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Infrastructure Public-Private Partnership Case Studies of APEC Member Economies

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EXECUTIVE SUMMARY

The Asia-Pacific region is the locomotive that has been driving world economic growth in the recent decades. Infrastructure investment and development have played a critical role in this process in terms of improving connectivity and unleashing growth potentials. In the face of a huge infrastructure gap in the Asia-Pacific region, public-private partnership (PPP) is considered by APEC member economies as a cost-effective solution to bridging this gap. The PPP modality mobilizes private financial resources and know-how, promotes efficient use of public funds, and improves service quality. PPP projects require a multiple of key factors to ensure its success. These include, among others, an enabling policy and legal environment, proper design and preparation, strong institutional capacity, long-term contract management, and careful monitoring over the project life cycle.

In this collection, 55 case studies were provided by contributing APEC member economies, as well as international financial institutions. The case studies cover infrastructure PPP projects in the transport, energy, water supply and wastewater treatment, and service sectors of 18 APEC member economies. A careful review of the case studies reveal the following lessons and experiences:

The PPP model offers significant advantages over traditional public procurement in terms of efficiency, service quality and value for money. Australia, Canada, Japan, the People's Republic of China (PRC), and Peru have all reported significant cost savings by applying various PPP methods on infrastructure projects. Australia tendered bids for a road (the Peninsula Link), water (Victorian Desalination), and a rail infrastructure (rolling stock) project. The financial proposals were evaluated against a public sector comparator (estimate of the risk-adjusted, whole of life cost of the project if alternatively delivered by the government). The preferred proponents provided bids lower than the public sector comparator by 1%, 14.1%, and 30% respectively. Canada carried out value-for-money assessments throughout the procurement process to estimate value savings that consistently demonstrated that the PPP approach provided a lower overall net present cost to taxpayers compared to the traditional delivery procurement method. Similarly, Peru utilized value-for-money analysis in approving the modern, mass public underground Metro system as a PPP project. The PRC experience in its municipal natural gas infrastructure project is noteworthy in that the successful operation and tangible efficiency gains afforded by PPPs convinced the neighboring municipal governments to launch PPP in their own cities. This supported PPP penetration into smaller cities and subsequently expanded the natural gas market. The Kawai water purification plant rehabilitation project in Japan showed a public sector comparator price higher by about 6%, which further validated the government's decision to use the private finance initiative approach in the construction of the plant. Because of private sector know-how, the project adopted a state of the art membrane filtration system to increase the water supply and water treatment capacity – a method the public sector has no prior experience with. Today, the water treatment plant with membrane filtration system processes water on a scale that has never been realized in Japan. The PPP design, build, own, operate approach of the five (5) water sector projects in Singapore, has resulted in a lower than expected bid price partly due to economic optimisation, design innovations, and improvements in membrane technology. PPP experiences reported by the China Development Bank indicate that PPP is essential in reducing national government debt, relieving the financial pressure weighing upon local governments, and demonstrate that local enterprises can expand to overseas market with the PPP model (as in the case of Jamaica's Highway 2000 project where a Chinese engineering company was engaged to construct the

highway). Privatizing Malaysia's hospital support services improved the management of its public health facilities and prolonged the life and reliability of the assets, which translated to better services to patients.

Government participation is essential to further encourage private sector interest, particularly in large, complex infrastructure projects. The experiences of Indonesia and Chile showed that the private sector will more likely invest in economic and infrastructure projects with government as their enabling partner. Risks associated with these types of projects are oftentimes too high for the private sector to bear on its own. In Chile, the government allowed for the option of a (government) guaranteed minimum income mechanism to increase the financial viability of proposed projects. Financial closures during the bidding process of a water project in Indonesia were unsuccessful due to lack of government financial support in the form of capital subsidies and government guarantees. Singapore's initial experience in the procurement process of building its waste-to-energy (WTE) incineration plant also met with setback as the market was not ready. A tender for a pure private sector competition model for the development of a plant in 2001 was unsuccessful because the private sector could not bear the demand risk. The private sector might also be unable to source for or unwilling to commit the required funds to finance such a capital intensive project without demand support. In view of the market conditions, the government decided to adopt a design-build-own-operate PPP scheme, with full take-or-pay approach to ensure project bankability. Invitation to tender was issued in 2004, contract was awarded to the winning bidder in 2005, and plant was completed in 2009. In Canada, two road transport case studies indicated that there were no proposals forthcoming from the private sector to complete the proposed infrastructure projects without public sector involvement. Thailand had an interesting experience in its container terminal project, where the government stepped in to manage demand risks in the face of strong competition among port operators, which drove prices down and adversely impacted revenues that were lower than initially projected.

Identifying and implementing risk-mitigating mechanisms for balanced management of risks for the public and private sector. Identification and proper allocation of risks is fundamental to a PPP success story. It is advisable to have in PPP contracts risk mitigation clauses to cover (a) changes in government policy or legal provisions that will mitigate exposure of the private sector proponent to unanticipated financial risks or cause delays in project implementation, (b) government guarantees, or performance undertakings to ensure that the obligation of the government implementing agency under the PPP contract will be fulfilled, and (c) regulatory risk guarantees, where the government undertakes to compensate the private sector proponent in the event that pre-agreed rate increases are not implemented for reasons not attributable to the private sector proponent. From the government's perspective, these risk mitigating mechanisms will help protect its interests and ensure the successful implementation of a high quality infrastructure project. Russia, for instance, implemented a "hybrid" model to mitigate some of the risks in its Pulkovo airport expansion project. The landside area of the airport (e.g., parking lots and access roads) was bid out purely as a 30-year PPP modality where the private concessionaire was responsible for construction, financing and maintenance. However, because the airside area was considered of national importance, particularly in terms of security, the private concessionaire built and financed the infrastructure but the runways, taxiways and ramp (airside) were owned and managed by the City of St. Petersburg through a public company. In the United States, the government adopted an availability payments scheme to lower the credit risk of a road expansion project (Florida I-595) to the private concessionaire. Additional federal government funding provided through the Transportation Infrastructure Finance and Innovation Act (TIFIA) managed by the US Department of Transportation (US DOT) stabilized interest rates in the wake of the 2008 global economic crisis, and encouraged

bank syndicates to lend to fill the financing gap. The PPP strategy allowed the target completion date to be set 15 years earlier than if the project was wholly government financed.

The political will and sustained commitment of the government in promoting PPPs are essential. Legal reforms and adoption of enabling rules demonstrate governments' commitment and will to support PPPs. In 2004, the PRC government stepped up efforts to encourage private sector participation in the downstream gas distribution market by issuing the "*Administrative Rules on Concession of Public Utilities*" (the Concession Measures) with a template concession agreement that formed the backbone of a unique decentralized PPP development model in the PRC. It created a new contractual modality through which a private sector partner is responsible for the construction and financing of the infrastructure that supports the provision of contracted services. The Shanghai municipal government, for its part, enacted the *Administrative Measures of Shanghai Municipality on the Concession of Urban Infrastructure* to encourage private sector's participation in infrastructure construction and operation by way of concession.

The case studies also indicated that Mexico, Australia, and Korea have solid legal and regulatory frameworks for PPPs designed to promote investments in infrastructure. The federal government of Mexico established several measures to promote infrastructure investment through domestic sources of funding at a time when the global financial crisis weakened the international credit market. The recently enacted Financial Reform Law, which amended 34 laws, aims to enhance credit allocation in an already stable and well capitalized financial system; this reform upgrades to law the Basel III principles. The Public Private Partnership Act (Mexico) and the Partnerships Victoria Framework (Australia) promote proper distribution of risks between the public and private actors, as well as the efficient use of public resources within a framework of transparency and accountability, providing legal certainty to those involved in the projects. Korea has a strong legislative and institutional framework as presented in the PPP Act of 1994, which is further supported by an Enforcement Decree that regulates matters delegated by the PPP Act and those necessary for its strict implementation.

Creation of a dedicated PPP center or unit within government provides the necessary link between government and the private sector. A government's strong commitment to move the PPP agenda forward is also demonstrated by its creation of a PPP Unit/Center, tasked with the responsibility of identifying and managing a portfolio of investment projects, as well as provide advisory services and technical assistance to government and private institutions engaged in designing and implementing PPP programs and projects. Many of the APEC member economies have established PPP Units within their public services. Australia, Canada, Chile, PRC, Korea, Malaysia, Mexico, New Zealand, and Thailand are among those that have allocated human and financial resources to focus solely on improving the delivery of public infrastructure through PPPs. Chinese Taipei established a permanent PPP Unit (Department for the Promotion of Private Participation, PPP Department) under the Ministry of Finance. The authority also set up a "Platform for Private Participation in Infrastructure" under MOF as a dialogue mechanism between the public and private sectors to discuss the economy's investment needs and implementation issues. The Public and Private Infrastructure Investment Management Center (PIMAC) of Korea plays a key role in integrating public investment management and budgeting for PPPs.

Establishing separate infrastructure investment funds help ensure viability of large, long term infrastructure development. The government of Indonesia introduced fiscal incentives such as the Viability Gap Fund (VGF) to enhance financial feasibility while keeping end-user tariffs low, and the Indonesia Infrastructure Guarantee Fund (IIGF) to mitigate political

risks. Canada's PPP Fund has in its coffers CAD\$1.25 billion specifically for public-private initiatives. Mexico for its part made available various credit instruments for long term financing when it created the National Infrastructure Fund (FONADIN), a specialized project financing vehicle that promotes high social impact infrastructure projects. The United States makes credit available through the Transportation Infrastructure Finance and Innovation Act (TIFIA) via secured (direct) loans, loan guarantees, and standby lines of credit to regional or nationally relevant infrastructure projects. Korea has the Infrastructure Credit Guarantee Fund (ICGF) to make project financing even more viable for PPPs. The Russian Federation Investment Fund is used not only to co-finance infrastructure projects, but also contributes to the authorized capital of open joint-stock companies.

PPP encourages the design and implementation of innovative, cost-saving approaches to infrastructure development. One of the distinct advantages of a PPP model is the ability to tap into private sector know-how and innovations for cost-effective solutions. The Beijing Metro Line 4 of PRC adopted a rail "plus property" PPP modality. The private sector proponent pays the full market price of the sites, the development cost of the property developments (both vertically and horizontally), and the construction and operating cost of the railway. In return, it will receive the growth in the value of the land it purchases, the fare from the rail line, and non-fare revenues from the associated commercial developments. The government also benefits from the general increase in land prices and increase in the value of its shares in China MTR. This approach fill funding gaps, removing the need for a direct government subsidy to the project. Another innovative idea in PRC's natural gas project is the separation of end users' payments from the local governments' budgets which made PPP possible in small cities. The construction of the port of Miami tunnel in the United States was deemed technically challenging, and the aim of the PPP procurement strategy is to attract overseas contractors with the necessary technical tunneling experience to bid on the project. This also allowed the design and construction risks to be transferred from government to the private sector. New Zealand also chose the PPP route in the construction of its Auckland South Prison. The New Zealand government wanted to leverage innovation from the private sector on how to operate a prison in a way that delivers improved custodial and rehabilitation outcomes.

Other innovative strategies are reported by (i) Canada, with the the method of compensation to the private partner of a highway project. The Gradual Toll Increase System allows the private partner to increase tolls beyond the maximum rate allowed when traffic hits a certain threshold. The higher tolls discourage drivers from using the bridge, and thus reducing congestion; and (ii) the Australian government, with the introduction of an Asset Recycling Initiative – making available AUD\$5 billion in grants to State and Territory Governments that sell assets and reinvest the proceeds into new infrastructure. Grant amounts can be up to 15% of the value of the proceeds of an eligible asset sale that occurs prior to 30 June 2019, provided that construction of a new eligible infrastructure project has commenced. Although this initiative does not require new infrastructure projects to be procured as PPPs, it will however increase the amount of new infrastructure investment being undertaken in Australia, with a consequential impact on Australia's PPP market.

Included in this publication are synopses of various PPP case studies where technical assistance from the World Bank Group, Asian Development Bank (ADB), the European Bank for Reconstruction and Development (EBRD), and other international financial institutions were utilized by APEC member economies on their PPP projects. The experiences described in these case studies highlight another important aspect of PPP implementation: **engaging the expertise of international organizations to provide technical assistance and transaction**

advisory services to help guide member economies – with little or no experience in PPPs – successfully conceptualize, design, finance, procure, and implement large infrastructure PPP projects. The stories offer valuable insights and new strategies applied in various infrastructure sectors that are both interesting and illuminating. These include the privatization of the Philippines' water and sewerage services system, the expansion of services of the Philippine National Kidney Transplant Institute hemodialysis center through PPP, and other examples highlighting international assistance to the Philippine government in implementing projects indicated in its aggressive PPP program. Vietnam's Phu My 2 Phase 2 project was also co-financed by the World Bank/International Development Corporation, the ADB, and Japan Bank for International Cooperation (JBIC). Other featured stories involve a variety of transaction advisory services from the International Finance Corporation on expanding power generation and transmission capacity in Central Java, Indonesia; improving health services through the construction and management of new hospitals in Mexico, as well as the construction of what is cited as the biggest wastewater treatment plant in the world. EBRD provided assistance to designing and structuring a loan to rehabilitate and extend the water supply and wastewater networks across Russia.

In sum, the experiences of APEC economies in this exercise demonstrate that while inadequate infrastructure continue to be a major development constraint in all economies, an increase in public-private sector participation will help improve the availability and quality of infrastructure and services—paving the path to sustained economic growth, enhanced competitiveness, and reduced poverty. Governments have also come to fully understand that in order to increase private investments in infrastructure, their capacity to promote, develop and implement sound PPP projects must be strengthened. These include creating an enabling environment for PPPs to thrive; strengthening capacities and skills in identifying and mitigating investment risks and developing more innovative, lower risk financing mechanisms; improving the legal and regulatory framework; enhancing information management systems; and establishing strong institutional set-ups and improving capacities to design, develop, bid, contract, implement, and evaluate PPP projects.

APEC economies must continually respond to the challenges in developing PPPs in a range of sectors, and in diverse economic, institutional, social, environmental and political conditions. APEC member economies must keep in mind the complexities—including benefits, risks, and drawbacks—to private sector involvement and improve its ability to develop contextually specific private sector solutions supplemented with the proper capacity building interventions. It again highlights the important role that governments can play in this process. It is hoped that the case study compilation, through facilitating experience sharing among APEC member economies, can serve as a useful reference and help enhance the capacity of member governments in delivering infrastructure PPP projects in the future.

FOREWORD

Recognizing the important role infrastructure development plays in unleashing economic growth potentials and promoting social development, the APEC Finance Ministers' Process (FMP) has long identified infrastructure investment and financing as a key area of cooperation. Public-Private-Partnership (PPP) has great potential in mobilizing private sector resources and know-how, and improving quality and efficiency of public services. As the host of the APEC FMP 2014, the Ministry of Finance of China launched the joint exercise of PPP case studies of APEC member economies, to facilitate experience sharing on implementing infrastructure PPP projects. This serves as a concrete action to implement the Multi-Year Plan on Infrastructure Development and Investment (MYPIDI) endorsed by APEC Leaders in 2013. The case studies are pragmatic contributions to the agenda of the APEC Leaders' Meeting this year on Strengthening Comprehensive Connectivity and Infrastructure Development.

In this collection, 55 case studies are contributed by participating APEC member economies as well as international financial institutions. The case studies cover infrastructure PPP project in transport, energy, water supply and wastewater treatment, and service sectors of 18 APEC member economies. The lessons and experiences derived from the case studies served as useful inputs in formulating the *Implementation Roadmap to Develop Successful Infrastructure PPP Projects in the APEC Region*, which will be an integral part of the Joint Ministerial Statement of the Finance Ministers' Meeting (FMM) in 2014, and a concrete contribution of the FMP to the APEC Blueprint on Connectivity and the APEC Leaders' Meeting.

In compiling the case studies, the finance ministries and related line ministries, PPP centers, private companies of APEC member economies as well as international financial institutions of Asian Development Bank, the World Bank Group (including the International Finance Company), Organization for Economic Co-operation and Development, and the APEC Business Advisory Council have provided strong support by recommending case studies of infrastructure PPP projects, and sharing lessons and experiences. Their generous contributions are gratefully acknowledged.

It is important to emphasize that the selection of PPP case studies is by no means exhaustive or definitive. But, it is our hope that through these experiences, future work on infrastructure PPPs in the APEC region can be guided, especially in the formulation of effective approaches that promote innovative public-private sector partnerships in infrastructure development and service delivery. We invite you to continue reading the succeeding pages of this book so we can share with you in more detail the success stories and pitfalls, learnings, and other innovative strategies from participating APEC economies that you may find applicable to your own PPP endeavors.

Yours sincerely,

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Australia (various PPP projects)

Macroeconomic context

Demand for infrastructure in Australia is expected to increase in the coming years due to the demographic challenges associated with population growth, ageing and greater urbanisation in major Australian cities. Infrastructure Australia estimates that within Australia there are currently over A\$80 billion in unfunded economic infrastructure projects that have been submitted to it for assessment.¹

The Australian economy is in the midst of a major transformation, moving from growth led by investment in resources projects to broader-based drivers of activity in non-resources sectors. This is occurring at a time when the economy has generally been growing below its trend rate and the unemployment rate has been rising.

Australian PPP framework

Australia is a Federal system of government, comprised of the Australian Government, eight States and Territories and 560 local governments.

Over the past 25 years, more than 130 PPP projects have been contracted in Australia by the national and state/territory governments.² These have been a mix of social and economic infrastructure.

Australia's Constitution provides that State and Territory governments are primarily responsible for delivering economic infrastructure, including roads, ports, railways, public transport, energy and resources projects. Accordingly, State/Territory governments deliver the great majority of PPPs. The Australian Government is directly responsible for major airports, communications, tertiary education and defence projects, but is also a major funding contributor to State/Territory government projects due to Australia's vertical fiscal imbalance³.

The Council of Australian Governments (COAG) is the peak intergovernmental forum in Australia. It comprises the Prime Minister plus the Premiers/Chief Ministers of each State/Territory and the President of the Australian Local Government Association. In 2008, COAG endorsed the National Public Private Partnership Policy and Guidelines. The National Guidelines are applied by all governments and are targeted at PPP projects greater than \$50 million. As a common law economy, specific legislation is not required to enable PPP investments.

In 2008, the Australian Government also created Infrastructure Australia as a statutory body to advise governments, investors and infrastructure owners on Australia's current and future infrastructure needs, mechanisms for financing infrastructure investments, policy, pricing and regulation. Infrastructure Australia also provides information on the impact of these issues on investment and efficiency of the delivery, operation and use of national infrastructure networks.

Key functions of Infrastructure Australia are:

¹ Office of the Infrastructure Coordinator, submission to the Productivity Commission draft report on Public Infrastructure, 2013

² A list of all PPPs contracted in Australia is available on Infrastructure Australia's website: http://www.infrastructureaustralia.gov.au/public_private/.

³ The Australian Government provides between 30 and 70 per cent of states/territories government revenue.

- publication of a national infrastructure priority list, based on assessments of the business cases for projects submitted to it by proponents;
- developing a 15 year plan mapping Australia's infrastructure needs;
- undertaking a 5 yearly audit of Australia's stock of infrastructure; and
- maintenance of the National PPP Policy and Guidelines.

