting fees and charges year after year. Regulation may assume that commercial activities will compensate for the overall airport expenses (single till regulation) or that only the aeronautical revenues shall support the airport operation and development (dual till regulation) (PPP Knowledge Lab, n.d.).

Cost to users

In many airport PPPs, reforms and upgrades of facilities and services will also mean an increase in fees and charges to airlines, passengers, and cargo. When developing regulation, the expectations of private investors for return on investment should be balanced against the concerns of the users regarding cost.

In an effort to attract investment, some governments may allow the private partner to increase fees and charges prior to any reforms. This encourages bidders to increase their offers for the acquisition of shares or decrease government concession fees, transferring the benefit of lower sale prices or concession fees from the user to the government. Curbing the desire to protect users from higher fees and charges is a challenging equilibrium for the government when designing the deals.

Delivering the infrastructure: monitoring and contract compliance

In an airport PPP, it is crucial that a monitoring system is put in place to ensure the concessionaire carries out the agreed-upon reforms, upgrades, and tasks. Typically, the investments that are the responsibility of the private sector within the PPP agreement fall into two categories: those necessary to comply with the international standards and recommended practices dictated by the International Civil Aviation Organization (ICAO) and those necessary to accommodate growth, assuring an optimum level of service (PPP Knowledge Lab, n.d.).

A monitoring body that oversees the provision of the infrastructure according to the agreement must be in place on day one of a PPP. The body must be financially independent and technically empowered, with the authority to oversee and enforce the compliance of the contract.

The success in the effective monitoring of the contract will depend on the institutional strength of the country and the relative power of the airport operator vis-à-vis the regulator. In some cases, providing too much power to one single operator has led to regulatory capture, diminishing the positive results of the PPP.

Models

There are several PPP models that can be applied for airport projects. Therefore, the critical question for any government considering an airport PPP is: which PPP structure is possible under the given circumstance, and which is able to achieve the best outcomes for the key stakeholders— the public sector, the private investors, and the public in general?

Choosing the appropriate PPP structure will always depend on a number of factors, including the project objectives, financing requirements, the market realities, the ability of the government to manage and supervise, and the political and regulatory landscape. The scope of a given PPP project must also be well determined by a government (e.g., full scope would include airside, landside, and commercial developments, as opposed to only airside or one of several terminals).

PPPs can also vary in terms of ownership, investment, management and operations. The traditional model is complete government control over ownership, investment, management and operations, and public ownership remains common in many parts of the world. Private sector involvement in the airport sector can take a number of forms, with contract duration and risk burden for the private sector gradually increasing from model to model as the private sector becomes more involved. Although not exhaustive, this section illustrates the types of PPPs commonly used in the airport sector.

Management Contracts

Management contracts allow private sector skills to be brought into service design and delivery, operational control, labour management and equipment procurement. However, the public sector retains the ownership of facility and equipment. The private sector typically assumes specific responsibilities related to a service, and it is typically not asked to assume commercial risk. The private contractor is paid a fee to manage and operate services. Normally, payment of such fees is performance-based. Investment decisions remain with the public sector, however limited risks and responsibilities can be transferred to the private sector (e.g., performance risk). The operator can also take on even greater risk (e.g., risk of asset condition and replacement of equipment).

Management contracts tend to be a good option in countries with minimal PPP experience, or where legal and regulatory frameworks are still being developed. However, they typically include only a very limited commitment of the private partner, rarely involve any form of investment, and are therefore generally of short duration. The management contract implies less private involvement/control, and has been implemented in a few countries with relative short duration. Many of these contracts have not been renewed at their expiration and some have been transformed into concessions.

Concession

A concession grants a private concessionaire the responsibility for operations and maintenance, as well as financing and managing required investments of the asset over the concession period. Ownership generally remains with the government or public authority, and rights and responsibilities are reverted back at the end of the concession term. A concession contract typically implies the “user pays” whereby the concessionaire generates revenue directly from consumers (e.g. through non-aeronautical revenues, fees, etc.). Concession contracts, unlike management contracts, tend to be output-focused, i.e. delivering the actual service (the concessionaire determines how best to achieve this with agreed performance standards). Given that the private concessionaire has much more influence and power to optimise revenue generated in the concession, and concessions typically have longer fixed durations, a more significant contribution is expected from the private concessionaire. Often, an important upfront investment for the construction is required. Also, a direct initial payment or high on-going

concession fees to a government granting a concession are possible modalities that define an airport concession scheme.

In a much narrower sense, there are also small commercial concession arrangements, such as in-terminal (e.g., retail) concessions. Once considered just ancillary services serving the travelling public, they have gained popularity as airports are often able to substantially increase non-aeronautical revenues while improving passenger satisfaction. The main types of in-terminal concessions are food and beverage, convenience retail, speciality retail, duty free, advertising, and other services (e.g., ATMs, foreign exchange kiosks, salons, business centres, etc.). In-terminal hotels and fitness centres have also emerged as in-terminal concessions in some of the largest airports.

Divestiture

Divestiture is the most extreme form of private involvement and entails the sale of assets or shares of a State-owned entity (e.g., the airport company) to the private sector. This can be partial (where the government retains some partial ownership) or full divestiture (where the private sector has complete control over the investment and operation and management of the asset). Unlike concessions, divestiture offers the private sector full ownership of the assets and the transfer is considered permanent.

In general, airports around the world are publicly owned, or have at least a mixed, public-private ownership structure. Globally, approximately 80% remain in public hands, while the remaining 20% is mixed and fully private share. Nevertheless, the share of privately held airports may rise in the future, as some cash-strapped governments have recognised their airport network as an opportunity to raise capital and satisfy international borrowers.

The Government Role

One clear statement on the role of governments in PPP comes from ICAO (2016) guidance materials which clearly stipulate that: When considering the commercialization or privatization of airports and air navigation service providers (ANSPs), States should bear in mind that they are ultimately responsible for safety, security and economic oversight of these entities.

It is important to note that, in a PPP arrangement, despite increasing private sector involvement, the government maintains primary responsibility to meet and comply with all relevant obligations according to the Convention on International Civil Aviation (Chicago Convention), its Annexes, and related air services agreements.

A PPP should be seen as a delivery tool to achieve certain objectives, rather than an end in itself. A government must first define the project objectives and determine if they can and should be met through public funds or if they necessitate private sector involvement. The decision should be taken in consideration of business needs, the public interest, and value for money.

Case Studies (Examples of Private Sector Participation in Airports Development and/or Operations)

Case Study: Zvartnots Airport Expansion Project, Armenia

Project Background

In March 2010, the Board of Directors of the Asian Development Bank (ADB) approved a direct loan of $40 million to Armenia International Airports (AIA) for the Zvartnots Airport Expansion Project (Phase 2). The funds were used to finance the construction of a new landside terminal building and installation of equipment and facilities to supplement the air-side concourse which was built during phase 1 of the modernization program (ADB, 2013). Co-financing for phase 2 also consisted of $40 million from the European Bank for Reconstruction and Development (EBRD) and €15 million from Deutsche Investitions-und Entwicklungsgesellchaft (DEG) (ADB, 2013).

AIA was established in May 2002 to implement a concession agreement between Armenia and Corporacion America. AIA is currently 100% owned by American International Airports (AmIA, also the sponsor), a Delaware-registered holding company created in 2002 with the aim of conducting airport-related activities (ADB, 2013). AmIA operates out of New York.

Key Project Features

As a result of the concession agreement granted in 2001, AIA was given the exclusive right to administer and operate Zvartnots International Airport (ZIA) and its related property and equipment and conduct all business for a period of 30 years plus any extension required to ensure a 20% internal rate of return. AIA was required to prepare a master plan in 2003 and update it every 5 years (ADB, 2013). Phase 2 of the project included a new land-side terminal building to replace the existing terminal (built during Soviet times) and complement the air-side concourse built in phase 1.

AIA negotiated and awarded a single-source services contract to Europort for the project design and implementation. It included management, supervision, and coordination of all design, works, equipment, and materials supply contracts. AmIA has a long-standing relationship with the company, having used it to construct and/or manage multiple airport projects in Latin America from 2003 to 2013.

Private Sector Development

Armenia is dependent on air transport for a significant portion of the cross-border movement of passengers and goods because of a limited railway system, restricted use of the southern border in times of extreme climatic conditions, and lack of road network infrastructure. ZIA is the country's main international airport and serves the vast majority of passenger and freight traffic between Armenia and the Caucuses, Russia, and Europe. The combination of operational improvements and capital expenditure associated with phases 1 and 2 of the project has resulted in significant benefits at ZIA for its clients, partners, contractors, and employees. This has resulted in consistently increasing passenger, plane, and cargo traffic, which has continuously exceeded the expectations at the appraisal stage. To further improve operations, AIA is working closely with the government and regulators to open Armenian skies to allow operators to compete for landing and take-off slots on a competitive basis. Since commencement of commercial

operations of the new terminal in October 2011, up until June 2013 ZIA had served 140,000 passengers, 1,550 aircraft movements, and 980 cargo tons per month on average, which compares favourably with the projections at appraisal stage of 125,000 passengers, 1,390 aircraft movements, and 900 cargo tons per month (ADB, 2013).

Within Armenia, the privatisation of ZIA and the ongoing success of both phase 1 and phase 2 of the project has played a demonstration role and encouraged the government to pursue similar undertakings in other sectors, such as water and sewerage, within the capital Yerevan and regional areas of Armenia. AIA's positive governance behaviour—such as timely audited financial accounts, transparent reporting, open engagement with the government and regulators, and sympathetic support for residents requiring relocation from the airport apron— provides a benchmark for private sector operators in Armenia (ADB, 2013).

Case Study: Skukuza Airport, South Africa

Skukuza Airport is the only commercial airport in the Kruger National Park, located near Skukuza, in the Mpumalanga province in South Africa.

Skukuza Airport is managed by the Skukuza Airport Management Company, in conjunction with South African National Parks (SANParks). In 2013 SANParks announced that they have appointed Skukuza Airport Management Company to improve the airport's runway, buildings and to operate the airport for the next 10 years (ICAO, 2015). In return of the investments made for improvements, Skukuza Airport Management Company can levy airport charges. Skukuza Airport Management Company, a PPP comprising regional airline SA Airlink, Lion Sands and Federal Air and SANParks, the South African National Parks Company, was formed to oversee the refurbishment and enhancement of Skukuza Airport's runway and terminal buildings to enable airline services (ICAO, 2015). Skukuza Airport Management Company took over the operation of the Skukuza airport on 1 September 2013, and commenced with the alterations and improvements essential to bring the airport to the international standard required to allow the operation of scheduled passenger services on airline category aircraft (ICAO, 2015).

Case Study: Maya Maya Airport (Brazzaville), Antonio Agostinho Neto International Airport (Pointe Noire), Oyo Ollombo Airport, Congo

In December 2009, the Congolese Government signed a concession contract with the international EGIS Group which was awarded with the tasks of developing, operating and maintaining the following Congolese airports: Brazzaville Maya Maya Airport, Antonio Agostinho Neto International Airport and Oyo Ollombo Airport (opened in March 2013) for a period of 25 years (ICAO, 2015).

Since April 2011, the above-mentioned airports management has been conducted by the concessionaire AERCO (Aéroports de la République du Congo), a privately held Company with Government participation. Egis Avia (through its subsidiary SEGAP, jointly owned with the Marseille Provence Chamber of Commerce) and Egis Projects will be the majority shareholders and reference technical partners of the concessionaire AERCO. EGIS Group brings with it a vast range of experience in areas such as project financing and development, engineering, infrastructure and service operations. Egis is 75% owned by the French "Caisse des Dépôts" and 25% owned by Iosis Partenaires, (a "partner" executive and employee shareholding) (ICAO, 2015).

- Maya Maya Airport modernization included, among others, a new terminal which opened in February 2014 as well as an extended runway and was funded by a $180 million low-interest loan offered by the Export-Import Bank of China. The upgrades were performed by the Chinese construction firm Weihai International Economic & Technical Cooperative Co., Ltd.
- The existing Antonio Agostinho Neto International Airport terminal was renovated in order to improve the quality of services offered to passengers and a new terminal was opened in 2015.
- Oyo Ollombo Airport opened in 2013 and was placed in the north of the country, an area rich in mineral and agricultural resources.

1.3.2 Road Sector PPPs

Overview

Governments are aware that a well-maintained and managed road network unlocks the region's productive capacity by linking agricultural areas to national or regional markets, and encourages economic growth and social integration by bringing cities and villages closer together. It is no surprise, therefore, that governments are constantly looking for ways to develop their road networks and other transport links to meet their economic, political and social needs. In LLDCs this often means constructing new roads as well as refurbishing, widening and extending existing roads. Building new roads, however is expensive and governments are often unable to commit sufficient fiscal spending to roads. This is why project financing and PPP projects are interesting to governments (PPP Knowledge Lab, n.d.).

The private sector can play various roles in the project lifecycle of road development, whether it be in road construction, operation, financing or maintenance. Partnerships between the public and private sector in roads are by no means a new phenomenon and, when done right in the appropriate circumstances, can improve project quality and increase efficiencies. Historically, the most common road PPPs have been brownfield concessions. However, since the year 2000 greenfield projects have become increasingly more popular (PPP Knowledge Lab, n.d.).

Revenues and Traffic Forecasts

The principal issue in relation to road projects is a viable off-take purchase. The off-take purchases in a road project are generally individuals and, as a result, demand risk is more difficult to quantify and harder to allocate. In some cases, local populations are asked to pay a toll for a road they have previously used for free. Instead of paying, they seek alternate routes and as a result of the diminished traffic, the project company will never be able to satisfy debt servicing, much less obtain a sufficient return on its investment.

It is essential that the toll regime for a transportation project be based on reliable economic, technical and financial assumptions. The applicable calculations for shifts in the underlying assumptions should be flexible. However, it should be noted that renegotiation of the tariff regime after commencement of the project may be very difficult. Therefore, lenders will generally undertake their own traffic forecasting exercises to verify those provided by the grantor and the project company (PPP Knowledge Lab, n.d.). Unfortunately, many traffic forecasts suffer from political orientation, where they are undertaken with the intent to show the need of the

local economy for state investment in infrastructure rather than to provide an objective analysis of demand (PPP Knowledge Lab, n.d.).

The complexities of traffic forecasts and the cost of risk allocation associated with toll revenues has led to the increasing popularity of availability payment-based toll road projects. Availability payments from the grantor compensate the project company for making the road available to users. A performance penalty regime will deduct amounts from such payments for defects in the road or the services provided by the project company, such as major maintenance, signage, safety, and aesthetics. The penalty regime and the key performance indicators (KPI) are even more important in an availability payment regime than under a user-fee based system since the commercial incentives associated with increasing traffic to earn more profit is lost and will need to be replicated through KPIs (PPP Knowledge Lab, n.d.).