Some State and Territory Governments have established dedicated PPP units within their public service to manage projects or provide whole-of-government oversight and advice to procuring agencies.

Australian PPP markets

Economic infrastructure

Economic infrastructure includes PPPs for the construction of transport, energy or telecommunication infrastructure. Economic infrastructure PPPs are structured as either:

- *Availability-payment based PPPs* where the government agrees to make payments to the private sector operator of the infrastructure based on key performance indicators being satisfied. In these PPPs, the government funds the infrastructure though it is being financed by the private sector; or
- *Demand-risk PPPs* where the private sector operator receives payment directly from the users of the infrastructure (for example through user tolls) rather than from the government. In these cases, the private sector operator is taking on the demand-risk associated with the infrastructure. The infrastructure is being funded by users rather than funded by the government.

Australia has leveraged significant amounts of private sector investment through demand-risk economic PPPs, with every \$1 of government funding for toll road infrastructure attracting around \$16 of private investment since the mid-1990s. However, since 2008 there has been a marked decrease in the number of toll road PPPs deals contracted and amount of private sector capital attracted per dollar of government funding.

Social infrastructure

Social infrastructure PPPs, such as those in health care, education and justice, attract considerable interest from institutional investors because of the low-risk, long-term nature of the projects. Institutional investors, along with construction companies, generally provide most of the equity for these PPPs with the remainder of the financing provided by a bank consortium. Social infrastructure PPPs make up the majority of PPPs contracted in Australia. Social infrastructure PPPs are availability-payment based.

Recent initiatives

In May 2014, COAG agreed to implement an asset recycling initiative. Under the initiative, the Australian Government has made \$5 billion available to State and Territory Governments that sell assets and reinvest the proceeds into new infrastructure. The Australian Government will provide grants to State and Territory Governments of up to 15 per cent of the value of the proceeds of an eligible asset sale that occurs prior to 30 June 2019, provided that construction of a new eligible infrastructure project has commenced.

The asset recycling initiative does not require that new infrastructure projects are procured as PPPs; however, it will increase the amount of new infrastructure investment being undertaken in Australia, with a consequential impact on Australia's PPP market.

Peninsula Link

I. PROJECT DESCRIPTION

a. Background

The Peninsula Link is a 27km un-tolled freeway, in the South-East of Melbourne, Victoria, Australia. The route for the freeway is illustrated in the map below.



b. Project rationale, objective and scope

The project objectives are:

- Reducing and improving travel time reliability
- Improving freight and commercial vehicle access within the corridor
- Reducing traffic congestion
- Delivering the project and related traffic information systems
- Retaining flexibility for future enhancement of the Peninsula Link
- Integrating the project with the existing surrounding transport network
- Providing flexibility to improve public transport services both within the project and on the surrounding traffic network.

Contingent liabilities for the Government by way of subsidies/viability gap financing

The project is an availability-payment based PPP. This means the project is funded using periodic payments from the government on the condition that the road is available for use and key performance indicators are satisfied. No financing was provided by the government.

II. STRUCTURE OF THE PROJECT

a. PPP Scheme

Under the project deed, the private sector partner is required to design, construct and finance the project and operate and maintain the project over a 25 year period.

b. Risk Allocation

Risk	Description	Primary Risk Bearer
Land acquisition	Risk of cost and delay associated with acquiring land identified at contractual close.	Government
Environmental	Risk of delays resulting from difficulties in obtaining environmental approvals.	Government
Construction costs and delays	Risk of cost and delay if caused by defined extension events that prevent construction milestones being met and total costs being different from anticipated.	Shared depending on the cause of the event.
Traffic flow	Risk that traffic flow, vehicle mix and volume on the freeway is different from what is forecast	Government
Fitness for purpose	Risk that the works, project scope and requirements, the project plans and manuals are not fit for purpose	Private sector
Industrial relations	Risk of delay caused by industrial action (other than that resulting from an act or omission of the State) which prevent construction milestones being met or total cost being different from anticipated.	Private sector
Financing	Risks associated with the availability and cost of finance.	Private sector

III. PROJECT ANALYSIS

a. Inception and project preparation

Through 2008 and early 2009, as part of a business case for the project, an assessment of alternative procurement strategies for the delivery of Peninsula Link was undertaken which considered a range of procurement and funding options. The government funded design and construction procurement option was used as the benchmark against which alternative procurement options were assessed.

b. Feasibility and procurement

The procurement timeframe for the project is outlined below:

- 31 March 2009: Invitation for expressions of interest issued (five respondents)
- 24 June 2009: Request for proposals issued (three short-listed)

- 20 October 2009: Bids submitted
- 9 November 2009: Two bidders short-listed
- 7 December 2009: Final bids received
- 20 January 2010: Contract close
- 8 February 2010: Financial close

Tenders were evaluated using a public sector comparator, which is an estimate of the risk-adjusted, whole-of-life cost of the project if alternatively delivered by the government. The preferred proponent provided a bid that was 1 per cent lower than the public sector comparator.

c. Development

The private sector partner is responsible for all aspects of design, construction, finance and commissioning of Peninsula Link including:

- Coordination and management of the design development process
- Liaising with all relevant government agencies and utilities providers and installation and maintenance works to ensure the provision of utility and external infrastructure to the site as required for the project
- Implementing an appropriate communications strategy to engage with the community and various stakeholder groups

d. Delivery

The private sector partner is responsible for the provision of the following services for Peninsula Link throughout the 25 year operating phase of the project, in accordance with the performance standards specified in the project scope and requirement standards and the project deed:

- Operation and maintenance of the freeway to a pre-agreed standard, including liaison and interface with other road network operators and performance levels relating to road and traffic management and traffic incident management
- Provision of traffic management services, including proactive measures to manage traffic flows and performance, and the provision and use of intelligent traffic information systems to maximise road network efficiency, safety and user information
- Safety and environmental management, including adherence to applicable approvals, laws, guidelines and standards.

e. Exit

Starting from three years prior to the expiry of the operating phase (25 years), the government will carry out joint inspections of the freeway and the maintained off-freeway facilities to determine the maintenance and repair work required to achieve the asset condition required for handover. At the end of the operating phase, the freeway and the maintained off-freeway facilities will revert to the government at no cost.

IV. FINANCING INFORMATION

a. Project cost and financing sources

The delivery cost of the project was A\$849 million (in 2010 dollars).

The financing for the project comprise senior debt and equity as follows:

- Senior debt comprises a capitalising construction facility which converts to a term loan on commencement of the operating phase, with a combined loan term of seven years from financial close
- Equity provided by Bilfinger Berger Project Investments and clients of Access Capital Advisers.

b. Economic and financial IRR, NPV and DE ratio

The debt gearing of the project was 85.9 per cent with the remaining capital provided by equity.

V. CURRENT STATUS AND KEY IMPLEMENTATION ISSUES

The road opened for traffic on 17 January 2013 and is now in the operational phase.

VI. ROLE OF PPP UNIT/CENTRE

The project is being delivered using the framework developed by Partnerships Victoria. The Partnerships Victoria Framework is designed to utilise private sector expertise in designing, financing, building and maintaining infrastructure projects. The Partnerships Victoria framework consists of the National PPP Policy Guidelines and Supplementary Partnerships Victoria requirements.

This project pre-dates the creation of the Infrastructure Australia. However, projects of this nature may now be submitted to Infrastructure Australia to determine whether they are included on the Infrastructure Australia's priority list and would also form part of the national PPP pipeline maintained by Infrastructure Australia.

Further information about the project is available from the Partnerships Victoria website:

<http://www.dtf.vic.gov.au/Infrastructure-Delivery/Public-private-partnerships/Projects/Peninsula-Link>

VII. KEY LESSONS LEARNED

The Victorian Auditor-General's Office released in June 2011 the audit on examining how effectively VicRoads and the Linking Melbourne Authority (LMA) had managed a sample of major road projects, including the Peninsula link.

The audit identified a number of shortcomings around the projects, in particular that LMA did not inform decision makers whether the Peninsula Project should proceed and how it should be procured. Therefore assurance was not guaranteed on whether procurement represents value for money. In particular the estimates of the economic benefits were unreliable and this uncertainty was not adequately communicated to decision makers. Other weaknesses around procurement decisions were:

- The way the costs of state delivery were estimated as represented by the Public Sector Comparator (PSC)
- Did not test the sensitivity of the relative costs of the PSC and the PPP bids to small changes in the PPP discount rate.

The report went on to make a number of recommendations:

- Improve the quality assurance of the transport modelling and the calculation of the economic benefits

- Improve the quality assurance applied in estimating and revising the public sector comparator cost
- Better inform decision makers about the sensitivity of the comparison of the PPP and PSC costs to small changes in the PPP discount rate
- Document a plan to measure outcomes as part of the project development

Further information on the lessons learned can be obtained:
<http://www.audit.vic.gov.au/publications/2010-11/20110601-Major-Roads.pdf>

Project Case Study: Victorian Desalination Project (Water infrastructure)

I. PROJECT DESCRIPTION

a. Background

The project is a seawater desalination plant. It will supply up to 150 gigalitres (GL) of water a year to Melbourne, Geelong and, via other connections, South Gippsland and Western Port towns, with the capacity to upgrade to supply up to 200GL in the future. The project's production capacity represents approximately one third of Melbourne's annual water usage.

b. Project rationale, objective and scope

The overarching objective of the project is to provide water security for Victoria's growing population and economy in the face of drought and the challenge of climate change.

c. Contingent liabilities for the Government by way of subsidies/viability gap financing

As this project reached financial close around the time of the global financial crisis, some financing support was provided by the government. In particular:

- The government agreed to act as a lender of last resort if the project debt, which was to be syndicated (slightly under half the senior debt) was not completely sold down. This facility was not called on and has now expired as the syndicated debt was completely sold down.
- The government agreed to share in some of the risks associated with refinancing including providing additional support if refinancing is not available because of a significant market dislocation.

II. STRUCTURE OF THE PROJECT

a. PPP Scheme

The project is an availability-payment based PPP for a term of 30 years and 1 month. The government makes payments to the private sector partner based on the volume and quality of water produced by the plant.

b. Risk allocation

Risk	Description	Primary Risk Bearer
Land acquisition	Risks associated with acquiring interests in land required for the project	Government
Key approvals	Risk of delay in obtaining specified key approvals for the project	Government
Design and construction	Risk that the design, construction and commissioning of the project cannot be completed on time or to budget or that the project does not meet the governments output specification resulting in delayed or reduced service.	Private sector
Operation,	Risk that the requirements for operation,	Private sector

maintenance and repair	maintenance and report to meet the government's specification are different or cost more than anticipated.	
Industrial action	Risk of all strikes or industrial action (except industrial action resulting from wrongful act or omission of the government).	Private sector
Asset ownership	Risks associated with the maintenance and ownership of assets including the requirement to maintain assets in order to deliver the project services and that project assets do not have the required asset lives.	Private sector
Financing	Risk of movements in interest or foreign rates after financial close	Shared between the government and private sector

c. Special features

As this project reached financial close around the time of the global financial crisis, some financing support was provided by the government. In particular:

- The government agreed to act as a lender of last resort if the project debt, which was to be syndicated (slightly under half the senior debt) was not completely sold down. This facility was not called on and has now expired as the syndicated debt was completely sold down.
- The government agreed to share in some of the risks associated with refinancing including providing additional support if refinancing is not available because of a significant market dislocation.

III. PROJECT ANALYSIS

a. Feasibility and procurement

The procurement was progressed using the following stages:

- Expressions of interest: evaluation of expressions of interest submitted by consortia seeking to participate in the tender process.
- Initial proposals: evaluation of initial proposals submitted March 2009 in response to the government's request for proposals.
- Amended proposals: based on consultation and community feedback, the government announced its decisions to prefer an underground power supply solution in April 2009. Following that decision, the government sought and then evaluated amended proposals from shortlisted bidders which encompassed and priced an underground power solution.
- Final proposals: due to the volatility in the financial markets over the tender period, the government sought final proposals from shortlisted bidders in July 2009 with firm financing commitments, to optimise the risk allocation and debt/equity solutions available for the project.

Tenders were evaluated using a public sector comparator, which is an estimate of the risk-adjusted, whole-of-life cost of the project if delivered by the government. The preferred proponent provided a bid that was 14.1 per cent lower than the public sector comparator. The project reached contractual close with the preferred proponent on 30 July 2009 and financial close on 2 September 2009.

b. Development and delivery

The main obligations of the private sector entity under the project documents include:

- To procure financing for the project
- To design, construct and commission the desalination plant, transfer pipeline and the high voltage alternating current (HVAC) transmission line
- To operate maintain and repair the desalination plant and transfer pipeline for the project, and handover that infrastructure to the government at the end of the project term
- To handover the HVAC transmission line to the government upon completion of reliability testing
- To offset 100 per cent of the project's energy use during the operating and maintenance phase with renewable energy.

c. Exit

At the end of the project term, the private sector partner is required to hand over the desalination plant and associated infrastructure to the government at no cost. The government may require the private sector partner to carry out joint inspections with the government up to three years prior to the end of the project term.

IV. FINANCING INFORMATION

a. Project cost and financing sources

The cost of the project is A\$5.7bn (in 2009 dollars).

The financing package for the project included:

- Senior commercial debt in the form of nominal bank debt
- Mezzanine debt in the form of nominal bank debt
- Government supported debt in the form of the government syndication guarantee facility (now expired)
- A mix of sponsor and third party equity investment
Economic and financial IRR, NPV and DE ratio
The debt to equity ratio for the project was 83:17.

V. CURRENT STATUS AND KEY IMPLEMENTATION ISSUES

a. Current status

The Victorian Desalination Project achieved final commissioning completion on 17 December 2012. The plant is now capable of supplying up to 150 GL of water a year to Melbourne, Geelong and via other connections, South Gippsland and Western Port towns.

VI. ROLE OF PPP UNIT/CENTRE

The project is being delivered using the framework developed by Partnerships Victoria. The Partnerships Victoria Framework is designed to utilise private sector expertise in designing, financing, building and maintaining infrastructure projects. The Partnerships Victoria framework consists of the National PPP Policy Guidelines and Supplementary Partnerships Victoria requirements.

This project pre-dates the creation of the Infrastructure Australia. However, projects of this nature may now be submitted to Infrastructure Australia to determine whether they are included on the Infrastructure Australia's priority list and would also form part of the national PPP pipeline maintained by Infrastructure Australia.

VII. KEY LESSONS LEARNED

Commencement of the desalination plan was delayed by approximately 12 months from the originally planned December 2011.

The desalination plant was funded through availability payments from the Victorian Government. In turn, the Victorian Government allowed Melbourne Water Corporation (the government owned water wholesale company) to recover revenue to cover the expected costs of the availability payments from water retailers. Price determinations for the water retailers are made by the Essential Services Commission on a 4 yearly basis. The determination covering the expected initial operations of the desalination plant was made in mid-2009 (covering the period July 2009 to June 2013). Due to the delay in commencement of the plant, the payments collected from consumers were not needed and had to be refunded through a regulatory process run by the Essential Services Commission.

Further information on the refund process is available on the Essential Services Commission website at: <http://www.esc.vic.gov.au/Water/Return-of-the-Desalination-Over-Collection>.

The Victorian Auditor General's latest comments on the desalination plant are included in its [Report on the Annual Financial Report of the State of Victoria, 2012-13](#).

Further information about the project is available from the Partnerships Victoria website: <http://www.dtf.vic.gov.au/Infrastructure-Delivery/Public-private-partnerships/Projects/Victorian-Desalination-Plant>

Project Case Study: Rolling Stock PPP (Rail Infrastructure)

I. PROJECT DESCRIPTION

a. Background

The PPP is for the design, manufacturing and subsequent maintenance of train carriages and a train maintenance facility.

b. Project rationale, objective and scope

The objective of the PPP is to replace all of the 498 non-air-conditioned CityRail carriages in Sydney and provide additional rolling stock to accommodate forecast growth in CityRail patronage.

II. STRUCTURE OF THE PROJECT

a. PPP Scheme

This is an availability-payment based PPP for a term of 30 years. The government will provide specified payments during the delivery stage of the project and performance-based monthly payments by RailCorp throughout the rest of the project.

b. Risk allocation

The private sector partner assumes the following risks:

- That the projects costs might be higher than expected
- That the time required to meet the delivery phase obligations might be greater than expected
- That the number of train carriages manufactured might prove insufficient for it to satisfy its availability obligations
- That changes to rail patronage might mean the maintenance requirements for the trains are greater than estimated
- That the private sector partner might have inadequate provisions for the work and materials required to meet its obligations

The government assumes risks for native title claims over the construction site and archaeological and heritage artefacts discovered on or under the construction site.

III. PROJECT ANALYSIS

a. Feasibility and procurement

On 31 August 2004, RailCorp issued a request for expressions of interest in the financing, design, manufacturing and maintenance of a sufficient number new carriages to ensure approximately 125 four-carriage "sets" would be available at all times for CityRail services.

Responses to the request for expressions of interest were received, by the closing date of 13 October 2004, from 6 consortia, with revised responses submitted by 2 February 2005. On 1 March 2005, RailCorp announced that four of the original 6 proponents had been shortlisted to submit detailed proposals for the single-deck carriages and that two of them had also been shortlisted for the double-deck carriages as well.

On 20 May 2005, RailCorp issued a request for detailed proposals to the shortlisted proponents. Detailed proposals were received by 10 October 2005. Based on the analysis of the detailed proposals, on 4 May 2006, the government announced that they would not proceed for the procurement of single-deck trains. However, RailCorp would seek final proposals from the two shortlisted double-deck train proponents.

On 31 May 2006, RailCorp invited both of these proponents to submit final committed proposals for a sufficient number of new double-deck carriages to ensure 72 double-deck eight-carriage train sets. This was subsequently revised to at least 78 sets. The closing date for these final committed proposals was 10 August 2006.

On 10 November 2006, the government announced the selection of Reliance Rail as the successful proponent for the project. Execution of the final contract was on 5 December 2006 and financial close took effect on 7 December.

Tenders were evaluated using a public sector comparator, which is an estimate of the risk-adjusted, whole-of-life cost of the project if delivered by the government. The preferred proponent provided a bid that was 30 per cent lower than the public sector comparator.

b. Development and delivery

The main development and delivery obligations on the private sector entity are:

- Private sector financing, design, manufacturing and commissioning of 626 new double-deck carriages providing 78 new trains and two spare carriages for CityRail services in metropolitan Sydney, with the first of these trains being introduced into service by April 2010 and all of the carriages being operational by September 2013.
- Private sector financing, design, construction manufacturing and commissioning of a new maintenance facility for the trains in Auburn and new train simulators for the training of RailCorp drivers and guards.
- At least 72 of the new trains (and more for special events) available for RailCorp's CityRail services everyday over a period of about 30 years.
- Private sector maintenance, cleaning, repair and refurbishment of the new trains, maintenance facility and train simulators, to RailCorp-specified standards, throughout their operational periods.

c. Exit

The main exit obligations on the private sector entity are:

- Decommissioning of the trains, and/or handing over of some or all of the trains to RailCorp, at the end of their operational periods.
- Handing over of the train maintenance facilities to RailCorp at the end of the operational period.