Models

Toll Concession

In a road concession the government grants the private sector the right to exploit a right-of-way for a fixed period. Typically, in a classic concession approach, the traffic and toll collection risks are with the private sector and it is a purely private endeavour, with minimal to no government stake. There have been some cases, as with the M6 Toll Road in the United Kingdom, where the concessionaire has even been permitted the freedom to set tolls and apply time-of-day adjustments. More frequently, however, the government will regulate the toll, linking them to an index or composite index of some form. In this scenario, the concession ends either when a contractually agreed amount has been recovered or a fixed expiry date occurs (PPP Knowledge Lab, n.d.).

In many cases, projects also end prematurely when the concessionaire becomes illiquid and insolvent due to overestimated demand. These experiences have influenced current thinking on whether it is realistic to transfer demand risk.

Toll and Traffic Guarantee Concession

In a toll concession that includes traffic guarantees the private sector takes some but not all of the demand risk of the road. Under this agreement, the concessionaire will get a minimum usage guarantee from the government. Traffic guarantees have been used around the world to mitigate inaccuracies in traffic forecasting and poor due diligence by banks that tend to be overly optimistic. One variant of the traffic guarantee is the so-called “cap and collar” whereby a cash payment is made to the private operator if usage falls below a stated level and the public sector takes all (or a share) of the excess revenue over a stated percentage (PPP Knowledge Lab, n.d.).

Direct Payment Models: Shadow Tolls and Availability Payments

In direct payment models, the remuneration for the private partner does not take the form of charges paid by the users of the works or of the service, but of regular payments by the public partner. The two most popular direct payment models are shadow tolls and availability payments. The former is a demand-based model, wherein the government pays the fees for the users. Availability payment models are based on output standards rather than demand. The contractor has to meet certain output standards set out in detail in the PPP agreement and, so

long as the terms are met, the contractor receives payment of a pre-agree sum. If it fails to do so, then pre-agreed deductions are made on an accumulated points basis.

Output and Performance-Based Contracts

Output and performance- based road contracts (OPRCs), which became popular in the 1980s with Argentina's widely known CREMA (Performance-based Road Rehabilitation and Maintenance) contracts, have evolved further in recent years from focusing mostly on routine and periodic maintenance tasks, to include rehabilitation and improvement tasks as performance-based activities (PPP Knowledge Lab, n.d.). OPRC contracts may cover either individual assets, like traffic signs or bridges, or all road assets within a road corridor or network.

OPRC projects today often follow the design-build-operate-maintain-transfer methodology, where the contractor designs and completes the required rehabilitation and/or improvements to deliver a certain level of service and thereafter operates and maintains the road for several years.

As the name stipulates, OPRC projects are based on output as opposed to input (PPP Knowledge Lab, n.d.). Under a traditional input-based contract the private contractor gets paid for each repaired pothole, whereas under an OPRC the contractor gets paid for each length of road it maintains at the required condition. In return for achieving this standard, the government will periodically pay a fixed amount to the contractor or allow the firm to collect user fees (e.g., toll fees).

Payment Mechanism Options

A key issue for roads PPPs is how the Concessionaire is to be paid and who is to bear the risks of traffic risk and revenue risk

- Traffic risk is the risk of how many vehicles will travel up and down the road
- Revenue risk is a factor of both traffic volumes/ toll rates and collection/ enforcement risk

Pure "Availability' based payment structures generally transfer neither of these risks to the private sector. "Shadow Toll" structures are seen as transferring traffic risk, but not revenue risk and "Real-Tolled" structures are usually considered capable of transferring both risks. The advantages and disadvantages of these options are presented in the following table.

Table 0.3: Road Development Payment Mechanism Options

	Real tolls	Shadow tolls	Availability/ performance base mechanisms
Features	▪ Road users pay for use of asset	▪ No actual tolls are collected from public ▪ Usually have banding mechanism, which applies different shadow toll payments to different levels of traffic ▪ Concessionaire is paid by authority on road use – the more the road is used the more the concessionaire is paid ▪ Common to have 4 bands: ○ Base Case: designed to service senior debt but not to provide return on equity ○ Higher bands: provide a return on equity ○ Top band: usually has a toll rate of zero to cap amount payable to concessionaire	▪ Concessionaire paid for making road available for public use ▪ Sometimes mixed with real tolls [e.g. Ireland] so that concessionaire pays a non-availability payment to authority for road or lane closures out of toll revenue. ▪ Amount of deduction/ non-availability payment usually determined by reference to factors including: ▪ length of project road that is unavailable ▪ Number of lanes affected ▪ Duration of unavailability ▪ Time of day of unavailability
Advantages	▪ Zero cost to the Government ▪ Government has fiscal space to fund other projects	▪ Where environment is perceived to be hostile to real tolls, can introduce PPP structures ▪ Prepare way for real-tolled roads in due course by cultivating an industry used to taking traffic risk ▪ Multiple sources of funding can be drawn on by government ▪ Mechanism of traffic risk transfer should reduce complexity of project and reduce level of due diligence required	▪ Absence of traffic/ revenue risk simplifies project ▪ Lower level of due diligence needed ▪ Reduces risk on concessionaire – making project cheaper ▪ Removes emphasis on monitoring traffic flows during operational period ▪ No consumer resistance ▪
Disadvantages	▪ High capital construction costs mean that projects traffic volumes often considered an insufficient revenue stream to meet debt service and equity return for sponsors ▪ Often some form of subsidy/ very long concession period ▪ Reluctance by investors to become involved – costs will be higher to reflect higher risks ▪ Potential consumer resistance to paying for road use and how to mitigate this	▪ No revenue generation device – total cost of project falls on public purse ▪ If traffic volumes are significantly in excess of forecasts, government may find itself paying more “toll” than it budgeted for [This happened in Portugal].	▪ No revenue generation device – total cost of project falls on public purse ▪ Concessionaire is not concerned how much traffic volume there is and so do not transfer traffic or revenue risk.

Case Studies (Examples of Road PPP Projects)

Case Study Lekki-Epe Expressway Toll Road Concession Project, Nigeria

Introduction

The Lekki-Epe Toll Road Concession Project commenced in 2000 with the placing of advertisements by the Lagos State Government for proposals as to how key road infrastructure within the swelling metropolis of Lagos could be developed on a PPP basis. Asset & Resource Management (ARM) Company Limited submitted a proposal in relation to the rehabilitation, construction, operation, maintenance and tolling of numerous stretches of highway infrastructure within Lagos and was duly mandated in 2003 to develop a toll road corridor along the Lekki peninsula (Trinity International LLP (Trinity), 2009). The Concession Agreement was eventually signed by the concession company, Lekki Concession Company Limited ("LCC") on 24 April 2006 (Trinity, 2009).

Overview

The concession agreement gives LCC the right to design, rehabilitate, construct, operate, maintain and toll the existing Epe Expressway (which was widened and rehabilitated as Phase 1 of the project), the Coastal Road which will be an expressway running parallel to the existing road (as Phase 2 of the Project) and the Southern Bypass which is an additional option for LCC in the Concession Agreement. The term of the Concession Agreement is 30 years from its effective date and the scheme is structured as a Build Operate Transfer (BOT) project, with the road infrastructure being handed back to the State at the end of the concession term.

Construction of the Phase 1 works was planned under a turnkey, lump-sum, fixed price contract which also includes a five-year maintenance obligation on the contractor. To further assist in aligning the interests of the investors and the contractor, the contractor took an equity interest of up to 5% in LCC in exchange for an agreed reduction to the Engineering Procurement and Construction (EPC) price (Trinity, 2009).

The concept of a Federal Support Agreement was introduced into the transaction structure to ensure that the State carried out its obligations under the Concession Agreement. After many months of negotiation and endeavour, a Federal Support Agreement for the project was eventually signed with the Federal Government. The agreement, which is the first of its kind in Nigeria, provides a mechanism which allows for funds allocated to Lagos State out of federally controlled sources to be utilised to support the State's obligations on a termination of the Concession Agreement. It was on the basis of this document that the possibility of a commercial bank entering the finance structure alongside the AfDB became a real possibility (Trinity, 2009).

Financing

The transaction was initially pitched to Nigerian lenders, however, with an illiquid bond market and a yield curve out to only the 15-year structure even with a standby facility covering the refinancing risk was far from appealing either for LCC or the local lenders (Trinity, 2009). A more long-term and cost-effective financing plan was therefore required. The AfDB was identified as being a potential source of long-term financing and it, together with Standard Bank were able to offer a financial package which matched the long-term nature of the project revenues. Furthermore, as the AfDB is a dollar lending organisation, Standard Bank was able to structure a

swap facility whereby LCC's exposure to dollar denominated obligations to the AfDB was significantly mitigated.

Challenges

The time period from the commencement of the concession process to financial close (two and a half years) is a clear indication that the project has faced many challenges.

- There were no privately financed toll road precedents to follow in West Africa. The project was truly a first for the region.
- There is no doubt that Lagos is viewed as a challenging environment in which to undertake an urban toll road project. In addition, the city end of the corridor is very narrow and massively congested. The results of this perception were many. In the first place, international organizations and contractors were not convinced that the environment in Lagos would support such a scheme. While certain international organizations enquired about the transaction, none were prepared to bid for the EPC and operation and maintenance (O&M) roles in the transaction. Equally, equity investors were challenged by the raw politics of the environment and the unpredictability of everyday life (Trinity, 2009).
- Local lenders had no real experience of long-term limited recourse financing of infrastructure concession projects. In addition, the financial terms that they were able to offer were constrained by limited tenors which were not consistent with the long-term nature of the financing that was required.
- At the outset of the project, there was a lack of any real procurement and regulatory regime for concession projects at the State level.
- During its development phase, the project was faced with the uncertainty of the first transition of power between civilian administrations in Nigeria. At the same time, there was a change in the government of Lagos State with a new Executive Governor being elected.

Success Factors

Achieving the financial close milestone was the product of a number of different factors.

- ARM took the decision to gather together a team of experienced infrastructure development advisors for the project at a very early stage in the process. At any time during the long gestation period for the project, it would have been very easy and understandable for ARM to seek to cut its losses and abandon the project (Trinity, 2009).
- LCC was very quickly established as a substantive entity in Lagos. It was able to hire a dynamic chief executive with wide ranging experience of developing and financing concession-based infrastructure projects. The LCC team was absolutely vital in driving the process along, not only in relation to the financing of the project but also dealing with the myriad of commercial, political and legal issues facing the project. There is no doubt that without the energy, enthusiasm and dedication of the LCC team in Lagos, the project would not have achieved financial close.
- The State proved itself to be an effective partner in the scheme. Not only did the State show considerable patience in the development phase (a quality not often shown by political entities), it proved its commitment to the scheme in a difficult political arena by agreeing firstly to guarantee the investment required to enable the pre-financial works to

proceed and then to provide a mezzanine loan to LCC of N5 billion to assist in the overall financing of the project.

- The patience, dedication and pragmatism of the senior lenders was a key aspect. Local lenders had stuck with the project from the outset and with African Development Bank (AfDB) and Standard Bank providing 15-year money, the local lenders (buoyed by consolidation and an extended bond yield curve) were able to push the market by offering 12-year tenors not previously seen in the Nigerian market (Trinity, 2009).
- The project underwent significant amounts of due diligence. The involvement of the African Infrastructure Investment Fund, co-managed by Macquarie, in the equity led to an extremely detailed, thorough and robust due diligence process. In addition, the senior lenders conducted their own traffic, technical, financial and legal reviews and there is no doubt that the rigorous nature of the process served to flush out many issues which were then addressed appropriately.
- Political reality required the construction works on the scheme to commence prior to first drawdown of the senior debt. In fact, the progress of the pre-financial close works was an enabling factor in itself. With the assistance of the State, ARM and local lending institutions, LCC was able to proceed with and complete the first section of the construction works before financial close was achieved. The completion of these works, in the most congested part of the road corridor, was a clear demonstration of the management capabilities of LCC and of the contractor, Hitech.
- The transaction is predominantly a Nigerian deal. The LCC team is Nigerian, the local lenders are all strong Nigerian financial institutions, the contractor is Nigerian and the majority of the shareholders are also Nigerian. With such a high level of local participation came much needed know how and understanding as to how the maze of local conditions should best be negotiated. This “on the ground” experience and presence was absolutely vital to address the public relations, technical, political, financial, commercial and legal issues that arose throughout the process (Trinity, 2009).

Conclusion

The Lekki-Epe Toll Road Concession Project was very much a first for West Africa. At the outset, many believed that the project was not feasible given the environment in which it was proposed to be undertaken. Nevertheless, one after the other, issues were addressed, albeit over an extended period. Achievement of the important financial close milestone is a testament to the faith and dedication of the sponsors, investors and advisors who have worked on the transaction over many years.

Case Study: Routes 2 and 7 Roads, Paraguay

The consortium Rutas del Este SA has secured a US$50 million financing package for "Section Zero" of the project to upgrade National Routes 2 and 7 in Paraguay. Route 2 links Asunción, the capital city, to Coronel Oviedo to the east. Route 7 connects Coronel Oviedo to Ciudad del Este, the second-largest city in the country (InfraPPP, 2018).

The financing has been provided by a consortium of local banks, comprising Sudameris Bank, Banco Atlas, Banco Regional, Banco Continental and Visión Banco. It will fund the rehabilitation of the section of Route 2 that links San Lorenzo and Ypacaraí, around 25km, and the temporary operation and maintenance of Route 2 and a section of Route 7 (InfraPPP, 2018).

The loan was structured by Goldman Sachs. This participation of international leading financial institutions had no precedent in Paraguay, making it the first loan of its kind. This is fitting, given that the project is itself unprecedented - it was the first project to be developed through a public-private partnership since the government passed a PPP law in 2013 (InfraPPP, 2018).

Rutas del Este SA consists of internationally-renowned developers Sacyr and Mota Engil, and Paraguayan firm Ocho A. The consortium was awarded the project in October 2016 and secured commercial close in March 2017 (InfraPPP, 2018).

The estimated total investment required is US$527 million. The financing of Rutas 2 and 7 involves a complex multi-tranche structure that combines a securitization of government receivables with a letter of credit facility and a project financing. The US$457.6 million securitization was structured by Goldman Sachs and implemented through a 144A/Reg S bond offering, with Goldman Sachs acting as global coordinator and joint bookrunner and Itau BBA acting as joint bookrunner. The combined US$200 million project financing and letter of credit facility was arranged by IDB Invest and included the International Development Bank ("IDB") (Clifford Chance, 2019).

The financing breaks new ground in that it includes a letter of credit facility provided by a multilateral lending agency to fully support advances to a project company using bond proceeds to finance working capital. The structure achieves the double purpose of eliminating construction risk from the perspective of bondholders, while reducing negative carry by eliminating the need for a separate working capital facility.