IV. FINANCING INFORMATION

a. Project cost and financing sources

The cost of the project is A\$3.6 billion (Estimated cost of building the new trains, the maintenance facility and the simulators at the time of the contract award).

Equity financing for the project was provided by Downer EDI, AMP, ABN AMRO, REST Super and Babcock and Brown.

b. Debt financing was provided in the following forms:

- A senior secured term loan provided by Westpac, National Australia Bank, Mizuho Bank, Sumitomo Mitsui Banking Corporation and Citigroup.
- Asset backed bonds underwritten by ABN AMRO.

c. Economic and financial IRR, NPV and DE ratio

The debt-to-equity ratio was 90:10.

V. CURRENT STATUS AND KEY IMPLEMENTATION ISSUES

a. Current status

The Auburn Maintenance Centre was completed on 18 June 2010 and the Crew Training Simulators were completed on 31 August 2010. The first train entered passenger service on 1 July 2011.

VI. ROLE OF PPP UNIT/CENTRE

This project was procured in accordance with the *Working with Government Guidelines for Privately Financed Projects* developed by NSW Treasury. These guidelines were the pre-cursor to the National PPP Policy and Guidelines released in 2008.

This project pre-dates the creation of the Infrastructure Australia. However, projects of this nature may now be submitted to Infrastructure Australia to determine whether they are included on the Infrastructure Australia's priority list and would also form part of the national PPP pipeline maintained by Infrastructure Australia.

Further information about the project is available from the NSW Public Private Partnerships website:

http://www.treasury.nsw.gov.au/ppp/nsw_projects/projects_which_have_been_awarded/rail/replacement_of_railcorps_electric_passenger_rollingstock

Autoroute 25 - Montréal, Québec, Canada

I. PROJECT DESCRIPTION

a. Background

The Autoroute 25 (A-25) Highway Project involved the completion of a 7.2km stretch of highway between Henri-Bourassa Boulevard in Montréal and the A-440/A-25 interchange in Laval.

Planning for the A-25 dates back to the early 1970s in the context of planning and developing major highway infrastructure to serve the Montréal Metropolitan Area and to improve connections with surrounding regions.

b. Project rationale

The absence of a continuous link between Montréal and Laval required users to take a 7km detour via the Pie-IX Bridge or an 11km detour via the Charles-de-Gaulle Bridge. The result was a major overflow of traffic onto the Autoroute 40 and the local road network, as well as the deterioration in the quality of life of residents in Montréal-North, Anjou, and Rivière-des-Prairies.

Furthermore, demographic growth projections forecasted strong economic and demographic growth in Laval, the Laurentides and Lanaudière regions (the areas north of Montréal and Laval), and in the Anjou/Mercier economic hub.

The completion of the A-25 Highway Project enabled commuters, transit, and truck traffic to travel across the northeastern section of the metropolitan region and avoid detours. Completing the highway link also has the added benefit of fostering economic development in the eastern section of the Montréal Metropolitan Area.

c. Rational for public sector involvement in the project

Transportation falls under the provincial sphere of responsibility. There were no proposals by the private sector to complete the project without public sector involvement.

d. Rational for selecting PPP as the procurement method

Several studies were undertaken to determine the most appropriate procurement method. The results of these studies enabled the *Ministère des transports du Québec* (the provincial transport department) to conclude that completing the highway link through a PPP would offer more benefits than a traditional procurement.

A PPP procurement model was selected for a number of reasons, including:

- transfer of upfront financing costs;
- overall project cost certainty;
- transfer of construction risk to the private sector; and
- transfer of maintenance risk for the term of the contract.

This project was evaluated for its Value for Money (VfM). It was expected to generate a lower overall net present cost to taxpayers compared to a traditional delivery method. The VfM results demonstrated that the PPP approach provided an estimated value savings of approximately \$226 million, in comparison to the traditional delivery approach. In particular the estimated savings are generated from significant transfer of risks and asset management obligations to the private partner throughout the lifecycle of the project.

e. Objectives

User objectives:

- Reduce daily travel time
- Reduce vehicle maintenance and operating costs
- Increased travel comfort and improved safety
- Maintaining the level of service below traffic congestion levels, even during rush hour

Community objectives:

- Reduce pollution caused by vehicles
- Support economic development of east-end Montréal and Laval
- Maximise the economic benefits for Québec generated by the construction and operating expenditures related to the project

f. Scope

This four (4) lane highway included interchanges, overpasses, and a 1.2km bridge across Rivière des Prairies. The bridge is comprised of six (6) lanes of traffic (three in each direction), and a multifunctional path to enable pedestrians and cyclists to cross freely.

The A-25 Highway Project also incorporates preferential measures for public transit, such as reserved bus lanes in Laval and Montréal.

An electronic toll system is in place for users of the bridge only. The A-25 Highway Project was the first transportation PPP in Québec and the first electronic tolling system in the province. "Before and after" images of the project can be found here:

http://www.a25.com/gestion/files/PwP_consultations_publicques.pdf

g. Key Outputs

The key output of the PPP delivery model in this case is a high quality asset delivered ahead of schedule, with clear, formalized expectations for ongoing operations and maintenance. In this Project, the private partner is required to maintain the asset in accordance with defined performance standards specified in the PPP contract over a period of 35 years. The Availability Payments are conditioned on performance and service quality. If the standards are not met, the province is entitled to deduct amounts from the scheduled payments to the private partner. Holdback provisions at the end of the concession, or maintenance, period further ensure commitment to maintenance over that period.

h. Project Milestones

Schedule	Activity
22 December 2005	RFQ issued
3 March 2006	Deadline for RFQ submission
31 March 2006	Announced qualified respondents
20 July 2006	RFP issued
30 March 2007	RFP closed
9 June 2007	Announced preferred proponent
27 June 2007	Government approval received
13 September 2007	Signed Partnership Agreement and completed financial closing
October 2007	Partnership Agreement made public
September 2011	Operational
February 2008	Commencement of construction
May 2011	In operation
2042	Concession period

i. Resources / existing capacity of the public and private partners

The Province of Québec began procuring public infrastructure through the PPP model in the 1990s. The A-25 Highway Project was procured by *l'Agence des partenariats public-privé du Québec*, the province of Québec's PPP agency at the time. Due to a recent reorganisation within the Government of Québec, PPPs are now procured through the *Société québécoise des infrastructures*.

The agency kept transaction costs for this Project lower by leveraging its previous experience with the P3 procurement and contracting model.

j. Stakeholders

Procuring Authority: The Province of Québec

Advisors:

1. Funders Legal Advisor	• Blake, Cassels & Graydon LLP
2. Grantor Financial Advisor	• PricewaterhouseCoopers (PwC)
3. Grantor Legal Advisor	• Fasken Martineau
4. SPV Financial Advisor	• Societe Generale
5. SPV Insurance Advisor	• Moore-McNeil
6. SPV Legal Advisor	• Stikeman Elliott

- Funders: The Province of Québec
- Provincial Government: Ministère des transports du Québec
- Private Partners: Concession A25 (Macquarie Group, Kiewit-Parsons, Miller Paving, TransCore)
- Other consulted stakeholders:
 - Transfert Environnement
 - Open public consultation

k. Entity for procuring the PPP

The Province of Québec

l. Liabilities

Not applicable

m. Externalities influencing the project

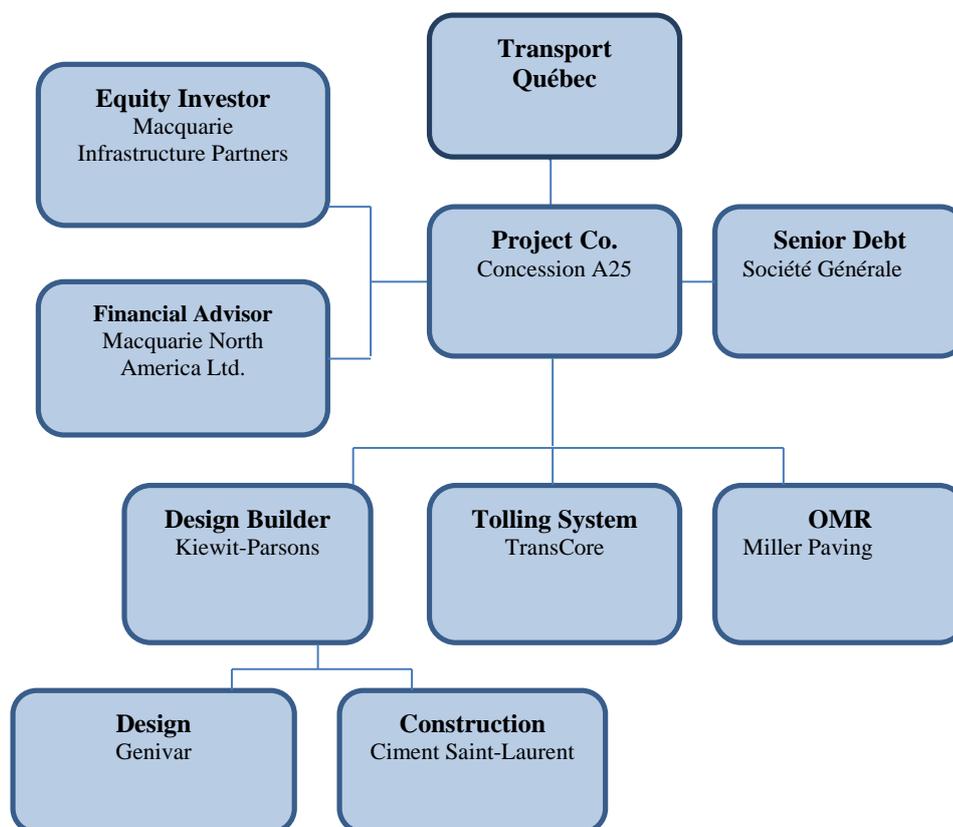
The design of the bridge had to take into account a freshwater sturgeon habitat that is located in the deep portion of the Rivière des Prairies.

n. Main project risks

Please see Section II (b).

II. STRUCTURE OF THE PROJECT**a. PPP Scheme**

The private sector contractor, Concession A25, is responsible for the Design, Build, Finance, Operate, and Maintain (DBFOM) of the Project over a 35 year period.



Concession A25 is the legal entity which forms the private partner. The Project Agreement, was signed by Concession A25, a wholly owned indirect subsidiary of Macquarie Infrastructure Partners. Other team members were considered “participants” for the purposes of the bidding process; however, they are now sub-contractors.

b. Outline of the key risk allocation

Risk Type	Public Sector	Private Sector
Obtain of environmental permits and authorisations	√	√
Cost overruns & delays		√
Selecting toll technology		√
Contaminated soil - undocumented	√	
Contaminated soil - documented		√
Inflation risk		√

Benchmark interest rate fluctuation risk		√
OMR of the structures and the electronic tolling system		√
Condition of assets upon hand-over		√
Set-up of the tolling system		√
Collection of tolls and toll revenue risk *	√	√

* The toll collection risk is mainly the responsibility of the private partner, but the government has mitigated that risk somewhat by including a provision for revoking the vehicle permit of those not paying tolls owed.

c. Revenue

Toll revenue from vehicles using the bridge are collected by Concession A25 on behalf of the Province, and are remitted on a daily basis in a dedicated fund. The concession is guaranteed a minimum revenue in the event that toll revenues are below a fixed level while the traffic lanes are available and the electronic toll system is reliable. This guarantee amounts to approximately 60% of the revenue estimated by the Province.

Revenue in excess of the guarantee is kept by the concession up to approximately 120% of the revenue estimated by the Province. Revenue beyond this threshold is shared equally between the government and the concession.

d. Explain how fiscal (government) risks were identified and managed.

Please see Section IV (f) below.

e. Special features

The innovative aspect of the A-25 Project is the method of compensation to the private partner. The Gradual Toll Increase System allows the private partner to increase tolls beyond the maximum rate allowed when traffic hits a certain threshold. The higher tolls discourage drivers from using the bridge, and thus reducing congestion.

Furthermore, the highway was built in such a way as to allow the addition an extra lane of traffic in each direction should it be required in the future.

III. PROCESS ANALYSIS

a. Inception and Project Preparation

Since the 1970s, the completion of the A-25 Highway was the topic of several studies. The government tested the project against the principles established in its Overall Policy for Public-Private Partnerships, of which the five principles are:

1. Justified and confirmed need
2. Emphasis on specific results rather than on the methods of attaining them
3. Financially feasible project
4. Best value for the public funds invested
5. Optimal risk allocation

The government authorized the launch of the process to select a private partner and carry out the project as a PPP through a number of laws and regulations. The two main laws governing the development and formation of the partnership are *An Act Respecting Transport Infrastructure Partnerships* and *An Act Respecting the Agence des partenariats public-privé du Québec*. Then, by passing supplementary regulations through Orders-in-Council 1245-2005 and 659-2006, the government authorized the Minister of Transport to launch and carry out the selection process for the execution of the project as a PPP.

Before the partner selection process began, the project was publicized through media interviews at national and international PPP conferences.

b. Feasibility

The Province and its advisors carried out an analysis of each procurement option, based on key criteria for the Project. These criteria included consideration of a delivery option's ability to transfer and mitigate risk, and deliver value for money. Based on these criteria, the DBFOM procurement methodology was seen to deliver the best results for the Province.

c. Procurement process

The strategy leading to the selection of the proposal and the private partner involved several steps designed to ensure robust competition among respondents, with a view of completing the project at the lowest possible cost while adhering to the Provinces' requirements. The selection of the best proposal took place in three main steps under the supervision of a fairness monitor:

1. Request for Qualifications (RFQ)
2. Request for Proposals (RFP)
3. Finalization of the Partnership Agreement

A Fairness Monitor was retained to act as an independent observer. The Fairness Advisor also reported as to whether the processes and decisions were fair, reasonable, and consistent with the procurement process laid out for the project.

There were 6 assessment criteria with scores ranging from 10 to 20 points for each one. The three respondents with the most points above 60 were invited to move onto the next stage, the RFP.

1. Financial capability and financing ability
2. Ability in project management
3. Ability in design

4. Ability in management of the environment
5. Ability in construction
6. Ability in operations, maintenance and rehabilitation

The three qualifiers submitted their response to the RFP in July 2006. The selection committee chose the lowest cost and technically compliant bid by Concession A25.

d. Implementation

The Province of Québec, through the Minister of Transport, was responsible for the overall implementation and supervision of the project.

e. Development

Please see Section I (h and i) and Section III (c).

f. Delivery

The Project was delivered in 5 parts:

1. The construction of highway on-ramps at the intersection of highways 25 and 440.
2. The construction of the A-25 Highway
3. Construction of the lanes reserved for public transit
4. Design and construction of the bridge
5. Obligations during the operations and maintenance phase related to sound attenuation, air quality, and visual appeal of the highway.

g. Exit

Construction was completed in 2011, and the project is now in the concession period, during which maintenance is ongoing. The Project Agreement is in effect until the end of the concession period in 2042.

h. Calendar of events

Please see section I (h) and (i).

IV. FINANCING INFORMATION

a. Project Cost and Financing Sources

Total financing: \$570 million through a combination of equity, senior debt, and government payments

Macquarie Infrastructure Partners provided \$220 million in equity funding and Société Générale provided senior bank debt funding of \$270 million required to complete the construction.

The 35 year Project Agreement is performance based with deductions for non-performance and non-availability. There is also a provision for an end-of-term holdback. The innovative “Gradual Toll Increase System” provides for minimum revenue protection and up-side sharing of toll revenue. The system was designed to meet a condition of the environmental approval to keep traffic volumes to a maximum of 68,000 vehicles on average per day.

This Project Agreement provides for the following terms:

- The term of the agreement is 35 years, which includes four (4) years for construction and 31 years for operation, maintenance, and rehabilitation activities.
- The private partner was responsible for the design and construction of structures, related risks, and commissioning the infrastructure.
- The private partner, during OMR, must operate the infrastructure in accordance with the agreement. Failure to respect the OMR requirements may give rise to deductions for non-availability and non-performance.
- The private partner is responsible for financing the activities.

In exchange for carryout these activities, the government of Québec will:

- Pay the private partner a total amount of \$80M paid at certain stages during the design-construction phase.
- Pay the private partner \$14.3M annually for 31 years (availability payment).
- Pay the private partner remittances linked to the toll revenues.
- Monitor the agreement for compliance and non-performance. The private partner is required to report events and provide data and information on a periodic basis.

b. Financial internal rate of return

The financial rate of return for Concession A25 is not public information.

Concession A25 will be compensated for all risks and responsibilities assumed under the Partnership through a combination of construction payments, availability payments, and remittances linked to toll revenues.

Please see Section I(d) for Value for Money analysis results.

c. Changes to the financial arrangements

No refinancing occurred.

d. Key financing issues faced

No financing issues were faced.

e. Multilateral or commercial guarantee or insurance instruments

Detailed requirements for insurance instruments were finalized in the Project Agreement, which can be found here:

http://www.sqi.gouv.qc.ca/gestionprojet/documentation_projets/Transports/A25/EP/EP.pdf

f. key elements of counterparty risk, minimum commitment levels and how such risk is addressed in the PPP contract.

Risk is allocated within the Project Agreement at Annex 19. The Province's private sector advisors developed a thorough risk register that contained the risks applicable to the Project and to quantify the impact of these potential risks. Please see table in Section II (b) for risk allocations.

The Project Agreement can be found here:

http://www.sqi.gouv.qc.ca/gestionprojet/documentation_projets/Transports/A25/EP/EP.pdf

V. CURRENT STATUS AND KEY IMPLEMENTATION ISSUES

a. Current Status

The A-25 highway has been in operation since 2011 and is currently in its operations and maintenance phase.

b. Implementation Issues

There were no implementation issues.

VI. ROLE OF PPP UNIT/CENTER

The A-25 Highway Project was procured by l'Agence des partenariats public-privé du Québec, the province of Québec's PPP agency at the time. Due to a recent reorganisation within the Government of Québec, PPPs are now procured through the Société québécoise des infrastructures (SQI). This organization was created in November 2013 as a result of a merger between Infrastructure Québec and Société Immobilière du Québec. As a large organization with over 600 people, the SQI systematically evaluates all public infrastructure projects over \$50M for P3 viability. The organization has developed significant expertise on social infrastructure, roads, and hospitals.

As the A-25 Project did not receive funding from the P3 Canada Fund, PPP Canada was not involved in the procurement of the project, nor did it play an advisory role.

VII. KEY LESSONS AND OBSERVATIONS

a. Observations

From the public sector

The importance of having a "champion" to support the project throughout its various stages.

It is important to keep proper balance between being flexible enough to include new ideas in technical proposals and meeting government standards designed to protect the public. This ensures that full advantage of private sector innovation is taken.

Maintaining the confidentiality of negotiation. Official and confidential communication between respondents and government officials during the selection process is necessary for both public and private sectors to understand each other's needs and concerns.

The A-25 Project benefited from the lessons learned from other jurisdictions as it helped develop and manage the selection process.

From the private sector

Processes should be structured so that there are objective evaluation criteria and include a Fairness Advisor who participates in all interactions between the province and bidders.

Standardisation of documentation helps reduce a bidder's costs.