By leveraging the status of IDB Invest as a multilateral lending agency with a robust credit rating, this innovative structure allocates risks efficiently to reduce financing costs and provide the protection required to attract institutional investors. Rutas 2 and 7 is the first project finance transaction for which IDB Invest and IDB have provided a letter of credit facility (Clifford Chance, 2019).

Case Study: Using PPPs to develop Chile's infrastructure (Transit Country)

During the 1980s, the Chilean government failed to invest sufficiently on the country's infrastructure, particularly its motorways. At the same time, the number of vehicles increased from nearly 900,000 in 1982 to more than 1.3 million ten years later, while traffic accidents nearly doubled. By the early 1990s, it became necessary for a significant level of investment, so the government of Chile had to decide how to find the necessary capital for roads and yet continue to put money into social improvements (CPI, 2016).

The government opted for a concessions programme in order to renew all its infrastructure, including roads, ports and airports, to meet the demand resulting from Chile's rapid economic growth. The programme applied the principles of public-private partnerships (PPPs) to the task, with the intention of improving the investment efficiency and management of its infrastructure projects. "The government responded by launching a programme under which concessionaires would finance highways and other infrastructure in the private capital markets. The programme was designed to boost investment in the country's infrastructure without raising taxes or increasing public-sector debt, which were not politically viable options at the time." (CPI, 2016).

The Chilean PPP infrastructure initiative was adjudged a success by the International Monetary Foundation (IMF) in 2004. "Since 1994, the government has engaged the private sector in 36 PPP projects with a total value of US$5.5 billion. The projects contracted thus far comprise 24

transport projects, nine airports, two prisons, and a reservoir. Over 20 of these projects are already in the operational phase. (CPI, 2016)

Between 1994 and 1998, projects worth USD3.3 billion were developed in Chile under PPPs, and this resulted in the construction of nearly 2,000 kilometres of roads. In 2014, the PPP programme was still viewed favourably, although with some reservations. “PPPs have worked well for ports and airports and, in Chile, for urban motorways with heavy traffic. But they should be a complement to, not a substitute for, public investment in roads, railways and metros.” (CPI, 2016).

Key lessons

- Good degree of alignment between the Chilean government and its agencies and the private sector organisations responsible for the financing and delivery of PPP infrastructure projects. The government was responsive to problems encountered by the banking sector. After it was clear that there are systemic problems in the Chile financial system, which inhibited capital uptake, the government introduced reforms in order to enable PPP infrastructure projects. When the programme was launched, it was assumed that most of its financing would come from the domestic financial market. The funds obtainable from Chilean banks are limited, however, by portfolio diversification regulations, which prohibit banks operating in Chile from investing more than 15% of their capital in greenfield infrastructure projects. “Other changes introduced to the Chilean financial regulations in 1995–96 was designed to facilitate the involvement of local banks and institutional investors in concession projects. One key modification to the banking law increased the limit on lending for infrastructure projects from 5% to 15% of the lender’s capital and reserves. The other significant change allowed pension funds and insurance companies to invest in bonds issued by companies that did not have an established track record.
- Clear Objectives. The broad objective of the PPP infrastructure programme was to boost investment in the country’s infrastructure without raising taxes or increasing public-sector debt. The detail was set out in the Concessions Law and associated legislation.
- Strong Management. There was a sound institutional structure supporting the PPP programme. The Coordinación General de Concesiones was established as a separate agency within the Ministry of Public Works in 199 to manage the project design, bid process, the selection of concessionaires, and the supervision of concessions during construction and operations. It is structured as three main departments covering projects, construction, and operations, with units that provide support on legal, environmental, social and engineering issues.

Case Study: Senegal’s Dakar-Diamniadio Toll Road (Transit Country)

In 2000, the Senegalese capital Dakar faced severe traffic congestion and high levels of pollution. Recognising the challenge to the country’s economic growth if the infrastructure were not improved, the government of Senegal initiated the construction of a 32km toll highway from Dakar to the new economic hub of Diamniadio. The project was completed in 2015, diverting 45,000 vehicles from Dakar's city centre and reducing commuting times between the city and its suburbs from two hours to less than 30 minutes (Schaefer, 2018)**.**

The Public-Private Infrastructure Advisory Facility’s support to the Government of Senegal in 2009 led to the construction of the Dakar–Diamniadio Toll Road, one of the first toll roads to be built through public-private partnerships (PPPs) in Sub-Saharan Africa (excluding South Africa).

The highway now provides substantial socioeconomic benefits for the 2 million Senegalese living in Dakar and surrounding cities. The highway is essential to Dakar's development as a sub-regional economic center.

In 2007, PPIAF approved a $250,200 grant to help establish the institutional and regulatory framework for the transport sector in Senegal. The PPIAF grant supported technical assistance to the National Agency for the Promotion of Investments (APIX) to consolidate the institutional framework and develop contractual arrangements for the Dakar–Diamniadio Toll Highway project (Schaefer, 2018).

The highway—the first public-private partnership (PPP) for a greenfield toll road in West Africa—was completed in two phases, and was also supported by IFC. The first section, a 24-km stretch from Dakar to Diamniadio that was inaugurated in 2013, slashed commuting time between the two cities from more than two hours to about 30 minutes.

Eiffage, the French company that emerged as the preferred bidder, offered to finance 92.5 million euros (about US$125 million in 2009) (Schaefer, 2018) through debt and equity, or about 40% of the construction costs. Upon its selection in December 2008, Eiffage formed SENAC as a special-purpose vehicle to serve as the concessionaire. The Senegalese government contributed €55 million of the construction costs (about US$74 million) from its own budget but financed the rest of its €130-million share with loans from development agencies.

The success of the first section led to an extension of the toll road, also structured as a PPP. The second stretch, commissioned in 2016, extended access from Dakar to the newly inaugurated international airport in the region of Thiès and created a faster route from the capital to seaside resorts in Saly, an important source of employment and income for the country. IFC investments in the two phases of the toll road—part of a broader World Bank-led project in Senegal—amounted to €26 million. An additional €50 million was arranged and mobilized by IFC from the Western African Development Bank, the African Development Bank and CBAO, one of the main Senegalese commercial banks.

Key lessons

- Political commitment. The Government of Senegal set the project as a priority. The first driver on the road was the President – who paid the toll. But commitment alone isn't enough; it needs to be turned into action by government agencies. An intra-agency coordinating committee was set up. The National Agency for the Promotion of Investments (APIX) oversaw the preparation of the concession. The Public Private Infrastructure Advisory Facility (PPIAF) supported APIX with technical assistance, including the design of a framework for the oversight of the project.
- Consensus-building and stakeholder engagement. Part of PPIAF's US$250,000 grant to the Government of Senegal helped to pay for seminars with stakeholder groups to discuss structuring options for the road and socio-economic drivers of the willingness to pay. The final structure chosen involved a relatively low toll, with an upfront contribution by the government to the cost, with the concessionaire taking full construction, operating and traffic risk. The combination of careful outreach to stakeholders, a fairly low toll, significant time savings and a well-maintained road meant that the first toll road in the country was accepted by the population. In addition, the fact that there is a free alternative road helped

the Government and other stakeholders point out that motorists could always choose to use the other route.

- Experienced concessionaire with strong commitment to Senegal. The concessionaire, the Eiffage Group is one of Europe's leading construction and toll road operating companies, with a long history of involvement in, and commitment to, Senegal. Eiffage, through the special purpose company set up to construct and operate for 30 years the road, SENAC S.A., ensured that the road was constructed and is being operated to a high standard, on time and within budget.
- Strong involvement of development institutions in both public and private financing. The public sector component, financed by the Government of Senegal, the African Development Bank, the Agence Française de Développement and the World Bank, covered right-of-way clearance, urban restructuring and re-settlement of households – up to 30,000 people – affected by the road. On the private side, IFC served as the lead arranger and global coordinator for this landmark €230 million toll road project, committing €22.5 million in long-term debt facilities. In all, the total private equity and debt raised by the concessionaire amounted to €100 million. The amount of the debt financing package was €65 million, of which €45 million was mobilized from the Western African Development Bank (BOAD), the African Development Bank and CBAO, one of the main Senegalese commercial banks.
- Clear, visible benefits. Commuters are saving three hours a day. The road is safer and the quality of the ride is higher. There is economic development sprouting all around the road. Small farmer businesses have been developed with women associations alongside the road. For those who do not wish to use the new highway, the previous road remains as a free – and now more fluid – alternative.
- PPIAF makes small grants like this all over Africa, and in other regions, to help governments build capacity and regulatory frameworks, to bring in private investors and financiers to provide better infrastructure services.

Case Study: Kalangala Infrastructure Services PPP Project, Uganda

Bugala Island, situated on Lake Victoria in Uganda's Kalangala District, has undergone a transformation over the past decade. Bugala Island was previously one of Uganda's poorest districts, and residents lacked safe regular access to the mainland, reliable electricity and clean water. This had constrained the growth of agriculture and fishing activities on the island and prevented the realisation of its tourism potential (Private Infrastructure Development Group (PIDG), n.d.). In 2005, InfraCo Africa[2] began to address these constraints and established an infrastructure company, Kalangala Infrastructure Services (KIS). Today, the island is thriving and Kalangala is among Uganda's wealthiest regions. KIS has played a major role in this transformation (PIDG), n.d.).

KIS is a PPP project pioneering mixed utility company that has responded to the complexity of Bugala Island's needs. KIS has delivered and now operates two modern roll-on roll-off ferries; has

[2] InfraCo Africa provides funding and expertise to infrastructure projects, enabling them to grow from an initial concept to a bankable investment opportunity to a viable operating business. They can work with projects at their earliest stage, either directly where they already have an experienced lead developer, or where they can provide on-the-ground project development expertise through their own teams. InfraCo Africa receives funding, through PIDG's publicly funded trust, from governments in the UK (FCDO), the Netherlands (DGIS) and Switzerland (SECO). InfraCo Africa is established and operates as a private limited company which is registered in England and Wales.

upgraded the island's 66km Luuku – Mulabana main road; is distributing clean water to 19 villages on the island; and has developed 1.6MW of hybrid solar-diesel power and recently taken over operation of the Kalangala Town Council (KTC) grid (InfraCo Africa, n.d.).

The project saw the establishment of the implementing institution; Kalangala Infrastructure Services (KIS) Ltd, a subsidiary of Infra Co Ltd (54% stake), which is based in the UK. The project was financed through equity and debt from Infra Co, Nedbank from South Africa, Emerging Africa Infrastructure Fund (EAIF); a debt joint guarantee from USAID and Guarant Co; as well as an Output Based Aid (OBA) grant (InfraCo Africa, n.d.).

There was no formal bidding process to identify the private sector players as the project was mainly spurred by development partners, who were interested in developing the Island. The PPP, which is a BOT, also has several incentives for the private Lake Victoria and tax waivers on specified machinery inputs. KIS is also the contracting agency to execute all the project investments, which include:

- **Road Works:** Rehabilitation, expansion and upgrade of the 66km Main Island Road
- **Ferry Service:** Build two new ferries to provide ferry transport services between Luuku and Bukakata;
- **Power Supply Systems:** Development of a power generation plant, and construct a distribution network throughout Bugalaisland; and Water Supply Systems: To rehabilitate and expand the Kalangala Town Council water supply system and construct water supply systems for 5 major fish landing sites.

In order for the private sector to recoup its costs, it collects fees from the ferry services, and tariffs for the power and water supplied to the Island. The Government also compensated previous land owners who lost their land to enable the road construction and leeway to power lines and water pipes.

The period in which the PPP would be operational before being transferred to government could not be established. However, at the end of the period, all the assets will be transferred to the government, even though Kalangala Infrastructure Services shall be maintained as a special purpose vehicle for developing Kalangala.

The KIS PPP project has already had some demonstrable impacts on the ground. It has enhanced living standards of the people of Bugala Island in Kalangala District. Villages where KIS water supply is provided are also having a decrease in waterborne diseases. Electricity generation has also increased business hours, as they can now run till late. There has also been a noticeable trend where temporary structures that were common before the project are being replaced by permanent homes. Government has also benefited from the project, as taxes have been paid from the project in the first five years, including from ferry VAT and ferry license fees (InfraCo Africa, n.d.).

1.3.3 Railway PPPs

Efficient rail transport can be an important catalyst for economic growth and development. Rail transport can stimulate trade, link production sites to regional and international markets, promote national and cross-border integration of regions and facilitate access to labour markets, education and health services.

Rail transport is generally more energy efficient than road or air transport. Investment in rail transport is therefore an important element of a low carbon transport strategy. High-speed lines can substitute long-distance road or air transport. Rail transport is also an energy efficient means to move high volumes of bulk commodities from centres of production, such as mining and agricultural areas, to ports and airports (PPP Knowledge Lab, n.d.).

PPPs in railways can bring opportunities for investment, operating efficiency and modern and clean technology. PPP railway projects providing for shared use of rail tracks may lead to efficiency gains and an increased revenue basis for states and private investors and make investment in PPP schemes more attractive.

There is a long history of private investment and financing in railways. The development of railways across Europe and in the United States in the 19th century played an important role in both their demographic and industrial development. In recent decades, railway PPPs have been used in emerging markets to rehabilitate and rejuvenate existing general freight and passenger rail operations, to finance greenfield rail lines to serve dedicated, heavy haul end users like mining, or to finance above rail investment (rolling stock) where there is a separation of above and below rail operations (PPP Knowledge Lab, n.d.).

Revenue guarantees and market risk

A primary difference between a PPP passenger railway project and a PPP power project is the absence of a universal offtake agreement. Although commercial carriers may make contracts with railway operators for long-term rail access, such contracts will, generally, not cover the entire period of the concession. Further, just as with roadway and bridge projects, there is no guarantee that once the project is completed private passengers will use the service. Even with market testing and traffic forecast, the project company can be left holding the majority of the market risk for the project. For this reason, lenders will seek to allocate this risk to another party. Certain methods have been developed to allocate part of this risk to the grantor, such as through shadow tolls.

Track access charges

The revenue stream for the owner of the rail track is usually based on track access charges, which operators pay in order to run their rolling stock on the network. Track access charges are usually based on:

- A fixed track charge (set against fixed track upkeep costs);
- A variable track usage charge based either on the number of net ton kilometres or passenger kilometres recorded or the number of train slots used or a combination of both; and
- A variable traction electricity charge, if applicable, (for the power consumed by the operator's trains).

This payment structure works well within the framework of project financing where the lenders will want a fixed part of the payment stream generated by end users to cover debt service.

Interface with existing transport services

PPP railway projects often need to be linked to existing transport services, since they may involve the construction of new lines or networks or the enhancement of an existing network.

When a railway project must connect to the national railway service (which may suffer from operation and maintenance failures, inefficient scheduling or high cost for users) the project company's efficient operation of the rail project may be inhibited. Specific undertakings from both the grantor and the national railway should be obtained as well as practical and enforceable sanctions sufficient to provide incentive to operate the railway effectively and to compensate the project company for potential damages.