Procurement processes should provide considerable communication opportunities.

b. Lessons

The opportunities during the RFP process to examine the Partnership Agreement, and the other measures implemented, minimized the negotiations required after the government's approval of the choice of the preferred proponent, and significantly reduced the time required to achieve financial close. This approach had a number of benefits:

1. It gave the government the opportunity to consider the concerns and suggestions of the proponents and to adapt the Partnership Agreement to a business environment and to the marketplace.
2. It gave the proponents the opportunity to integrate their proposals with the government's requirements set out in the Partnership Agreement.
3. It made it possible for financial closing to be reached in less than 90 days.

Chief Peguis Trail Extension - Winnipeg, Manitoba, Canada

I. PROJECT DESCRIPTION

a. Background

The Chief Peguis Trail Extension (the Project) is the second phase of construction of the Chief Peguis Trail, an existing, four-lane divided urban roadway which forms part of the City of Winnipeg's Inner Ring Route. The 3.7 kilometer east-west extension runs between Henderson Highway and Lagimodiere Boulevard. The design of the roadway allows for expansion to six lanes in the future.

The route of the Chief Peguis Trail was long ago foreseen as part of a regional transportation network first shown in the 1968 Winnipeg Area Transportation Study. The route alignment was first developed in a 1982 *Preliminary Design Study* by UMA Engineering Ltd. Opened in 1990, Phase I of the Chief Peguis Trail comprised a short section of roadway crossing the Red River between Main Street and Henderson Highway. This project, Phase II, extends that route and incorporates other active transportation features.

The Project supports the city's long range policy plan, *Plan Winnipeg 2020 Vision*. In particular, it fulfills the following planning mandates:

- Integrating needs of pedestrians and cyclists into the planning and design of urban transportation facilities;
- Designating truck routes that ensure the safe and efficient movement of goods and the protection of existing neighbourhoods;
- Investing strategically in new infrastructure;
- Extending or adding to the existing cross-town and circumferential street system.

b. Project rationale

This project creates a key new connection between two of Winnipeg's major north-south routes, allowing vehicles and truck traffic to avoid over used residential streets. It also provides multi-use paths, a multi-use bridge, a grade separation at Rothesay Street, intersection improvements and other amenities to encourage active transportation such as bicycling, in-line skating, walking and running.

The neighbourhoods surrounding the project suffered from the absence of an east-west connection, both for vehicles and trucks. This lack of any east-west arterial streets in the North Kildonan neighbourhood led to high traffic volumes on residential streets between Henderson Highway and Lagimodiere Boulevard, with resulting vehicular emissions and safety impacts. With traffic volumes on Chief Peguis Trail of approximately 26,000 vehicles per day, new road infrastructure was needed to relieve negative impacts on communities and provide greater choice in transportation modes.

c. Rationale for public sector involvement in the project

The provision of local road infrastructure falls within the responsibility of provincial and municipal jurisdictions. The Project addressed the problem of overflow vehicle and truck traffic onto residential streets through the extension of this roadway, while also creating new active

transportation options. There were no proposals by the private sector to complete the project without public sector involvement.

The City owns the right of way, the roadway and structures at all times. The City provides the private partner with non-exclusive access to and use of relevant lands for the purposes of executing the Project, via a license granted in the Project Agreement.

d. Rationale for selecting PPP as the procurement method

A PPP procurement model was selected for a number of reasons, including:

- transfer of upfront financing costs;
- overall project cost certainty;
- transfer of risk to the private sector; and
- transfer of maintenance risk for the term of the contract.

This project was evaluated for its Value for Money. It was expected to generate a lower overall net present cost to taxpayers compared to a traditional delivery method. Two Value for Money (VfM) assessments were carried out during the business case development stage and financial close of the project. The final VfM results demonstrate that the PPP approach provides an estimated value savings of approximately \$31 million, in comparison to the traditional delivery approach. In particular the estimated savings will be generated from significant transfer of risks and asset management obligations to the private partner throughout the lifecycle of the project.

e. Objectives

A number of different objectives were targeted through the Project:

- A safe, efficient, direct link from the Kildonan Settlers Bridge to Lagimodiere Boulevard;
- An improvement in travel times as well as an alleviation of congestion on residential streets in North Kildonan;
- Safety benefits via intersection improvements as well as the reduction in east west traffic on local residential streets;
- Social and environmental benefits through time and fuel savings (reduced vehicle emissions), and encouragement of active transportation through the new multi-use pathway developed alongside the roadway as part of the Project;
- Safety benefits via the intersection improvements; and,
- Reduction in east-west truck traffic on residential streets.

f. Scope

The Project encompassed the following elements:

- A new 3.7km roadway between Henderson Highway and Lagimodiere Boulevard;
- A new underpass structure that includes sidewalks on both sides and a multi-use pathway underneath;
- A 3.5 metre-wide multi-use asphalt pathway adjacent to the Extension;
- Nodes or key gathering areas are located at major pedestrian intersections, equipped with benches, waste receptacles and bike racks;

- Multi-use bridge;
- Pump station and dry pond;
- Intersection improvements and lane widening; and,
- Sound attenuation, noise walls, and landscaping.

g. Key Outputs

The key output of the PPP delivery model in this case is a high quality asset delivered ahead of schedule, with clear, formalized expectations for ongoing operations and maintenance. In this Project, the private partner is required to maintain the asset in accordance with defined performance standards specified in the PPP contract over a period of 30 years. A monthly payment is conditioned on performance and service quality. If the standards are not met, the City is entitled to deduct amounts from the scheduled service payments to the private partner. Holdback provisions at the end of the concession, or maintenance, period further ensure commitment to maintenance over that period.

h. Project Milestones

Schedule	Activity
2008	Project conceptualised (Business Case)
February 2009	RFQ released
May 2009	RFQ submissions due
September 2009	RFP released
February 2010	RFP submissions due
July 2010	Preferred proponent identified
September 2010	Commercial & Financial Close
Fall 2010-Spring 2011	Detailed road and bridge design and approvals
Fall 2010-Spring 2011	Drainage installation, preliminary grading and ditching
Spring 2011 – Fall 2012	Roadway and multi-use pathway construction
Spring 2011 – Fall 2012	Sound attenuation barrier
Summer 2011 – Summer 2012	Bridge construction
Spring 2011 – Fall 2012	Utility construction and relocation
December 2011	In operation (one year before schedule)
2041	Concession period (30 years)

i. Resources / existing capacity of the public and private partners

The City of Winnipeg was one of the first municipalities in Canada to utilize the PPP model for capital project delivery. In 1995, the City successfully used a Design Build Finance and Maintain (DBFM) procurement and contracting process for the Charleswood Bridge. The City completed constructing its East District Police Station using a Finance Build Operate model. The City also used a DBFM procurement process for the Disraeli Bridges Project.

The City therefore kept transaction costs for this Project lower by leveraging its previous experience with the P3 procurement and contracting model. The City also avoided unnecessary expenses by using and adapting Alberta Infrastructure's procurement documentation, including a standard Request for Qualifications (RFQ), Request for Proposals (RFP) and Project Agreement containing standard and market-accepted processes, terms & conditions, and requirements.

The project consortium chosen for the project, DBF2 Ltd, is a limited liability special purpose entity. Its members' depth of experience and financial capacity were evaluated through the RFQ and RFP processes.

j. Stakeholders

- Procuring Authority: The City of Winnipeg
- Advisors: Deloitte & Touche, CIBC World Markets, Knowles Canada Consultancy Services, City of Winnipeg Legal Services Department
- Funders: The Province of Manitoba, the City of Winnipeg, PPP Canada
- Private Partners: DBF2 Ltd (Terracon Development Ltd., Bituminex Paving Ltd., Taillieu Construction Ltd., Gateway Construction & Engineering Ltd., Genivar Consultants Limited Partnership, Kupskey Consulting Ltd.)
- Other consulted stakeholders:
 - Winnipeg Transit
 - Manitoba Trucking Association
 - Douglas Mennonite and St. Ann's Ukrainian Catholic Churches
 - Winnipeg Trails Association, Transcona Trails, River East Neighbourhood Network -Trails Committee
 - River East Transcona School Division
 - Millennium Gardens

k. Entity for procuring the PPP

The City of Winnipeg

l. Liabilities

Not applicable

m. Externalities influencing the project

A public open house was held in 2008 to ensure early engagement of the community members in the project. Since the detailed design was well underway at the time of the Open House, DBF2 was able to accommodate many of the public concerns such as the noise attenuation wall, public use areas and traffic concerns into the final design.

Relationships were built with two churches that fronted onto the corridor to work together to create new, aesthetically pleasing entrances to their facilities. In addition detours and construction staging was designed to accommodate traffic to the churches during construction.

n. Main project risks

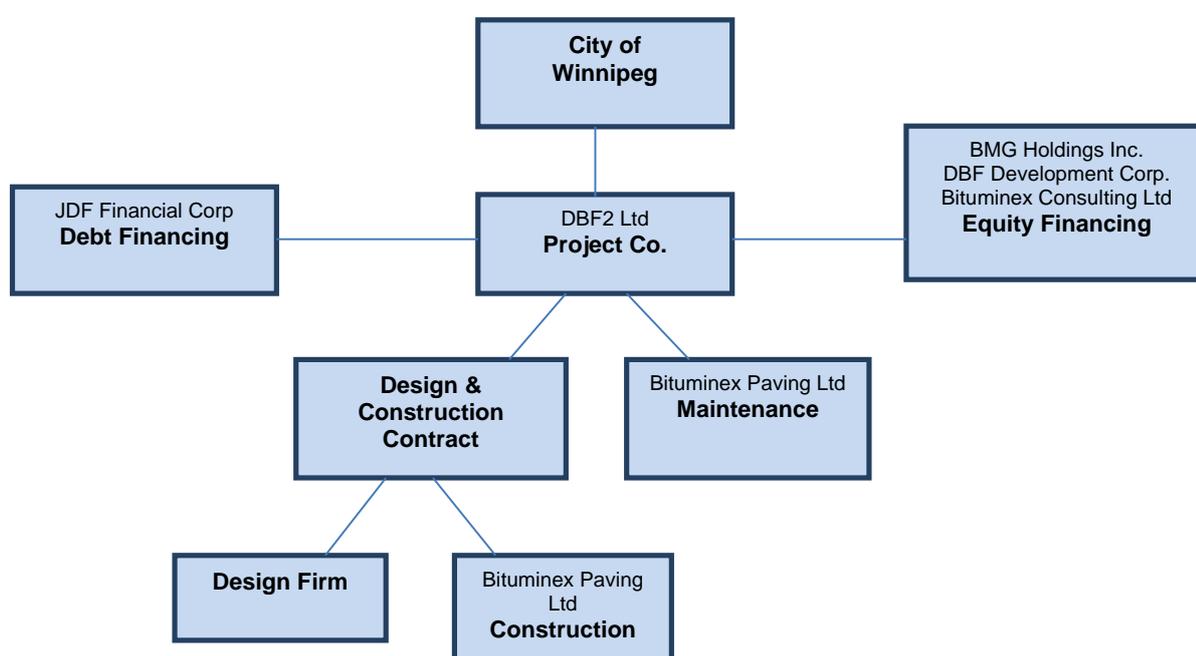
Please see Section II (b).

II. STRUCTURE OF THE PROJECT

a. PPP Scheme

The private sector contractor, DBF2 Limited Partnerships, is responsible for the Design, Build, Finance and Maintenance (DBFM) of the Project over a 30 year period.

Project management schematic:



The allocation of responsibilities between the City and the Project Co., DBF2 Ltd. is presented below according to the terms of the signed Project Agreement:

	DBF2 Ltd.	City of Winnipeg
Design	<ul style="list-style-type: none"> Detailed and final design 	<ul style="list-style-type: none"> Preliminary Design Report Design specifications (Technical Requirements)
Construction	<ul style="list-style-type: none"> Construction of project in compliance with Technical Requirements 	<ul style="list-style-type: none"> Provide access to site and rights of way
Financing	<ul style="list-style-type: none"> Short-term and long-term financing (approximately 80% of capital costs) 	<ul style="list-style-type: none"> Provides some payments during construction (approximately 20% of capital costs) which reduce DBF2's financing requirement

Maintenance	<ul style="list-style-type: none"> • Roadway and structural inspections • General maintenance (litter, graffiti removal) • Preventative and rehabilitative maintenance (roadway and structures) • Pavement condition • Guardrails • Landscaping • Drainage systems, curb and gutter • Guide signs 	<ul style="list-style-type: none"> • Monitoring and enforcement • Regulatory signs
Operations	<ul style="list-style-type: none"> • All operations except those in City column. 	<ul style="list-style-type: none"> • Traffic signals • Pavement markings • Street sweeping

b. Allocation of Risks:

Risk	Public Sector	Private Sector
Design and Construction		
Design & construction approvals		✓
Design error		✓
Weather		✓
Acquisitions of right-of-way		✓
All permits and regulatory authorisations		✓
Delays by entities other than the City		✓
Delays by the City	✓	✓
Construction schedule delays		✓
Construction cost overruns		✓
Defects in the works		✓
Sub-contractor insolvency		✓
Labour disputes		✓
Utility relocation and protection		✓
Achieving construction standards		✓
Labour and material availability		✓
Risks during Maintenance Term		
Specification of standards for maintenance services	✓	
Actual maintenance costs higher than expected		✓
Damage to works caused by the City	✓	
Damage to works not caused by the City		✓

Increased usage of authorised overload vehicles		✓
Increased legal load limits	✓	
Traffic accidents during maintenance term due to the performance of the contractor		✓
Meeting performance requirements		✓
Meeting hand-back standards		✓
Change in law	✓	✓
Force majeure	✓	✓
Financial Risks		
Inflation on construction costs		✓
Inflation on maintenance costs (per CPI index)	✓	
Inflation on maintenance costs (beyond rate of CPI)		✓
Refinancing risk		✓

c. Revenue

The Project does not create revenue for the public sector.

The City provided DBF2 with milestone payments of \$20 Million based on 50% completion of the construction works, and were also limited in the context of the overall capital costs of the Project (approximately 20%).

The City provided DBF2 with a lump sum Substantial Completion Payment of \$30 Million. This payment was triggered by certification from an independent safety auditor that the roadway could be safely opened to the public for its intended use.

Once the Project was commissioned, the City commenced providing DBF2 with performance-based annual service payments of \$6.5 million per year throughout the course of DBF2's 30-year maintenance term, subject to payment deductions relating to performance.

d. Explain how fiscal (government) risks were identified and managed.

The City clearly defined the City's ability to and limitations in raising debt for this Project through a borrowing by-law, setting out the procedure under which borrowing is to occur, approvals through the Minister of Finance, the manner of borrowing, the particulars of any proposed securities and the rate of interest payable on the amount and term.

The City's Finance Team, whose members are defined in the Project Agreement, was responsible for managing the overall quality and integrity of the financial management system for the Project.

e. Describe any special features of the project included to make it an attractive business opportunity.

The PPP model offered opportunities for the project consortium to incorporate innovative processes, designs and materials into their proposals, in order to both compete for the contract and deliver the project. Please see Sections III(f) Delivery and V(b) Implementation Issues for examples.

III. PROCESS ANALYSIS

a. Inception and Project Preparation

The City retained transactional, financial, and technical advisors (Deloitte & Touche and The MMM Group) to review several projects identified in the City's 2008 Capital Budget, including an analysis of the suitability of the Chief Peguis Trail Extension Project for a public-private partnership delivery model ("Business Case").

Together with its advisors, the City identified three potential procurement alternatives for the Project. The three models identified were: conventional delivery ("Traditional"), Design-Build-Maintain ("DBM"), and Design-Build-Finance-Maintain ("DBFM").

b. Feasibility

The City's advisors carried out an analysis of each procurement option, based on key criteria for the Project developed in consultation with the City, case studies of other Canadian infrastructure projects, and advisors' knowledge and experience. These criteria included consideration of a delivery option's ability to transfer and mitigate risk, maintain the City's operating flexibility, and deliver value for money. Based on these criteria, the DBFM procurement methodology was seen to deliver the best results for the City.

A key concern identified during development of the Business Case was the smaller size of the Project in comparison to the average size of many other PPP infrastructure projects in the market at that time. The Business Case identified a number of "precedent" smaller scale public infrastructure projects that have been successfully undertaken using a PPP delivery model, but recommended that further steps be taken to confirm the market's willingness and capacity to deliver this Project using PPP. Subsequent to the finalization of the Business Case, the City consulted a selection of market participants who indicated that the size of the Project would be sufficient to attract quality bidders.

c. Procurement process

The Public Service procurement team, comprised of representatives from Corporate Finance, Public Works, Legal Services and Materials Management used a two-stage procurement process consisting of an RFQ followed by an RFP to select the City's preferred proponent.

The RFP and the draft DBFM agreement were issued in September, 2009 to the three shortlisted Proponents. The City held Commercially Confidential Meetings throughout the RFP stage such that each proponent team had the opportunity to discuss issues or concerns related to technical, financial and legal aspects of the project in confidence with the Public Authority (City of Winnipeg).

After completing both the Request for Qualifications and Request for Proposals phase of the procurement process, Winnipeg City Council approved the recommendation of the Winnipeg Public Service to select DBF2 Limited Partnerships (“DBF2”) as the preferred proponent, given its highest rated technical and financial score as per the terms of the RFP. A final Project Agreement was subsequently finalized between the City and DBF2 Ltd.

A Fairness Advisor was retained to act as an independent observer and provided arms-length advice concerning the procurement process to the City. The Fairness Advisor also reported as to whether the processes and decisions were fair, reasonable, and consistent with the procurement process laid out for the project.

d. Implementation

The City of Winnipeg was responsible for the overall implementation and supervision of the project.

e. Development

Please see Section I (h and i) and Section III (c).

f. Delivery

DBF2 employed construction innovations such as concrete-asphalt compound roads and pathways, which have a higher initial installation cost but are less prone to damage caused by weathering or high-volume usage. DBF2 also used innovative materials to improve upon the original Chief Peguis Trail design, such as attenuation walls made of a blended recycled plastic that is lightweight, easily replaceable, and can be maintained at a low cost. The walls along the original Chief Peguis Trail were made of concrete and cement, making them hard to replace and prone to vandalism.

As the private proponent financed the upfront construction costs as detailed in their financial agreement, DBF2 had an incentive not only to stay within budget for initial construction, but to construct a quality asset that would also reduce maintenance costs during their maintenance term.

g. Exit

Construction was completed in 2011, and the project is now in the concession period, during which maintenance is ongoing. The Project Agreement is in effect until the end of the concession period in 2041.

See section 1(h) for detailed schedule.

h. Calendar of events

Please refer to previous sections.

IV. FINANCING INFORMATION

a. Project Cost and Financing Sources

Final total capital cost: \$108.5 million

Public Sector Funding

- PPP Canada (P3 Canada Fund contribution): \$23.9 million
- Province of Manitoba: \$9.0 million
- City – sinking fund debentures (Series WC): \$18.7 million
- City – cash: \$6.9 million

Private Sector

DBF2 sourced private debt and equity financing (\$50.0 million) in order to fund approximately 80% of the costs of construction. DBF2 will repay this financing through the payments it received from the City following the completion of the construction phase of the Project, and the Annual Service Payments it will receive over the 30-year term of the Project.

If DBF2 were able to obtain debt financing at a lower rate than it currently had in place, it would have been required to share the savings with the City; this did not occur.

b. Financial internal rate of return

The financial rate of return for DBF2 Ltd. is not public information, nor is the overall gearing ratio.

Please see Section I(d) for Value for Money analysis results.

c. Changes to the financial arrangements

No refinancing occurred.

d. Key financing issues faced

DBF2 sourced private debt and equity financing in order to fund approximately 80% of the costs of construction of the Project. The City funded the remaining 20% of the capital costs with Milestone Payments totaling \$20 Million. This partial public funding was intended to leverage the City's lower borrowing rate, while still ensuring enough private capital was at risk. The associated borrowing by-law was approved by Winnipeg City Council in December 2009, which authorized up to \$30 million for the purposes of making capital expenditures in connection with the project.

e. Multilateral or commercial guarantee or insurance instruments

Detailed requirements for insurance instruments were finalized in the Project Agreement and signed by both the City and the Preferred Proponent (DBF2 Ltd.).

f. Identify the key elements of counterparty risk, minimum commitment levels and how such risk is addressed in the PPP contract.

Risk is allocated within the Project Agreement. The City's private sector advisors led a risk workshop with City staff in order to develop a thorough risk register that contained the risks applicable to the Project and to quantify the impact of these potential risks. Please see table in Section II(b) for risk allocations.

V. CURRENT STATUS AND KEY IMPLEMENTATION ISSUES

a. Current Status

The Project has been in operation since December 2011, one full year ahead of schedule, and is currently in its maintenance phase. The project was named Manitoba's best managed project for 2012 by the Project Management Institute.

b. Implementation Issues

DBF2 adapted to challenges presented during construction. In order to meet their goal of completing construction work one year ahead of schedule, the consortium agreed to maintain a seven day work week. In the meantime, the design and construction teams collaborated to move ahead in parallel, which accelerated the overall working schedule.

However, round the clock construction noise impeded one local church's ability to conduct business on their premises without interruption; particularly in the summer when hot weather required the church to open windows to reduce discomfort to patrons. To resolve the issue DBF2 provided the church with air conditioners, which mitigated the effects of the increased noise and allowed construction to continue as planned.

c. Capacity of public and private partners to implement the project.

Please see Section I(j).

d. Contract renegotiated

No, it was not renegotiated.

e. Conflict resolution structure

Both parties (public and private partners) were required to make their best efforts to resolve any and all issues which arose on an ongoing basis. The Project Agreement outlined a formal dispute resolution procedure including providing a formal Dispute Notice, negotiation, involvement of independent referees, arbitration and litigation.

VI. ROLE OF PPP UNIT/CENTER (IF APPLICABLE)

a. Background on PPP Centre

PPP Canada is the Government of Canada's centre of expertise on P3s. Established in 2008 as a Crown corporation reporting to Parliament through the Minister of Finance, PPP Canada was given the mandate of improving the delivery of public infrastructure by achieving better value, timeliness and accountability to taxpayers through P3s.

PPP Canada acts as a leading source on P3 matters through knowledge development and sharing. In addition, the Corporation provides expertise and advice in assessing and executing P3 opportunities at the federal level as well as leveraging greater value for money from federal investments in provincial, territorial, municipal and First Nations infrastructure, in particular through the P3 Canada Fund.

b. Mandate of PPP Centre

PPP Canada's operations focus on three business priorities:

1. P3 Knowledge Development and Sharing: to serve as a source of expertise and advice on P3 matters;
2. Advancing Federal P3s: to assess federal P3 opportunities, and to advise on the execution of federal P3 projects; and,
3. Advancing Provincial, Territorial, Municipal and First Nations P3s: to assess the suitability of P3 projects from provincial, municipal, and First Nations governments seeking funding from federal infrastructure programs, in particular the P3 Canada Fund.

In the context of the Chief Peguis Trail Extension project, PPP Canada provided funding to the City of Winnipeg and acted as a source of P3 expertise throughout the project. PPP Canada continues to be involved in the project's management committee to ensure the continued public benefit of the project.

c. Funding of the PPP Centre

In Budget 2007, the government announced new measures to advance its infrastructure agenda through the promotion and use of P3s:

- Creation of a \$1.25 billion national Public-Private Partnerships Fund (P3 Canada Fund);
- Establishment of a new PPP office to lead federal PPP efforts with funding of \$25 million over the first five years.

In 2008, PPP Canada was established by Order-in-Council, to build P3 procurement knowledge and capacity federally and leverage greater value for money from federal investments in provincial, territorial, municipal and First Nations infrastructure through the P3 Canada Fund. With the appointments of the Chair of the Board of Directors and the Chief Executive Officer, PPP Canada became operational in 2009.

With the evolution of the Federal Business Line, PPP Canada also earns revenue from advisory services it provides to a number of federal departments, agencies, and crown corporations.

The operating budget of PPP Canada is \$14.7 million in 2014-15.

d. Performance of the PPP Centre

A detailed review of PPP Canada's performance is available in the Summary Corporate Plan and the Annual Report, both produced annually and available at www.p3canada.ca.

VII. KEY LESSONS, EXPERIENCES AND OBSERVATIONS

Major lessons and experiences and potential areas for improvement

The Chief Peguis Trail Extension Project was opened to traffic one year earlier than scheduled on December 2, 2011. A key lesson of the Project was the benefit of collaborative planning in the early stages between the public and private partners, as well as the leveraging effect of private sector innovation under the unique PPP contractual structure. The Project is one of the first projects in the economy that PPP Canada supported and received positive feedback from internal and external stakeholders.

Iqaluit Airport Improvement – Iqaluit, Nunavut, Canada

I. PROJECT DESCRIPTION

a. Background

The Iqaluit International Airport Improvement Project (the Project) is the largest public building project ever constructed in Iqaluit and a major project for the Government of Nunavut.

Once completed in 2017, it will address many safety and efficiency issues at the current airport while also offering Nunavummiut, businesses and visitors many improvements to their air travels to and from the region. The Iqaluit International Airport, which is owned by the Government of Nunavut, is the major gateway to Nunavut and its capital city of Iqaluit.

Nunavut is a unique geographical land mass without roads to connect its communities. The territory is made up of a series of communities on islands and the mainland, with airports as the only transportation link. This makes airport infrastructure critical to life in Nunavut.

b. Project rationale

The last major investment at the Iqaluit International Airport was 20 years ago. Since this time, traffic at the airport has grown steadily and significant investment is required to support both Nunavut's growing population and air transportation demand. The airport is a key economic portal for the territory and several major industrial projects (including mining) are developing in the area and the current airport infrastructure will not be able to handle the increased demand in air traffic without expanding both the airport buildings and runway. Improved accessibility to Nunavut is also expected to be an asset in attracting private investment to the region. New taxiways will open opportunities for expanded or future businesses at the airport on lands that are not currently accessible. With the space to build a new hangar and store cargo, the Iqaluit International Airport will also be a more attractive option for new air carriers.

The Government of Nunavut is also concerned with addressing safety issues presented by the current aging infrastructure. The runway has reached the end of its life cycle. The runway lighting and other safety related systems are increasingly difficult to maintain and operate. Although short-term fixes have been found to address some of these issues, the Government of Nunavut required a more sustainable and comprehensive solution to bring the Iqaluit International Airport in compliance with updated regulations.

c. Rationale for public sector involvement in the project

The Project is an important strategic investment for the Government of Canada as it is aligned with the key priority of exercising arctic sovereignty and making strategic investments in northern economic development.

Additionally, the Project Agreement requires the private partner to hire Nunavut Land Claims Agreement (NLCA) Beneficiaries (i.e. local Aboriginal population) during both construction and operations phases. This will support the Government of Nunavut in building an experienced, trained and accredited labour force that will aid in additional economic development in the region.

d. Rationale for selecting PPP as the procurement method

A PPP procurement model was selected as it was expected to generate a lower overall net present cost to taxpayers when compared with a traditional delivery method. In particular the project sponsor expected to leverage significant private sector innovation in airside re-pavement and reconstruction works, construction methodologies to deal with permafrost conditions and logistics.

The estimated net present cost of the Project delivered using a traditional (DBB) approach is \$518.7 million. The estimated net present cost of the Project delivered using the PPP procurement approach (DBFOM) and Arctic Infrastructure Partners' (successful private sector partner) proposal is \$418.9 million. In financial terms, the final Project Agreement is estimated to achieve value for taxpayers' dollars of \$99.8 million when compared to traditional procurement.

e. Objectives

The Project objectives are as follows:

- ensure that all federal regulations and operational requirements are met to maintain the Airport's certification with Transport Canada;
- improve the end user experience by increasing capacity at the airport to achieve an appropriate level of service;
- foster innovation in procurement, design and construction, logistics and sustainability;
- facilitate economic growth both in the community and in Nunavut;
- maximize the value of both short-term and long-term development opportunities for Inuit business and career development;
- deliver the Project within the approved budget;
- ensure no recordable employee or vehicle safety incidents;
- ensure that maximum value is achieved over the full life cycle of the Project;
- deliver performance-based outcomes;
- risk optimization;
- minimize operational impacts throughout transition to new facilities; and
- capitalize on potential commercial opportunities at the Airport.

f. Scope

The Project includes the following

- design and construction of a new 9,900 m² Air Terminal Building;
- design and construction of a new 5,200 m² Combined Services Building;
- approximately 450,000 m² of runway, taxiway, and apron improvements and rehabilitation;
- improvements to airport electrical systems and airfield lighting;
- two new taxiways;
- supply of the equipment integrated in the design, such as building security and control systems, elevator, mechanical systems and baggage handling systems; and,
- operations and maintenance of the existing airport during construction of the new facilities and operations and maintenance of the new airport for 30 years after the construction is completed.

g. Key Outputs

The private partner is incented to perform through a payment mechanism that is based on the principles of performance, facility availability and service quality. Monthly Availability Payments will begin once the private partner (Arctic Infrastructure Partners) assumes operations of the Airport and will be based on level of responsibilities as the Project progresses from construction to Service Commencement.

Throughout the operating period, the private partners' performance will be constantly monitored based on the availability of the infrastructure and achievement of key performance indicators. The public authority (Government of Nunavut) will be entitled to make deductions from its monthly payments if Arctic Infrastructure Partners does not meet the standards specified in the Project Agreement. For example, if a runway is not available and the situation is not rectified within 15 minutes, the payment to Arctic Infrastructure Partners could be reduced by up to \$4,500 for each 15 minute interval, depending on the time of day.

h. Project Milestones

Date	Activity
1999	Project initiated (Master Plan Study)
December 2010	Project conceptualised (Business Case)
June 2012	RFW released
August 2012	RFQ submissions due
October 2012	RFP released
May 2013	RFP submissions due
June 2013	Preferred proponent identified
September 2013	Commercial & Financial Close

i. Operational term and completion date

Construction began in July 2014 and is expected to be complete by December 2017 (42 months). Concession period is expected to be from January 2018 to December 2047 (30 years)

j. Resources / existing capacity of the public and private partners

The Government of Nunavut's P3 experience is limited with both capacity and resource challenges. Therefore, PPP Canada was actively involved in reviewing key procurement documents (RFQ, RFP, PA) and advising the project sponsor in the structuring and delivery of the Project. The Government of Nunavut also leveraged lessons learned from existing provincial P3 projects including by engaging Partnerships BC (British Columbia's provincial P3 agency) to lead the procurement of the project. Partnerships BC brought significant P3 procurement experience and a well-established P3 framework, which they adapted to the Project.

k. Stakeholders

- Procuring Authority: The Government of Nunavut
- Advisors: Partnerships BC, Pricewaterhouse Coopers, Stantec Consulting
- Funders: The Government of Nunavut and PPP Canada
- Government of Canada: Canada Air Transport Security Authority, Canadian Border Services Agency, and NAV Canada
- Private Partners: Arctic Infrastructure Partners (Bouygues Building Canada, InfraRed Capital Partners Limited, Sintra and Winnipeg Airports Authority)

I. Entity for procuring the PPP

The Government of Nunavut with the support of Partnerships BC.

m. Liabilities

Not Applicable.

n. Externalities influencing the project

Remote Northern Location: The remote northern project location creates a limited construction season and unique transportation challenges. In order to begin construction in 2014, Project Co. had to secure orders and coordinate with sealift operators (for cargo shipping) by August in order to meet the final sailing cut-off for the season. As the preferred proponent was anticipated to be selected in late May 2013, an early works agreement was implemented in order to allow Project Co. to secure the needed approvals and coordinate supply delivery.

Inuit (Northern Aboriginal) Workforce Participation: The Government of Nunavut's Nunavummi Nangminiaqtunik Ikajuuti (NNI Policy) speaks to a number of objectives including fair competition and Inuit workforce participation. This policy requires that Project Co. hire a minimum Inuit labour content (local Aboriginal population) during the construction, operations and maintenance phases of the Project.

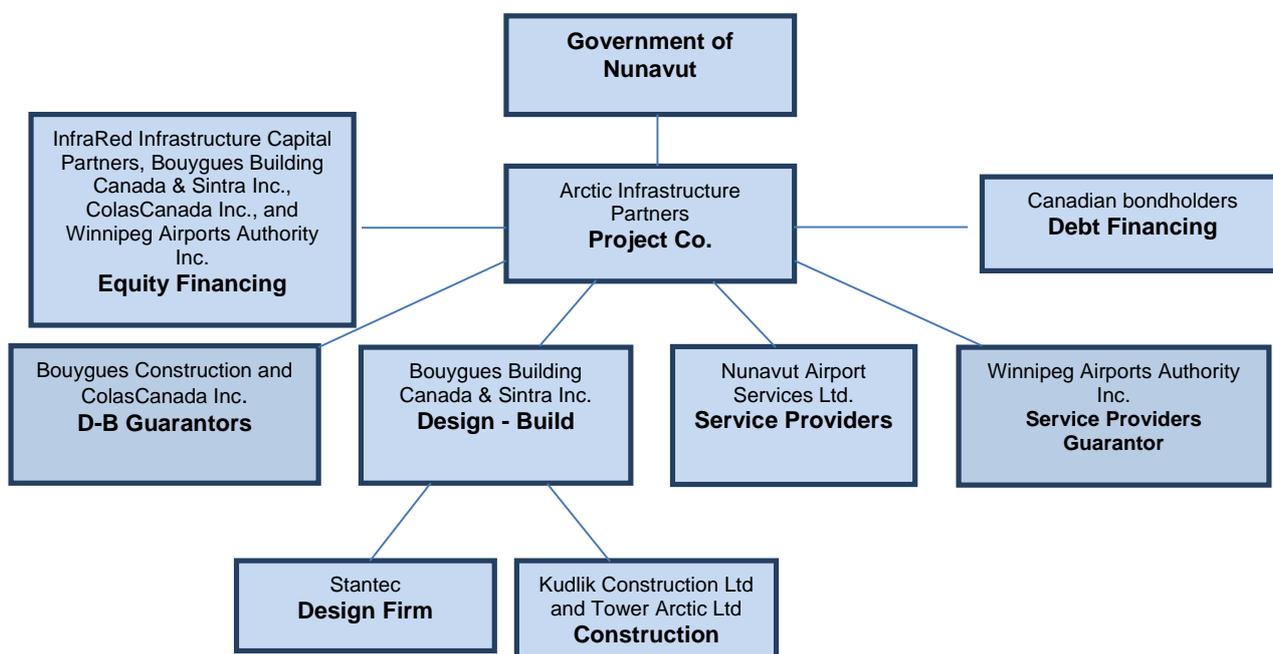
o. Main project risks

Please see Section II (b) below.

II. STRUCTURE OF THE PROJECT

a. PPP Scheme

The Iqaluit International Airport Improvement Project is being done as a Design, Build, Finance, Operate, and Maintain (DBFOM) partnership delivery model.



Under the terms of the Project Agreement between Government of Nunavut (GN) and the Project Co., Arctic Infrastructure Partners will be responsible for the following:

- Obtaining and maintaining an Airport Operating License from Transport Canada and operating the Iqaluit International Airport to the standard described in the Project Agreement;
- Delivering the design and construction in accordance with the Project's specifications;
- Obtaining all permits, provision of utilities and other site services, construction work and commissioning, and substantial completion of the Project by the stipulated milestones leading to Interim Service Commencement and Service Commencement;
- Procurement, supply and installation of all equipment;
- Providing partial financing for the design and construction of the new buildings and for the rehabilitation of specified components of the existing buildings and current infrastructure;
- Operation of the . Airport and the life-cycle maintenance of the new and existing buildings, maintenance and support services, the development of a quality management plan, site security and grounds maintenance;
- Training and hiring of Inuit businesses and workers throughout the term of the Project Agreement;
- Environmental management and sustainability; and
- Returning the infrastructure assets to the Government of Nunavut in the specified condition at the end of the term

The GN retains ownership of the Airport throughout and following the Project Agreement period.

b. Outline of the key risk allocation

Risk	Private Partner	Public Sector	3rd Party
Financing	✓		
Design	✓		
Construction	✓		
Airport operations	✓		
Security screening of passengers			✓
Processing international travellers			✓
Fuelling airplanes and ground handling services			✓
Facility maintenance	✓		
Aircraft rescue and firefighting	✓		
Setting aeronautical fees		✓	
Supervening events	✓	✓	
Pre-existing environmental contamination		✓	✓
Unit price of asphalt, fuel, energy, shipping and labour throughout the Project Agreement term		✓	
LEED certification	✓		
Ownership		✓	
Scope changes		✓	
Pavement settlement risk	✓		
Changes in aerodome standards by Transport Canada and other adverse airport regulatory changes		✓	
Energy consumption	✓	✓	

c. Revenue

Project Co's revenue stream will include progress payments during construction, service commencement payments and availability payments, adjusted based on performance, as well as energy gainshare payments, fuel adjustment payments and shipping adjustment payments.

The public authority is expected to generate a limited amount of ancillary revenue, and realise marginal incremental revenues from landing fees that are primarily attributable to growth projections.

d. Explain how fiscal (government) risks were identified and managed.

Nunavut's Office of the Comptroller General is responsible for managing the overall quality and integrity of the Government of Nunavut's financial management and control systems. Additionally, the Government of Nunavut's borrowing power is limited to \$400.0M. However, the total capital cost of the Project is accrued to the Government of Nunavut throughout the construction period as the costs are incurred. The progress payments structure of the P3 affords Nunavut with greater flexibility to manage the fiscal impact of project costs within the Government of Nunavut's borrowing limit.

e. Describe any special features of the project included to make it an attractive business opportunity.

The new Air Terminal Building is at the leading edge of international airport design, addressing the arctic environment while also reflecting the values and culture of the community. It was designed to reflect the Nunavut landscape and culture and foster a sense of place.