For freight rail, multimodal connections must be considered. The importance of well-functioning rail-port links, rail-inland container transfer facilities, and other logistic centers is critical to the success of a freight railway projects.

Taking over existing rail services

Taking over existing rail services can be a challenge if the private operator uses limited recourse financing (i.e. project finance model) to raise debt, since the existing service is often unprofitable. This is particularly true of routes which are primarily passenger service oriented. Often even recovering operating costs can be difficult. Often, public sector subsidies are needed to support such projects for the benefit of the community.

Capital cost and subsidies

Rail projects involve significant capital costs, especially when a network must be extended or where substantial parts of its infrastructure must be replaced. This investment may exceed the appetite of the private sector finance market, or the revenue potential of the project.

- Passenger rail: In the case of passenger rail, the investment necessary for capital improvements may exceed the willingness of passengers to incur fare increases and may require a long-term subsidy from government. Meaningful government subsidies will provide lenders with improved debt-coverage ratios, sponsors with enhanced equity returns and can encourage both parties to take usage risk.
- Freight rail: The challenges associated with financing freight railways are different from those that affect passenger railways. For freight railways, the main issue is the lack of alignment between the tenure of commercial debt, which rarely exceeds 15 to 18 years, and the normal amortization of the infrastructure, which is 40 years or more. Therefore, to be viable, the investment has to be underpinned by one or several offtake agreements that will secure the necessary transport volumes and revenues.

Usage and revenue forecasts

Delivering a project successfully relies on the accuracy of revenue forecasting. Long-term usage and revenue forecasts are inherently uncertain given the changing competitive context of other rail services or other transport alternatives such as roads or air transport. The potential for aggressive and sustained competition must be considered, particularly in deregulated markets. This uncertainty may result in lower credit quality for structures that pass volume risk to lenders.

Depending on circumstances, freight forecasting can be even more problematic than passenger sector forecasting, especially if the traffic includes a high share of transit traffic or modal shift traffic between road and rail.

Models

Rail PPPs typically operate within a concession framework, through which a private partner is granted permission to rehabilitate and/or build and operate a railway and collect revenues from the railway, for a fixed period of time, or until other conditions in the contract have been met. Concessionaires use the revenue stream from their operation of the rail network to pay off debts incurred in the rehabilitation/construction of the line, pay whatever applicable concession fees to the grantor and to pay for ongoing maintenance and operation of the below and above rail assets (PPP Knowledge Lab, n.d.).

Broadly speaking, rail concessions can be divided into four categories, defined based on what aspect of the railway is being financed:

1. **Private monopolistic vertically integrated railways:** all of the rail infrastructure is owned, built, and maintained by a single operator that has the most time exclusive use of the rail.

2. **Privately shared use vertically integrated railways:** the same as above but the operator has obligations to share the rail infrastructure with third party users, albeit it might be granted an initial exclusivity period.

3. **Below rail service providers:** the operator of the rail provides rail infrastructure to rolling stock operators, similar to a toll road.

4. **Above rail service providers:** the operator provides rail transport services (passenger and/or freight) using rail infrastructure it does not own.

Within these four categories, there are many different types of rail concessions that serve a variety of purposes. For example, because railways are often the most economical way for mining product to be transported to end users or ports for distribution, mining companies may invest in railway infrastructure and operations and enter into a special purpose railway concession. These companies are remunerated by providing transport to support their own operations and by selling services to other companies. In these concessions, the company pays a concession fee to government for the right to operate the railway over a long period (e.g., 30 years) and becomes responsible for investing in and maintaining the railway infrastructure and rolling stock (PPP Knowledge Lab, n.d.).

While less common, there have been PPPs in high-speed rail, like the Perpignan-Figueres Line between France and Spain that opened in 2011. Under a high-speed railway concession, a private firm or consortium of private firms builds or restores a rail track and its associated facilities (such as the train station) under a long-term concession agreement, in which the concessionaire takes the financial risk in return for the right to charge a toll to passengers and freight trains that use the line (PPP Knowledge Lab, n.d.).

Case Studies

Case Study Rail Concessions

The following is an extract from *Railway Reform: Toolkit for Improving Rail Sector Performance Chapter 13: Encouraging Private Sector Participation (2017)* prepared by the PPIAF supported by the World Bank. It presents a discussion on private sector participation in railway development through railway concessions.

Concession contracts

Rail concessions are effective ways of increasing private sector participation. Concessions and franchises are simply contracts between a government owner and private parties for the provision of specified rail-related services. The contracts can be for infrastructure, operations, or both. The terms "concession" and "franchise" are often used interchangeably, but may be interpreted differently in different jurisdictions. Here, concessions and franchises are distinguished by the length of the contract – a concession typically lasts longer than a franchise and requires a more significant investment commitment from the private sector.

In most cases, concessions involve a contract for vertically integrated train services. Under a typical concession contract, the state maintains ownership of the land under the railway and the "below the rail' infrastructure, while transferring most other infrastructure along with rolling stock assets and the right to operate rail services to a private company for a period fixed in the contract. Concessions are usually longer-term arrangements, in order to take advantage of private sector investment and commercial management practices. Railway concessioning can encompass the whole enterprise or be limited to specific enterprise components – freight operations, commuter services, or long-distance passenger services. Railway concessioning has been used in Europe, Latin America, Africa, and in many other parts of the world. While a number of African concessions have been terminated early (see text box below), those that have continued have had generally positive results. At a minimum, concessioning has generally reduced the financial burden of the railway on Government, and in almost all cases rail traffic has increased, sometimes dramatically following the concession.

Underperformance and instability of concessions in Sub-Saharan Africa
According to Joan Miquel Vilardell (2015), most concessions in Africa have been awarded to holders who have not performed as expected, have become very instable, or both. There has been need for multiple restructuring and amendments to stay operative. This could suggest that the approach or the type of targeted operator were ill conceived.

Concessions that have been cancelled in Africa include:

- The 20-year concession of Zambian Railways (ZR), signed in 2003, was revoked by the Zambian Government in 2012.
- The 25-year concession of Tanzania Railways (TRC), signed in 2007, was terminated in 2011.
- The 25-year concession of the Kenyan and Ugandan railways to Rift Valley Railways (RVR) signed in 2005 was cancelled in 2017.

However, as was the case initially in many parts of the former Soviet Union, concessions in Africa did not deal effectively with a number of underlying issues[3]:

- The fundamental misunderstanding by Government about what concessions meant. Concessions do not mean for concessionaires to manage the railways on behalf of Government. Rather, concessionaires are to take over the railways and operate it profitably (subject to concession contract terms).
- Failure to agree on the financing mechanism for public service obligations (PSOs), particularly passenger transport. A number of concessions required the operator to continue to cross-subsidize loss-making suburban and longhaul passenger traffic from freight revenue for a number of years. This drained available cash (the difference between revenue and direct operating costs), leading to under-maintenance of track and thus to declining running speeds and service levels and eventually to a declining capacity to move freight. In most cases, these passenger service requirements were eventually converted to directly subsidized PSOs to be provided by the concessionaire.
- Failure to establish a corporate structure that was sustainable in an environment where the interests of the operator and the owner were not always fully aligned.
- Failure of the owner and the concessionaire to agree on reasonable traffic forecasts, and to align these with infrastructure upgrading proposals. Most agreements forecast a rapid increase in rail traffic, regarded as being constrained initially primarily by track and rolling stock condition. The agreements did not adequately consider the 'chicken and egg' question of how to finance the initial infrastructure improvements needed to handle additional traffic before traffic and revenue increased, or indeed how to convince potential customers to be the first to switch back to the not-yet-improved railway. In some cases, traffic volumes were simply not sufficient to support the infrastructure costs, setting unrealistic expectations. Failure to set up an appropriate mechanism to oversee the commercial agreement between the Government-owned railway and a private operator. In most cases, this task was left to the railway entity, creating a clear conflict of interest between the railway as regulator and the railway as owner and a party to the concession agreement.[4]
- Failure to agree on appropriate mechanisms to facilitate cross-border movement of cargo by rail. With notable exceptions (Abidjan-Ouagadougou in West Africa, and Mombasa-Nairobi-Kampala in East Africa), African railways concentrate on national markets and do not cross borders. When they do cross borders, they can attract traffic with a longer average haul, but only if they can provide service comparable to that provided by through truck movement.
- Failure of Government to implement (or pay for) some of the rehabilitation costs in accordance with the concession contract.