Furthermore, the Government of Nunavut will be able to leverage significant private sector innovation in airside repavement and reconstruction works and construction methodologies to deal with permafrost conditions. Most notably, a unique design innovation will help to prevent cracks in the foundation caused by rising ambient temperatures in permafrost areas. The building foundations will be built with a system of thermosyphons – tubes that run through the ground beneath the foundation to passively cool the ground. While thermosyphons are commonly used in the Arctic, this system is unique because it can be enabled to go one step further by actively cooling the ground beneath the foundation if temperatures continue to rise

III. PROCESS ANALYSIS

a. Inception and Project Preparation

In 1999 the Government of the Northwest Territories commissioned a Master Plan Study to assess the airport and to make recommendations with respect to its future role as the airport for the new Capital of Nunavut. The study found the existing Airport Terminal Building (ATB) to be undersized and congested. Most importantly, the study found that Apron III, where the existing ATB is located, could not be expanded because it would interfere with the city development and with a large creek bed that makes up a significant portion of the valley's watershed.

b. Feasibility

In 2010, the Government of Nunavut began working with a private consultant (PriceWaterhouseCoopers) to complete a preliminary business case, including a market sounding, risk workshop, and accompanying financial model, to assess the feasibility of the project based on different procurement options, including traditional procurement (design-bid-build) and a P3 (DBFOM) procurement.

Stantec Consulting was also engaged as technical advisors to support the feasibility analysis of the project including preparing cost estimates and participating in the risk workshop to provide a broad range of project management, technical, construction, and cost estimating expertise to advise on the risk adjusted costs for traditional public sector procurement and P3 procurement.

c. Procurement process

A two-stage, competitive selection process was undertaken for the Project. During the Request for Qualifications (RFQ) stage, respondents were asked to present their qualifications to take on the role of private partner for the project. Eight teams responded to the RFQ. A shortlist of three proponent teams was selected and invited to participate in the Request for Proposal (RFP) stage.

During the RFP stage, commercially confidential collaborative meetings were held so that each team had the opportunity to discuss issues or concerns related to commercial, legal, design and construction and facilities management matters in confidence with the Public Authority (Government of Nunavut). Prior to the closing date for submissions, a final draft Project Agreement was issued and it served as the common basis for all proposals.

The highest ranked proponent, as per the terms of the RFP, was selected as the Preferred Proponent. The evaluation committee recommended, and the Project Steering Committee approved, Arctic Infrastructure Partners as the Preferred Proponent. The competitive selection process was completed in approximately 15 months.

d. Implementation

The Government of Nunavut is responsible for the overall implementation and supervision of the project.

e. Development

Please see Sections I and III (c).

f. Delivery

In order to begin construction in 2014, Project Co. had to secure orders and coordinate with sealift operators by August in order to meet the final sailing cut-off for the season. As the preferred proponent was anticipated to be selected in late May 2013, an early works agreement was implemented in order to allow Project Co. to secure the needed approvals and coordinate supply delivery.

In support of a seamless transition and improved coordination, the Private Partner (Arctic Infrastructure Partners) will operate and maintain the existing Airport during construction of the new facilities, in addition to a 30-year concession period following Project service commencement.

g. Exit

The Project has just entered its construction phase, with building materials currently being shipped to Iqaluit.

Once the construction is completed in 2017, the Government of Nunavut will oversee the transition to the operations and maintenance phase, which will last 30 years.

h. Calendar of events

Please refer to Section I.

IV. FINANCING INFORMATION

a. Project Cost and Financing Sources

The capital cost for the new Airport is \$298.5 million. The Government of Nunavut will contribute \$68.7 million during construction, PPP Canada will contribute \$72.8 million and Arctic Infrastructure Partners will contribute the remainder through debt and equity in the Project. This capital contribution will be repaid as part of the Availability Payments from the Government of Nunavut to Arctic Infrastructure Partners over the life of the contract.

b. Financial internal rate of return

This information is not publically available.

c. Changes to the financial arrangements

No changes were made.

d. Key financing & funding issues faced

It is standard practice in Canada that the public authority is not involved in securing private financing. It is the sole responsibility of the project consortium to secure private financing, this forms part of their bid. As part of their successful bid, the private partner (Arctic Infrastructure Partners) priced a \$141.98 million offering of 34-year 5.092% senior amortized bonds. Standard & Poor rated the bonds, which will pay investors a mix of principal and interest, and indicated in a pre-sales report issued August 22, 2013, that, as with other public-private partner deal that they rate, that senior debt will be used first and concurrently with progress payments of the Government of Nunavut during construction while equity will be injected last.

Standard & Poor assigned a stable outlook to the bonds indicating that the rating reflects their assessment that there is a strong rationale for the project and that the new Iqaluit International Airport is critical for regional business and is a strategically significant asset for Canada as a primary gateway to the north. Standard & Poor also noted that the Project presented a challenging construction task noting that a similar project built in a less harsh southern climate would require half the construction time. Standard & Poor also indicated that high project gearing was being used to manage the project risks. Arctic Infrastructure Partners, includes four equity sponsors: InfraRed Capital Partners (80%); Bouygues Building Canada (10%); Sintra (5%); and Winnipeg Airports Authority (5%) sponsors.

The Government of Nunavut's borrowing power at any time is limited to \$400M.. The recourse to timed milestone payments as modelled by PPP Canada and a detailed forecast of capital requirements by the Government of Nunavut allowed the Territorial Government to lever the risk transfer afforded by the PPP approach while remaining within its borrowing limit.

e. Multilateral or commercial guarantee or insurance instruments

The Project is backed by insurance instruments, of which the detailed requirements are described in the Schedule 19 of the Project Agreement.

The Project Agreement is available at <http://www.gov.nu.ca/edt/documents/iqaluit-international-airport-project>

f. Conflict resolution structure in place?

While both parties (public and private partners) will make their best efforts to resolve any and all issues which may arise, on an ongoing basis, The Project Agreement (Schedule 20) outlines a formal dispute resolution procedure including providing a formal Dispute Notice, negotiation, involvement of independent referees, arbitration and litigation.

V. CURRENT STATUS AND KEY IMPLEMENTATION ISSUES

a. Current Status

The Project is about to enter its construction phase and is expected to be completed on time and on budget by December 2017.

b. Implementation Issues

The region's climate and accessibility creates certain difficulties for Arctic Infrastructure Partners. In order to begin construction in 2014, Arctic Infrastructure Partners needed to secure orders and coordinate with sealift operators at least one month prior to sailing dates – or August, for the last sailing cut-off. Shipping lanes are only open during summer months and represent the only mode of transportation through which Arctic Infrastructure Partners could send its construction materials to Iqaluit.

The Project Agreement has significant requirements for the involvement of NLCA Beneficiaries (i.e. local Aboriginal population), Inuit registered businesses and for the training and hiring of NLCA Beneficiaries throughout the term of the Project Agreement.

The Project Agreement includes a requirement that 15 per cent of the labour force constructing the Project be NLCA Beneficiaries. For the first five years of operations NLCA Beneficiaries must make up a minimum of 20 per cent of the labour force. That number increases in equal increments every five years to a 60 per cent requirement by the end of the Project Agreement. Achieving these targets will require Arctic Infrastructure Partners to provide a diverse range of training opportunities for NLCA Beneficiaries, enabling individuals to earn academic credentials and certification while also gaining valuable work experience. Local Inuit families will immediately benefit while the territory will gain over the longer term through the growth of a trained, certified and experienced workforce.

VI. ROLE OF PPP UNIT/CENTER (IF APPLICABLE)

a. Background on PPP Centre

PPP Canada is the Government of Canada's centre of expertise on P3s. Established in 2008 as a Crown corporation reporting to Parliament through the Minister of Finance, PPP Canada was given the mandate of improving the delivery of public infrastructure by achieving better value, timeliness and accountability to taxpayers through P3s.

PPP Canada acts as a leading source on P3 matters through knowledge development and sharing. In addition, the Corporation provides expertise and advice in assessing and executing P3 opportunities at the federal level as well as leveraging greater value for money from federal investments in provincial, territorial, municipal and First Nations infrastructure, in particular through the P3 Canada Fund.

b. Mandate of PPP Centre

PPP Canada's operations focus on three business priorities:

1. P3 Knowledge Development and Sharing: to serve as a source of expertise and advice on P3 matters;
2. Advancing Federal P3s: to assess federal P3 opportunities, and to advise on the execution of federal P3 projects; and,
3. Advancing Provincial, Territorial, Municipal and First Nations P3s: to assess the suitability of P3 projects from provincial, municipal, and First Nations governments seeking funding from federal infrastructure programs, in particular the P3 Canada Fund.

In the context of the Iqaluit Airport Improvement project, PPP Canada provided funding to the Territory of Nunavut and acted as a source of P3 expertise throughout the project. The Corporation was particularly involved in the development of the project's P3 Business Case. PPP Canada requires a P3 Business Case from applicants that qualitatively and quantitatively assesses a range of infrastructure project delivery models and recommends an optimal model that provides demonstrable public benefit and Value for Money for project stakeholders and taxpayers. PPP Canada's funding was contingent upon the publication of the Value for Money report on the project's webpage. Furthermore, PPP Canada will continue to monitor the Value for Money through its work on the project concession management committee.

c. Funding of the PPP Centre

In Budget 2007, the government announced new measures to advance its infrastructure agenda through the promotion and use of P3s:

- Creation of a \$1.25 billion national Public-Private Partnerships Fund (P3 Canada Fund);
- Establishment of a new PPP office to lead federal PPP efforts with funding of \$25 million over the first five years; and,

In 2008, PPP Canada was established by Order-in-Council, to build P3 procurement knowledge and capacity federally and leverage greater value for money from federal investments in provincial, territorial, municipal and First Nations infrastructure through the P3 Canada Fund. With the appointments of the Chair of the Board of Directors and the Chief Executive Officer, PPP Canada became operational in 2009.

With the evolution of the Federal Business Line, PPP Canada also earns revenue from advisory services it provides to a number of federal departments, agencies, and crown corporations.

The operating budget of PPP Canada is \$14.7 million in 2014-15.

d. Performance of the PPP Centre

A detailed review of PPP Canada's performance is available in the Summary Corporate Plan and the Annual Report, both produced annually and available at www.p3canada.ca.

VII. KEY LESSONS AND OBSERVATIONS

While the Project has just entered its construction phase, a key lesson and observation of the Project was the benefit of leveraging the experience of Partnerships British Columbia to manage project procurement and PPP Canada as procurement advisors. Including an experienced public sector team in the day-to-day management of procurement allowed a remote jurisdiction with significant capacity challenges, and limited P3 procurement experience, to successfully procure Canada's most northern P3 project.

Royal Canadian Mounted Police E Division Headquarters Relocation Project, Canada (Public Works and Government Services)

I. PROJECT DESCRIPTION

a. Background and Project Rationale

The Royal Canadian Mounted Police (RCMP) is the Canadian national police service and an agency of the Ministry of Public Safety Canada. The RCMP is unique as it is a national, federal, provincial, territorial and municipal policing body, providing policing services under contract to three territories, eight provinces (except Ontario and Quebec), over 150 municipalities, more than 600 Aboriginal communities, and three international airports.

E Division is the largest RCMP division in Canada, employing 25% of the national force, providing municipal, provincial, and federal policing throughout British Columbia. Prior to the completion of the new headquarters facility, E Division Headquarters was spread throughout Metro Vancouver in 43 non-purpose built, Crown-owned and leased facilities in 25 locations. The headquarters facility (known as the Fairmont site), located in the City of Vancouver, and was poorly situated, ineffective operationally, and had significant environmental, seismic and mechanical issues. This situation was compounded by rapid and continued growth in E Division Headquarters' functions. The locations and facilities did not adequately support RCMP service delivery requirements in a modern context and were no longer sustainable.

The RCMP E Division Headquarters Relocation project has been critical in supporting the ability of the RCMP to respond to the safety and security issues of the twenty-first century. The initiative consolidated and relocated the headquarters units to a strategically situated site in the City of Surrey, known as the Green Timbers site. It was also the Government of Canada's first public-private partnership (P3) accommodation project.

The 14.19 hectare site was acquired by Public Works and Government Services Canada (PWGSC) in 2005 for the purpose of providing a central, integrated, purpose-built headquarters facility for E Division.

b. Rationale for selection PPP and Scope

The Government of Canada required a delivery option that would meet the goal of improved operational efficiency for the RCMP, while providing best value for citizens and offering efficient and economical space and fit-up—key considerations for all Government of Canada facilities.

The four options considered included:

- traditional crown-construct;
- public-private partnership;
- lease; and
- status quo.

The Government of Canada conducted a review process and determined that a public-private partnership (specifically a Design-Build-Finance-Maintain option) could address issues of affordability, optimal risk sharing, and offer citizens the best value for money. This option would also meet the goal of improving operational capacity and ensuring on-time and on-budget delivery.

The new headquarters complex is approximately 76,162 square-metres in size and provides office and purpose built accommodation for over 2,700 E Division Headquarters personnel. It includes a seven-storey office building, post-disaster building, a high bay garage/workshop, as well as 1,810 parking spaces. The facility was designed to achieve LEED® (Leadership in Energy and Environmental Design) Gold accreditation.

c. Objectives

The new facility was developed with the following objectives:

PROJECT OBJECTIVES	DESIRED OUTCOMES
Supports integrated, intelligence-led policing services	A Facility that supports easy coordination of various integrated units both physically and electronically to provide citizens with complete and effective police services.
Supports effective and efficient service delivery	A Facility that is designed to meet current needs.
Demonstrates value for money	A project within affordability limits, that maximizes the value of each dollar spent to build and operate the Facility.
Provides for future flexibility	A Facility designed with the flexibility to support organizational and technological change.
Is accessible and welcoming to the public and community	A Facility that, while maintaining appropriate security, presents itself as open to the public.
Meets national standards	A Facility that meets national standards for design and security.
Demonstrates environmental excellence.	A Facility that meets the LEED Canada Gold Standard.
Provides urgently needed services to the community in a timely way	Service Commencement by early 2013.

d. Resources/existing capacity

At the time of the project, P3s were relatively new within Canada. While the federal government had experience in the early 1990's with the "first wave" of P3 projects,¹ there had yet to be a "second wave", or modern P3, project. Experience in P3 delivery in Canada had previously been limited to provinces.

¹ In "Dispelling the Myths: A Pan-Canadian Assessment of Public-Private Partnerships for Infrastructure Investments" by Mario Iacobacci (Conference Board of Canada), first wave P3 projects are described as P3s procured in Canada between the early 1990s-2004. These projects were characterised by off-balance-sheet treatment for public sector liabilities, attempts to transfer revenue/demand risk to the private consortia, and, in some cases, unsuccessful transfer of financing risk. The Confederation Bridge is an example of a first wave P3 project procured by the Government of Canada.

While PWGSC serves as the Government of Canada's real property expert, the P3 delivery model was new to the department at the time. PWGSC and the RCMP appointed a dedicated project team with experience in project delivery. The team was supplemented with P3 experts brought on board as advisors from the private sector (PricewaterhouseCoopers and Bull, Housser & Tupper) and BC's P3 provincial agency, Partnerships BC. Within the P3 context, the dedicated project team would be taking on a new role—that of oversight and contract management rather than delivery—which required a strategic approach to assembling the team. Not only would the team need to be well resourced and high performing, but it required a structure that promoted information sharing and respect for traditional and non-traditional approaches. The team structure also incorporated new roles, such as communications and horizontal leadership, amongst the roles of project management and professional and technical services.

The team was also supported by an Owner's Advisory Team (OAT), made up of external technical specialists from diverse fields (architecture, engineering, security, acoustics, etc). This team supplemented internal technical expertise throughout procurement and the design-construction process. Additionally, the federal Department of Justice oversaw legal aspects of the project and brought on legal advisors with P3 experience for support during implementation.

e. Stakeholders

The RCMP E Division project has a diverse range of stakeholders. The RCMP E Division is the client and the user of the facility; PWGSC is the owner and service delivery provider. PWGSC plays an important role in the daily operations of the Government of Canada as a key provider of services for federal departments and agencies, providing support achieving mandated objectives as a central purchasing agent, linguistic authority, real property manager, treasurer, accountant, and integrity advisor, as well as pay and pension administrator. PWGSC's Real Property Branch (RPB) manages one of the largest and most diverse portfolios of real estate in the economy and is the Government of Canada's real property expert.

Other stakeholders involved in the project included senior management at PWGSC and the RCMP, PPP Canada, central agencies such as Department of Finance and Treasury Board, as well as the City of Surrey.

Green Timbers Accommodation Partners (GTAP) was the successful proponent following procurement, and is made up of multiple corporations, each filling a specific role within the consortium:

- Consortium sponsors:
 - HSBC Infrastructure (now InfraRed)
 - Bouygues Bâtiment International
 - ETDE Facility Management Canada (currently known as Bouygues Energies and Services Canada)
- Design:
 - Kasian Architecture
- Construction:
 - Bouygues Building Canada
 - Bird Construction
- Facilities Management Services:
 - ETDE Facility Management Canada (currently known as Bouygues Energies and Services Canada)

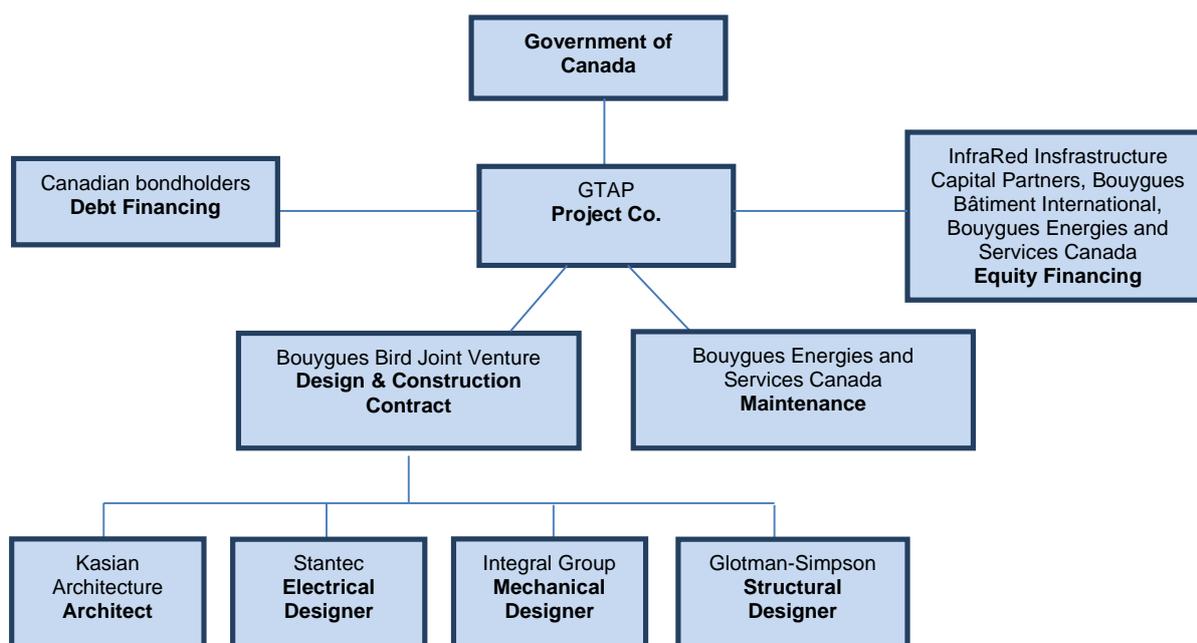
The two unsuccessful proponents were Cascadia and Integrated Team Solutions.

II. STRUCTURE OF PROJECT

a. PPP Scheme

The Government of Canada and Green Timbers Limited Partnership signed the Project Agreement on April 22, 2010 for a fixed price of \$966 million. This amount included \$263 million for design and construction (including \$120 million paid by Canada during the construction phase) and \$703 million for project financing, building maintenance, lifecycle repair, and renewal over the term of the agreement. Canada will pay insurance costs totalling \$8.9 million costs over the 25-year period for a total of \$975 million. Ownership of the facility and site remains with the Government of Canada at all times.

The Project Agreement outlined a completion date of December 23, 2012 at the latest and a performance-based payment mechanism over the duration of the contract.



b. Risk Allocation

Multiple risk workshops on design, construction, operations and maintenance, procurement and approvals, were carried out to determine the best allocation of risks for the public and private sectors. The following table illustrates general risk allocation:

Risk	Canada	Shared	Project Co
Financing			✓

Design			✓
Construction			✓
Facility Maintenance			✓
LEED certification			✓
Availability and performance			✓
Ownership	✓		✓
Scope Changes	✓		
Energy Consumption		✓	✓

III. PROCESS ANALYSIS

a. Inception and Project Preparation

The need for a new headquarters facility had been previously identified twenty years prior, and at the time of project inception in 2002, it had become operationally urgent. Despite previous efforts, the organization had been unable to get a project underway to address accommodation issues. The RCMP approached PWGSC to explore a joint solution. PWGSC's Pacific Region provided initial funding to develop a joint Treasury Board submission seeking Preliminary Project Approval (PPA).

Between 2002—2007, the project team undertook the necessary planning to develop the project budgets and schedule. The project team conducted extensive user consultations to ascertain the RCMP's needs and priorities for the facility and to achieve the overall vision for the project. During the business case stage, several project delivery methods were assessed. The P3 model was identified as offering best value to the Crown and was selected as the preferred project delivery approach. There was limited expertise within the federal government on the planning and execution of P3s; therefore, the project team secured advisory services from public and private entities with local and extensive P3 experience.

b. Feasibility

At revised PPA (Preliminary Project Approval) in 2007, Treasury Board granted PWGSC authority to proceed with a P3 delivery option, should it produce positive value for money (VfM). The project team proceeded with a P3 (DBFM) procurement process after a VfM analysis indicated positive value for money. Throughout the procurement process, the VfM analysis was continually monitored and updated in order to confirm that the P3 option delivered the best VfM in comparison to the other delivery options under consideration.

The final post-financial close VfM analysis from PricewaterhouseCoopers identified total savings of \$68 million (net present cost) for the Government of Canada compared to what traditional methodologies would have provided.

c. Procurement

The procurement process consisted of two key stages: the Request for Qualifications (RFQ) and the Request for Proposals (RFP). Prior to starting procurement, the project team sought information on the market's interest in and capacity for the project, as well as the interest in delivering it through a P3 model. In addition, a Fairness Monitor was retained—independent of the project team—and given access to all project team meetings and deliberations.

The RFQ indicated that the owner intended to select up to three parties to participate in the RFP stage; that the project had government approval; and that the selected site had received zoning approval. The details in the RFQ were sufficient to inform the proponents of the size and purpose of the building, with no unnecessary information included. Five consortia responded to the RFQ.

The RFP was the second phase and was electronically issued to the three shortlisted proponents from the RFQ stage. Commercially confidential meetings were held to allow open consideration of potential design solutions in order to help prevent unresponsive or unacceptable proponent solutions. The RFP was designed to give the evaluation committee the opportunity to focus on identifying the proposal that most closely met the needs of Canada – allowing the committee to evaluate proposals on a stand-alone or comparative basis and to base the decision on a balance between price and technical excellence.

It was the project team's responsibility to demonstrate that the evaluation process was legally, commercially, and technically sound, in addition to being fair. The process was agreed to upfront by all proponents, and the evaluation committee and advisors were trained by legal advisors to conduct a justifiable evaluation. The Fairness Monitor, agreed to by the proponents, attended all commercially confidential meetings, was made aware of all responses to Requests for Information, and attended all evaluation meetings. The Fairness Monitor's report described the process as exemplary. Technical soundness was established through an evaluation manual and training, relationship reviews, confidentiality agreements, and security measures.

d. Implementation, Development, Delivery

GTAP was selected as the preferred proponent following evaluations in January 2010. Effective project approval was granted in March 2010, and the Project Agreement was signed on April 22, 2010, with financial close occurring the following day. A groundbreaking ceremony was held on May 10, 2010, signalling the start of the design-construction phase of the project.

As the Government of Canada's first P3 project, a strategic approach was required for the approvals process. Strategic communications, engagement, and education strategies were valuable given the unfamiliar P3 context. This approach facilitated the understanding of the P3 approach, imparting real knowledge on the P3 process and supported acceptance of the VFM report. A parallel evaluation and submission process was accepted by Treasury Board, which addressed the challenge of timelines—in traditional procurement, lenders are willing to hold their rates for longer than the three months that is standard for P3 procurements.

Within the P3 context, all design and construction work was tightly scheduled in order to deliver the project as stated in the Project Agreement. Once GTAP was identified as the preferred proponent, they engaged the government team for further development and user consultation. The development of an Inter-Agency Team, made up of representatives from PWGSC, RCMP, and GTAP, addressed the need for a collaborative approach between the public and private partners during the design-construction period.

e. Calendar

Schedule	Activity
February 06, 2008	Advanced Vendor Notification

July 08, 2008	Request for Qualifications (RFQ)
October 23, 2008	RFQ Evaluation
March 31, 2009	Request for Proposals (RFP)
September 30, 2009	RFP Technical Submissions
November 13, 2009	RFP Financial Submissions (RFP closes)
January 7, 2010	Preferred Proponent Identified
April 22, 2010	Project Agreement Signed
May 07, 2010	Official Groundbreaking Ceremony
December 23, 2012	Service Commencement

IV. FINANCING INFORMATION

a. Project Cost and Financing Sources

GTAP closed the RCMP E Division project with CAD \$195 million (2010) of amortizing senior secured bonds, due September 2037 (25 years plus 2 years for construction). The private bond placement, which is A-rated, is priced at 285bps over long term Government of Canada bonds (4.10%).²

For financing flexibility, the RFP allowed Proponents in their financing plan to raise funds either through a private or public placement and either through bank debt or bond financing or a combination thereof. This financing flexibility allowed for a more competitive environment especially in light of the global financial crisis at the time.

a. Key issues faced in financing

The impacts of the global financial crisis were of concern in the spring/summer of 2009, shortly before the RFP release date. Developers were facing increasing costs of financing, and it was uncertain if the teams could raise funds at a reasonable price to pursue the project.

In response, the project team consulted with their legal, commercial and financial advisors to understand the market conditions, which had begun to improve by August 2009. The project team determined that VfM could be achieved with an increase of government capital funds during the construction period. This solution allowed Canada to maintain the project timeline and offered benefits by reducing the amount of private sector funding and increasing the overall VfM for the project without impacting the risk transfer equation or the attractiveness of the project to potential investors. All proponents signed agreements indicating that they wished to continue with the RFP process.

V. CURRENT STATUS AND KEY IMPLEMENTATION ISSUES

² Rates referred to on InfraAmericas, "RCMP E Division Reaches Financial Close" (April 23, 2010) by Janet du Chenne. Accessed July 10, 2014: <http://www.infra-americas.com/news/canada/732171/rcmp-e-division-reaches-financial-close.shtml>

The RCMP E Division Headquarters facility has been operational since December 23, 2012; delivered on time and on budget. Performance is assessed monthly, overseen by the Joint Operating Period Committee, which is made up of senior management from PWGSC and GTAP.

VI. ROLE OF PPP UNIT/CENTRE

The development and procurement of the RCMP E Division project coincided with the formation of PWGSC's own P3 Development and Advisory Services National Centre of Expertise and Canada's P3 agency, PPP Canada, a federal Crown corporation. The project team received advisory services from Partnerships BC, the provincial P3 agency, through the establishment of a Memorandum of Understanding.

The project team's efforts have facilitated the incorporation of P3s as a procurement option within PWGSC, and influenced federal policy direction on P3s. As outlined in the 2011 Budget, the Government of Canada now requires federal projects of \$100 million capital costs or more and a life span of at least 20 years to consider P3 as a potential delivery model, applying a P3 screening tool to assess high-level suitability. Should the screen indicate that there is P3 potential, the procuring department is required to develop a P3 proposal among other procurement options under consideration. Government departments are directed to consult with PPP Canada on their screening results.

VII. KEY LESSONS AND OBSERVATION

a. Observations

Occupants of the facility have expressed a high level of satisfaction with both the premises and services provided by GTAP.

The dedicated project team contributed to the successful development of the facility through their efforts to integrate the client during the procurement process, collaborate with its private partner, and willingness to learn and adapt to a new approach to procurement. Other key drivers throughout the project's history included the incorporation of traditional and non-traditional approaches and roles within project management, extensive stakeholder engagement across all project stages, and the organizational paradigm shift necessary to deliver a P3.

b. Best Practices

P3s represent a significant shift in the public sector's role in the delivery of real property projects. The P3 approach requires the government to shift into an oversight function as opposed to delivery. Strong leadership and communications were a critical component of the RCMP E Division project's success, as was incorporating a principle-based strategic management framework for project management. Leadership was a key element in governance and oversight activities, strategic management, communications, engagement activities, as well as horizontal risk management.

The project also highlighted the importance of collaborative relationships and client service, emphasizing active engagement and communication with clients and ensuring that the end product meets client needs. The Integrated Project Team brought together both RCMP and PWGSC project teams—this allowed for the optimization of resources and the integration of diverse perspectives through the project.

During the design-construction period, the public and private sector teams formed an Inter-Agency team, which formed the core of consultations and technical decision-making during that period. This team reinforced a shared commitment to results and allowed for efficient decision making; however, effective management was required to ensure the appropriate level of private sector involvement.

An additional best practice identified is the inclusion of facilities management expertise early in the procurement phase. Incorporating internal and external facilities management advisors can have a positive impact on the development of the Project Agreement.

Metropolitan Center for Vehicles Removed from Circulation (CMVRC), Santiago, Chile

I. PROJECT DESCRIPTION

a. Background

Located in the Metropolitan Region, this concession project includes putting into place the infrastructure and services that allow for compliance with the obligation of custody of vehicles removed from circulation or from public roads by order of authority and according to the Transit Law applicable to 20 communes making up the city of Santiago, Chile. The respective municipalities have signed a mandate agreement with MOP (Chilean Ministry of Public Works), in which said governments delegate to MOP the responsibilities to tender, through public proposal, the operation and maintenance of the service of vehicle removal and custody, and thus transferring to a private party the rights and responsibilities for a given period of time.

In addition, the project includes services of Reception, Transference and Delivery (Spanish abbreviation RTE) of the vehicles in said infrastructure, and the subsequent return to the owner by means of a certification granted by the competent Court or Authority, and after paying Concessionaire the RTE service and custody service in accordance with the provisions of the contract.

The Concessionaire shall be responsible for all and any loss and damages, from the moment when the transfer is initiated from the place required by Authority until its eventual return to the owner.

The project is a result of a private initiative called "Vehicle Removal and Custody" and declared as public interest by MOP on March 22, 2002. The initiative was started by *Custodia Santiago S.A.* after developing initial studies to analyze the technical, economic and social feasibility of said project.

b. Key Outputs

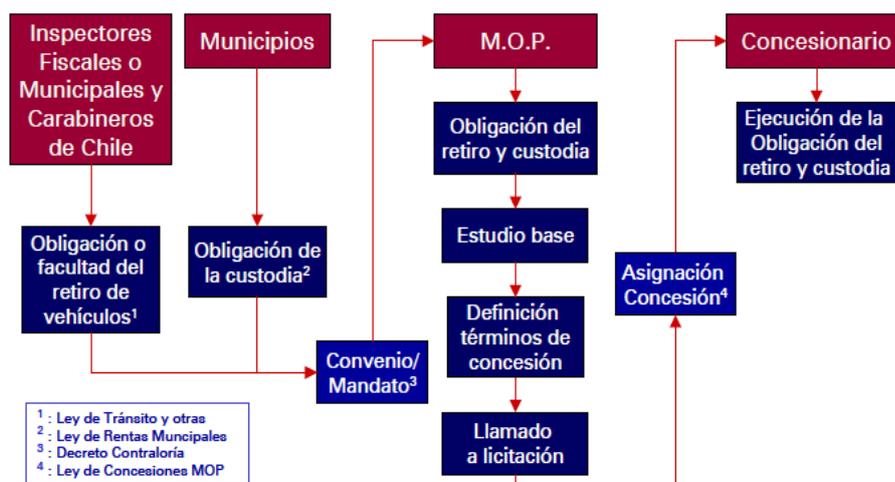
The concept of concession includes removal and custody services of vehicles, which, due to infringements, accidents, neglect, by court order or requested by another competent authority, are required to be removed from public roads. Transit Law No. 18.290 contains various articles that specify the competent Authority, or rather, the required authority responsible for removing vehicles.

In addition, various authorities were named as competent authorities for the purpose of ordering the removal of vehicles, in particular the Chilean Police, as well as Public and Municipal Inspectors.

c. Rationale for Public Sector Involvement

In this way, public sector participation is indispensable (in this case Municipalities and Authorities) to the project, since municipalities have the obligation of providing custody to removed vehicles, while inspectors and the police have the obligation to remove vehicles and transfer them to a third party – in this case the project Concessionaire.

d. Structure of the mandate transfer to the Concessionaire.



e. Challenges

Currently, vehicle removal and custody do not work together: on one hand there are the municipal lots and Police Units for vehicle custody and on the other hand, there are crane services provided by private companies and in-house services provided by the Police.

f. Rationale for Private Partner Involvement

There are many reasons that can constitute grounds for removal of a certain vehicle from circulation. Currently, in many cases, the Authority only processes the corresponding infraction and does not end up removing said vehicle due to lack of storage space afterwards and lack of cranes by part of the Police. When a vehicle needs to be told, first of all, the availability of Police cranes is reviewed. If said equipment is unavailable, the request is made to a private company. Response time of private companies is estimated to vary between 30 and 60 minutes after being contacted by the Authority. In the same place where the vehicle is tolled, the Police write up a brief guide with general information on the vehicle. Afterwards, the vehicle is transferred to the Police Unit, where upon receiving the vehicle, a full guide is completed. In most cases, the vehicle is transferred to a municipal lot, as the Chilean Police is the party that processes the transfer.

Not all Municipalities of Greater Santiago (34 in total) have warehouses, and some are not functional, as they have reached their capacity limit.

The Judges mainly interact with the Police and not with the lots, since the Police receives the infractions issued, or rather, can dispatch an order to remove a certain vehicle from circulation as established by the Criminal Procedure Code, which, on the other hand, does not specify that these vehicles should be taken to a certain Municipal Lot.

Thus, the most important characteristics and benefits of the projects can be summarized as follows:

- Vehicle removal and storage procedure is formalized through a sole responsible party following a standardized and regulated procedure.

- The concept of service is incorporated in the responsibility of the authorities and vehicle owners, defining response time, responsibility of removal and custody of the vehicles, and other additional services.
- The Municipalities are directly benefited by the project, since it takes away the cost of placing vehicles in the current lots in addition to reducing their administrative and legal responsibilities.
- The project frees up physical and human resources for the Chilean Police, as it eliminates the use of their installations for attending vehicles and reduces the personnel involved in tasks associated with said procedure.
- An ideal technological platform will be created to enable the interaction among all the relevant players in the process. The platform will have access to trustworthy and precise information on the vehicles and allow for a faster and more efficient search of the corresponding information. In addition, it will reduce customer service time as well as streamline all the process involved.

g. Key Outputs and Responsibilities of Concessionaire

The following are a few examples of the minimum works to be carried out by the Concessionaire: (Full list of service coverage is in appendix section)

- Building the necessary infrastructure for the sites and for the administrative offices and customer service center of the Concession.
- Enable parking for the purpose of vehicle custody.
- Build access road as well as connecting roads to the public roadwork and circulations inside the concession area.
- Prepare sites and equipment to protect the safety of personnel, installations and goods.
- Set up information systems.
- Put in place security and surveillance systems.

h. Project Milestones

The most important milestones associated with the concession contract are the following:

Activity	Schedule
Declaration as Public Interest Project by MOP	March 2002
Business Study (by private party)	2002 to March 2003
Mandate Agreement with Municipalities	May 2005 to August 2006
Call for Tenders	January 2008
Tenders Reception Period	November 2009
Contract Awarding	May 2010
Initial Engineering	October 2011
Initial Construction	January 2013
Temporary Launch	July 2014
Operation Begins	August 2014 (estimated)

Bidders (in some cases Bidding Groups) participated in the tendering process. *IAB Inmobiliaria S.A.* won the contract. Other bidders are “*Consortio Schiappacasse Custodia*”; “*Grupo CON-PAX Concesiones, Arauco y Claro Vicuña Valenzuela*”; “*Sociedad Concesionaria Central Metropolitana de Vehículos S.A.*” and “*Inversiones y Servicios INSER S.A.*”, whose bid was deemed technically unacceptable.

The entity in charge of administrating the PPP: in 1991, the Chilean Government enacted the Concessions Law. Afterwards, the Ministry of Public Works created the Department of Coordination of Public Work Concessions, which is in charge of developing, disseminating and managing private sector participation in public projects.

To minimize demand risk for a completely new project with no historical precedents, the Chilean Government allowed for the option of a guaranteed minimum income mechanism (Spanish abbreviation IMG) as an income floor that makes a project bankable. Since these projects had no historical precedents, the finance sector penalized the expected removed vehicle flow and the income, for which reason the bidder opted for IMG.

i. Special Features

Guaranteed Minimum Income ensures liquidity before debt services and a minimum annual income to the Concessionaire. The mechanism was designed with the idea that if the effective income were greater than IMG, the Concessionaire would have to share with the Government half of the surplus.

In terms of economic conditions, the bidding included a Rate Factor used to calculate the base rate for RTE service, with a maximum value of US\$ 87. The winning bid came up with a base rate of US\$ 55, which is adjusted in accordance with fluctuations in the price of Diesel.

j. Project externalities

- 1) The current municipal lots where all removed vehicles are stored have an administrator and a security guard, for this reason surveillance is not offered for 24 hours of the day but rather, only during working hours of said personnel. In addition, few had assistants and only the largest cars are assigned enough personnel to ensure functioning. Thus, vehicles are frequently missing parts and are eventually delivered in poor conditions to owners. The concession establishes a safe service level that ensures the condition of vehicles in custody, and in case of any incident, the respective fees are paid to the entire responsibility of the Concessionaire.
- 2) On the other hand, the lots lacked appropriate equipment to transfer vehicles such as cranes provided by private companies or the Police. Once a vehicle is removed, the Police request a tolling service from their Police Unit. The Police tolling option is considered first. If no Police crane is available, the request is made to a private company whose current response time varies between 30 and 60 minutes after being contacted by Authority. The concession includes working with a crane system that complies with a given service level established by law, in addition to considering fleet renewal given the service life of the equipment involved in the project, as well as addition of new cranes when needed.
- 3) Under current regulations, each of the 34 communes making of Greater Santiago should have a warehouse and necessary personnel. Having a central warehouse and other

primary warehouses can generate savings in the number of personnel needed for operation.