[3] This section is drawn in part from recent surveys of African rail concession performance, including: Joan Miquel Vilardell, Railway Concession in Africa: Lessons Learned, prepared for AfDB Transport Forum, 2015; Larry Phipps, Review of the Effectiveness of Rail concessions in the SADC Region, prepared for USAID Southern Africa, 2009; Richard Bullock, Results of Railway Privatization in Africa, World Bank, 2005;

[4] For example, the debate about appropriate structure continues – In 2016, 10 years into a 25-year agreement, Kenya Railway Corporation and the Ministry of Transport retained a consultant to advise on a more appropriate regulatory mechanism for the balance of the concession agreement between KRC and RVR.

Concession contracts that include upgrading of rail infrastructure are typically for a period of 25 to 40 years, to allow the concession operator to obtain a return on investment in long-term assets. A concession contract can also include government commitment to invest in assets, such as infrastructure or passenger rolling stock.

Infrastructure concessions are generally exclusive – the concession operator has the exclusive right to invest, maintain, and operate the infrastructure and to run trains, although they can require the concession operator to provide access to other train operators providing specific transport services (passenger, freight, or both).

Typically, state-owners are financially responsible for resolving existing workforce redundancies and environmental issues prior to concessioning. The State may include one or more service contracts with the concession operator for loss-making services (usually for provision of specific number of passenger services).

A difficult and often contentious part of concession agreements involves terminal valuations—how the value of private investments will be calculated at the end of the concession. If assets simply revert to government ownership at the end of the concession, operators often seek to dis-invest during the final years of the contract, effectively using up their earlier investments. This can leave the government with railway assets that are no better than when they were transferred to the operator at the beginning of the concession, or in some cases assets that have degenerated beyond their initial condition. Another option is for the government to pay the operator for the asset value that remains at the end of the concession. This requires contractual agreement from the beginning on a method to value the assets at the end of the concession. Often, concession contracts have a renewal period, to try to avoid this end-of-contract dilemma. In such contracts, a 30-year concession may be renewed for an additional period of 5-10 years after year 20, thereby providing the private investor with an incentive to continue to invest. This avoids reaching the 'final years' of the concession, unless there has been a decision by one party to terminate rather than to renew.

Concessions involve competitive tendering, engage private investment and management directly, and can transform a state-owned enterprise. Some countries have emphasized the use of concessioning both to promote competition within the rail sector and to seek private sector investment and management. Larger national rail networks, such as Brazil, Argentina, and Mexico, were concessioned into self-contained viable sub-networks – each constituting a natural geographic monopoly. In some concessions, the government has required new private operators to allow other licensed railway operators access to the concessioned network. In Mexico, the national railway was disaggregated into competing networks plus a jointly owned concession serving Mexico City. Network segments with lighter traffic density were separately concessioned as short-line railways. These concessions have created competitive rail services, attracting large private sector investments and new commercially focused railway management teams. Rail traffic in Mexico has grown dramatically, the need for subsidy and government investment has declined dramatically, and the condition of assets – infrastructure as well as rolling stock fleets – has improved greatly. In Cameroon, while the results are less dramatic, there have been significant investments by both the government and the operator, traffic has grown steadily, and the 20-year term of the original agreement, signed in 1990, has already been extended to 30 years.

1.4 Challenges with PPPs in Transport

It is worth nothing that private sector engagement in infrastructure projects is not traditionally a natural fit because PPPs bring together parties with such diverging interests and end goals. While the Principal-Agent incentive theory (i.e. the principal (often government) introduces a set of incentives in order to increase the agent's (private sector) efficiency), conflicting interests can still exist:

- The agent could act contrary to its instructions because the principal's instructions are not in their interests, for example by increasing profit margins despite cost-effectiveness being in the principal's best interests (also known as moral hazard).
- The principal could select an ill-suited agent (adverse selection), which causes problems with project implementation.
- The private sector could be more experienced and have superior knowledge of terms and conditions from previous projects (knowledge asymmetry), compared to the government entity, which has limited PPP experience. This asymmetry could result in reduced access to information as the private sector's engagement in project delivery and operations grows.

Therefore, mitigating against such outcomes in order to enhance congruency of goals involves the publication of best practices guidelines and manuals, making use of knowledgeable transaction advisors and ensuring that costs to the public sector are market related. Additionally, devising a robust monitoring regime can also assist in mitigating 'shirking' during the project implementation.

Some critics have also noted that there is a tendency towards over-engineered and legally complicated agreements because PPPs are risky undertakings. PPPs are thus criticised for their high transaction costs, the long-term and rigid nature of contracts, the difficulty in finding private investors to partners with, and the increased difficulty for local firms and financiers to participate in PPP projects.

1.5 Key Messages

PPPs are advantageous because of the following.

- Improved service quality through the use of contracts and the public partner is able to specify the level of service quality required to be offered to the public. The private sector may also have special expertise and technology that will result in improved service quality.
- May lead to higher quality and timely provision of public services.
- Lower project costs may be incurred since PPP projects usually encompass a wide range of activities – design, construction etc., all in one project rather than being separated into its different parts. Therefore, better overall solutions are possible to accomplish and the chance to exploit scale economies increases.
- Risk sharing in that PPP projects are often designed so that each specific risk associated with the project is borne by the partner best suited to handle this risk. For example, since PPP projects typically give the private sector a greater responsibility for project design, construction, service obligations and financing, there is a net transfer of risk from the public

sector to the private sector. Likewise, the public sector would then take care of aspects such as political issues and regulations.

- If the public sector is unable to finance all the projects that are considered to be socio-economically beneficial then the private sector can participate in the financing of some projects, thereby ensuring earlier and quicker construction.
- PPPs are seen as an instrument that combines the relative strength of government and private provision in a way that responds to market failure but minimizes the risk of government failure. Private sector actors in PPPs can use their management skills and capacity for innovation to improve efficiency and quality standards.
- Efficiency gains play an important role in increasing value for money through PPPs. Governments pay a fee to the private partner for the services provided (for example, in terms of usage fees and availability payments), which the private sector uses to pay operating costs and interest charges and to repay debt and return on equity. In cases where efficiency increases offset the higher financing costs of the private sector, the PPP may have a higher value for money and hence be the preferred option for the government. Such efficiency effects may include improved analysis during project selection, better planning, on-time and on-budget implementation, improved construction expertise, and adequate maintenance (WBI 2012).
- PPP projects presume long-term commitment from all parties, which may create locking and reduced flexibility.

If implemented well, PPPs can therefore help overcome inadequate infrastructure, which constrains economic growth, particularly in developing countries. PPP's should however be implemented thoughtfully considering the potential challenges presented in section 4.4.

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