- 4) Currently, all vehicles removed from circulation are taken to the Police Unit and some never even end up in the lots, which make it necessary to assign a staff member to take over the vehicle reception and subsequent delivery in addition to time spent in transferring vehicles to lots. The concession implies that Police participation ends the moment the crane takes the vehicle to the primary warehouse, saving time for staff involved in above-mentioned processes and resulting in wider benefits for the society, as Police and staff members will have more time for surveillance if they choose.

II. PROJECT STRUCTURE

a. Type of PPP Project

This is a Design Build Operate Transfer (DBOT) type project in which the Concessionaire is in charge of designing, building, operating and transferring public works under the supervision of the Ministry of Public Works represented by a Public Inspector whose performance is evaluated by an external company.

b. Risk Allocation Matrix

Type of Risk	Ownership/ Responsibility
Demand Risk	Guaranteed Minimum Income
Construction and Maintenance Cost	Full cost will be borne by the concessionaire
Economic Policy Risk	Not applicable
Environmental Risk	Not applicable
Tax Risk	Government of Chile

In terms of project risks, as indicated before, demand risk was adequately addressed by having the option of Guaranteed Minimum Income.

Construction and maintenance risks were analyzed by a consultancy, which carried out studies in the proposal period of the private initiative, despite the studies being submitted almost completely to the winner through obligations established in the contract and in the received Sale Bid. From a contractual perspective, the Concessionaire proposed to MOP the areas for building CMVRC sites that fulfill the Bidding Requirements, and then proceeded to acquiring the same areas as it is the sole responsibility of the Concessionaire to clean the ground, draw the limits and protect the areas. Afterwards, the Concessionaire developed, entirely at its own cost, the Definitive Engineering Plan of the sites, including at least the architectural projects and specialized projects indicated in the contract. All sites mentioned in the Definitive Engineering Plan will be the sole responsibility of the Concessionaire, which will bear the full cost.

Economic policy risk was estimated to be insignificant due to strong macroeconomic management by the Chilean Government. As for environmental risks, the competent authority was inquired and replied that it was not necessary to go through the Environmental Impact Evaluation System given the characteristics of the project.

User fees for RTE services differ by type of vehicle (light, motorcycle, heavy/two axles, heavy/more than two axles), and takes into consideration current prices of custody service in municipal lots.

Project income consists of RTE service fee and custody fee, the former of which is the primary variable in the bidding process and result of the Sale Bid submitted by the winner, thus guaranteeing the minimum income level with the mechanism of Guaranteed Minimum Income.

The tax risk was addressed before the bidding process in 2005 and 2006, through reaching the most number of Mandate Agreements with the Municipalities of Santiago, which reviewed and approved the Bidding Requirements in 2007, enabling a greater demand, higher income and consequently a more attractive business.

In addition, the project also considered, as a Complementary service, the possibility that the Concessionaire can provide Custody and Reception services for vehicles removed from circulation and/or from public roads and spaces by order of Authority to the municipalities not considered in the contract. This implies that income may be higher than initially estimated, from vehicles not considered in the initial evaluation as long as the service delivered by the Concessionaire is positively evaluated by the community and incentivizes other municipalities to participate.

All this can improve the public sector performance by reducing the risk borne by Government through the mechanism of Guaranteed Minimum Requirements and enabling custody service in CMVRC to generate potentially higher income.

The Bidding Requirements imposed limits on minimum accounting equity, which was set at 4.4 million USD. Additionally, a bank warranty bill is required to demonstrate the seriousness of the bid, which during the initial construction had to be replaced by a construction warranty bill and later by an operation warranty, whose value is less since the concessionaire had already made an important investment in building the site, which became an implicit warranty.

One of the main characteristics of the project is the implementation of a technological platform that allows for the interconnection between all players involved in the process (municipalities, the Chilean Police, etc.) and electronic applications for vehicle removal and their corresponding transfer, in addition to the entry and safeguarding of all relevant vehicle information to facilitate its identification and follow-up. This will allow for an important modernization of the system, which currently does not demonstrate adequate service levels (in terms of response time, level of vehicle information, etc.) and an equalization of services delivered in the Chilean capital.

III. PROCESS ANALYSIS

a. Inception

The project arises from a private initiative called "Vehicle Removal and Custody" declared as public interest by MOP on March 22, 2002. The private initiative was started by *Custodia Santiago S.A.*, who carried out the initial studies to analyze the technical, economic, and social feasibility of the project.

Afterwards, the Ministry of Public Works took charge of the project implementation. Due to the amount invested and the players involved, MOP decided to take the route of Public Private Partnership (PPP), taking advantage of the Concession Law.

b. Preparation

The Department of Coordination of Concessions of the Ministry of Public Works specifically set up a Division of Project Development and Tendering, nominating a project manager supported by a multidisciplinary group which included professionals in engineering, space, environment, expropriations and demand analysis. Meanwhile, the Project Manager wrote the Bidding Requirements with the help of the support team and lawyers. The Bidding Requirements would form as a part of the Concession Contract.

c. Procurement

The project went through a Bidding Phase, during which the Bidding Requirement was submitted and would form, along with other main background information as “Agreement Protocol between the Chilean Police and the Ministry of Public Works”, defining commitments of the Chilean Police with the Concessionaire as well as coordination steps deemed relevant and compliant with institutional regulations that establish the procedures of vehicle removal notification, information to submit to Concessionaire, responsibilities of public officials and of the Police, among others, in accordance with the Bidding Requirements.

The project received 5 bids in total, of which one was disqualified for being technically unacceptable and its Sale Bid was returned without being reviewed. 4 Sale Bids were evaluated, which indicates a good level of competition. The Bidding Requirements established only one variable, which is the Rate Factor used to calculate the base rate for RTE service, at a maximum value of approximately US\$ 87. The winning bid put forth a value of US\$ 55, more than 37% lower than the maximum set in the Bidding Requirements.

d. Implementation and Development

The contract is valid for a fixed period of 25 years from the date of Temporary Site Launch Authorization. 15 days after beginning the concession, the Ministry assigns a Public Inspector for the Construction Phase to administrate and manage the contract on behalf of the Ministry.

The first phase of the contract is the Engineering Phase initiated in October of 2011, in which the Concessionaire must develop the definitive engineering plan of the project and present them for review, while the approval marks the end of the first phase. Once the Public Inspector approves the definitive engineering plan, the Concessionaire can begin the second phase and start building the sites. The contract established a maximum period for finishing the Construction Phase of 18 months in the Bidding Requirements. In addition, three Progress Reports are required at 5%, 40% and 80% completion of the construction.

e. Delivery

When administering and managing the contract, including project and site review, the Public Inspector is supported by specialists of the Department of Coordination of Concessions, as well as by an external company hired as Technical Inspection Advisor for Construction. Reception of approval of the site is formally processed by the Ministry of Public Works based on reports submitted by the Public Inspector.

This concession includes a trial period as a prerequisite for obtaining Temporary Site Launch Authorization. The trial period begins when it is demonstrated that the constructions are carried out correctly, and that the technological platform works well as determined by the Commission on Temporary Launch Authorization. The trial period lasts for 30 days, which is currently under development. The MOP is currently implementing an agreement with the Civil Registry to obtain the address of the “apparent owner” of vehicle and accelerate the process involved in identifying vehicle owners.

After the Construction Phase, the Operation Phase begins. To administer and manage the contract during this phase, the ministry assigns a new Public Inspector and hires a company as Technical Inspection Advisor during the operation.

f. Exit

Finally, the contract establishes that once the concession is close to finishing, the Public Inspector of Operation should take a series of measures to supervise service standards beyond the conventional ones to ensure that the ministry receives the site in optimum conditions of maintenance and operation.

The summary timeline from concession to the present is as follows:

Activity	Schedule
1. Declaration as Public Interest Project by MOP	March 2002
2. Call for Tenders	January 2008
3. Tenders Reception Period	November 2009
4. Contract Awarding	May 2010
5. Initial Engineering	October 2011
6. Initial Construction	January 2013
7. Temporary Launch	July 2014
8. Operation Begins	August 2014 (estimated)

Currently the concession is in trial period and is expected to begin Operation Phase in August 2014.

IV. FINANCING INFORMATION

a. Cost Estimates

The estimated budget submitted to the Government is US\$ 19 million based on available studies and other estimates of the Ministry.

b. Project Financing

Sponsors of the Concessionaire contributes equities of between 25% and 30% of investment, and the rest is contributed by the financial sector through debt financing against project flows, or more precisely, Guaranteed Minimum Income.

During the Construction Phase, financing is done with several national Banks that lends through “*credito puente*” (bridge loan) to the Concessionaire depending on the project progress and the monetary needs.

Once construction is completed and temporary launch authorization obtained (beginning of the Operation Phase), the sources of financing will be bonds issued on capital markets. The bonds are mainly acquired by Insurance Companies and Chilean Pension Fund Administrators given the long duration of said bonds.

V. ROLE OF THE DEPARTMENT OF COORDINATION OF CONCESSION OF PUBLIC WORKS

The Coordination of Concessions of the Ministry of Public Works is done through three divisions in accordance with the development phase of the project:

- i) Division of Project Development and Bidding, in charge of designing, planning and disseminating the project, negotiating financing with the Ministry of Finance, managing relations with bidders and writing the Bidding Requirements that subsequently become the main document of the Concession Contract. This division is in charge of the project until the awarding of the concession contract.
- ii) Division of Construction, in charge of administering and managing the project in the Construction Phase, which includes the definitive engineering plan and site construction.
- iii) Operation Division, in charge of administering and managing the contract in the Operation Phase until the end of the Concession. Once the contract is awarded, negotiations are allowed in the Construction Phase and in Operation Phase, in case changes in external conditions call for modifying the project. These modifications are specified through a Complementary Agreement.

The mission of Coordination is to create public infrastructure works to preserve and improve the quality of life of people and their environment within the Public Private Partnership Agreement. Improvements to contracts have been introduced through the years, from function- and appearance-based requirements to supervision-based on standards and service level.

VI. SOCIAL IRR AND NAV

The proposed projects – as all projects that require some Government investment are evaluated socially according to methodologies established in the National Investment System by the Ministry of Social Development (MDS). In this case, benefits are calculated based on user time and fuel savings compared against costs of investment and maintenance valued at social prices. From this analysis, social profitability indicators (social Internal Rate of Return, social National Added Value (NAV)) are obtained. If the social profitability is higher than the threshold set by MDS, the project is approved and deemed beneficial for the community and can be tendered.

From the beginning to the August 2014, the Coordination Department has tendered a total of 78 contracts totaling over US\$ 18 billion.

VII. KEY LESSONS, EXPERIENCES AND OBSERVATIONS

This project is a good example of how Public Private Partnerships can provide the best possible solution for solving problems that affect the community overall and are not easily resolvable by the State.

As automobile sales grow, so does the number of vehicles removed from circulation or abandoned vehicles that end up in municipal lots. The retained cars are growing so fast in number that the current infrastructure is collapsing, and some have run out of space for new cars. To change this situation, the Ministry of Public Works initiated the bidding process of this project in 2011 consisting of a large metropolitan lot to alleviate this problem and improve the service quality, which is the responsibility of municipalities.

When MOP opened the bid, twenty municipalities decided to participate, with which abandoned, removed vehicles and the ones tied up in litigations will go to stay in this center. It is expected that once the project is functional, more municipalities will want to join as several of them have shown interest. The economy of scale of this project, bringing together 20 municipalities, allows for creating an attractive business that would not be so if done separately. Thus, maintaining the current rates, improvements can be made in response time, security level of the vehicles and in general, obtain better indicators of service level.

In terms of project financing, it was possible to verify PPP as a valid and important tool, where a project like this could carry out with financing coming completely from direct user payments without compromising the Government budget.

Another important lesson was the need to disseminate and define the project together with the community, local authorities and government departments to choose the best solution for all and make everyone feel like a part of the project in addition to reaching consensus.

At last, it was important to discover that for such a complex project and the many players involved, the external conditions inevitably change and there is no permanently perfect solution, and the project has to be flexible enough in all its phases to be able to evolve with its surrounding and the requirements of the moment. For example, the Ministry is currently implementing an Agreement with the Civil Registry to rapidly identify owners of removed (or abandoned) cars to make the process more agile and efficient.

VIII. APPENDIX:

The concession contract outlines the following types of services:

BASIC SERVICES: basic services refer to the ones that the Concessionaire is required to provide from the beginning of the Site Construction Phase and throughout the period of concession, and by which the Concessionaire can charge a user's fee.

A) RECEIVING, TRANSFERING AND DELIVERING THE VEHICLES TO CMVRC (RTE)

The Concessionaire is required to receive, transfer and deliver the vehicles to CMVRC – vehicles removed from circulation and/or from public roads and spaces, in accordance with Law No. 18.290, the Transit Law.

To perform these services, the Concessionaire has to fulfill the following requirements and procedures:

a.1) RTE Service Application System

The Concessionaire has to implement, to its greatest ability, cost and responsibility, a computer system with access to the Internet or to another similar system proposed by the Concessionaire, so that the Authority can process the RTE service applications.

The system has to be able to match a service application with all the relevant information of the vehicle to be removed and transferred to CMVRC custody, including for example, crane for tolling the vehicle, location in the CMVRC to be transferred, information obtained from the registry, photos of the vehicle, etc.

This system has to be able to submit service applications through a technological platform, so that the Concessionaire can receive the application as soon as it is entered into the System. Additionally, the Concessionaire has to enable a Call Center with free hotlines so that the Authority can maintain communication at all times with the Concessionaire.

From the moment when the application is entered into the system, it is the responsibility of the Concessionaire to fulfill the maximum service time delivery requirement established in the Bidding Requirements and have the transportation means available to toll the vehicle.

a.2) Rolling Stock

The Concessionaire is required to have the necessary cranes to comply with the service standards established in the Bidding Requirements to the best of its ability, cost and responsibility.

The cranes used by the Concessionaire cannot be more than 7 years old (calculating from the year in which they are made).

a.3) Vehicle Reception Response Time

The Concessionaire will have 35 minutes to respond when requested by the Authority to appear at a certain location. Once the time limit is reached, the Authority can solicit crane services from another company, in which case the Concessionaire shall have no right to receive compensation.

Response time shall be measured from the moment in which the Authority enters a RTE service application into the Computer System or contact the Concessionaire through Call Center, until the moment of arrival of the crane to the location.

The concessionaire shall have to comply with the monthly average response time, defined for Peak and Non-Peak hours according to the following:

- **Peak Hour Monthly Average Response Time**

The monthly average response time during peak hours cannot be more than 60 minutes. Failure to comply will incur fines to the Concessionaire
Peak Hours refer to 07:00 - 09:00 and 18:00 - 20:00 on workdays except holidays.

- **Non-Peak Hour Monthly Average Response Time**

The monthly average response time during non-peak hours cannot be more than 35 minutes. Failure to comply will incur fines to the Concessionaire.

In addition, if in certain months, response time is over 60 minutes but under 90 minutes 10% of the time, the Concessionaire will be charged a fine. If response time is or more than 90 minutes for 5% of the time, another fine will apply.

For these purposes, Non-Peak Hours refer to time intervals not included in the previous definition of Peak Hours.

The required Peak Hour and Non-Peak Hour Average Response Time and the time intervals outlined for the purpose of charging fines can be reviewed per legitimate request by the Concessionaire during the fourth month of operation and every 24 months from the beginning of the Construction Phase of the concession, based on experience with concession and with services of similar characteristics offered on the market, and in addition has to include a study done by an independent consultancy.

a.4) Reception Records

Once the Concessionaire's crane reaches the vehicle site, in the occasion that the Authority calls for its removal, certified personnel of the Concessionaire will require said Authority to sign the Reception Records. The Reception Records consists of a numbered form, which records the name of Authority who ordered the removal of the vehicle from public road, the reason for removal, the exact location, the vehicle identification and a record of its state and characteristics, supported by photos documenting the conditions of the vehicle.

In addition to signing the Reception Records and to the above-mentioned photo documentation, certified personnel of the Concessionaire is required to make a digital video registry of the vehicle with at least a 360° view of the vehicle and its location.

Made in three copies, the Reception Records shall be the official document for registering vehicles in the Metropolitan Center for Vehicles Removed from Circulation. Concessionaire holds the original copy and has to submit a copy to the Authority who signed it, as well as another copy to the vehicle owner, if the latter happens to be present.

Once the documentation is complete, the Concessionaire must proceed to transfer the vehicle and subsequently, deliver it to CMVRC. From the moment of receiving the vehicle and once the Receptions Records is signed by the competent Authority, the responsibility of the vehicle lies with the Concessionaire.

a.5) Delivery Time in CMVRC

The Concessionaire shall proceed to transfer the vehicles in the rolling stock equipped for said purposes. The vehicles must be delivered within a maximum period of three hours from the beginning of the transfer, directly to the Metropolitan Center for Vehicles Removed from Circulation or to duly enabled transitory custody grounds that can hire the Concessionaire to optimize service. Should the Concessionaire use transitory custody grounds, vehicle arrival to these grounds shall be registered and delivered to CMVRC no more than 72 hours from the moment of entry into said grounds. In any case, the Concessionaire shall always be responsible for any damage, deterioration or loss of registered objects or caused to parts of the vehicle after its removal from the location solicited by the Authority. Failure to deliver on time will incur fines to the Concessionaire.

B) VEHICLE CUSTODY SERVICE IN CMVRC

The Concessionaire shall provide custody service to vehicles removed from circulation by order of Authority, from the moment of delivering the vehicle to CMVRC and throughout the time it remains in custody of CMVRC. The concessionaire can charge for said service at rates outlined in the Bidding Requirements.

Custody Service in CMVRC includes:

b.1) Delivery of Vehicle to CMVRC

Vehicles can be delivered to CMVRC in any moment between 0:00 - 24:00 every day of the week and every day of the year.

b.2) Vehicle Custody

The Concessionaire shall provide custody service to vehicles delivered to CMVRC in the Parking Area, and ensure that throughout the custody the vehicles remain in their original conditions in which they were removed from circulation and delivered to the Concessionaire by part of the competent Authority ordering the removal.

The Concessionaire shall be the sole party responsible for the protection and care of the vehicles delivered by the Authority.

b.3) Returning Vehicles to their owners

Unless the court orders the vehicle to be returned to a third party, the owner must request the CMVRC should they wish their vehicles be returned.

Once the respective document ordering the vehicle return is received by the Concessionaire, payments duly made and after paying the Concessionaire all the rights and expenses included in the Returns Settlement, the Concessionaire shall proceed to return the vehicle within a maximum period of 45 minutes. Returns Settlement refers to the document that confirms the services delivered by the Concessionaire and their value, requiring signature by vehicle owner or his/her legal representative.

Vehicle returns can be processed between 8:00 a 17:00 Monday to Friday.

SPECIAL MANDATORY SERVICES: special mandatory services refer to any and all services the Concessionaire is required to deliver throughout the period of concession, and for which it is required to provide to users free of charge.

A) RTE SERVICE AND VEHICLE CUSTODY IN CMVRC REQUIRED BY THE PROSECUTOR OR ORAL CRIMINAL TRIAL COURT

The Concessionaire should provide, at its own costs and responsibility for all RTE services and custody for vehicles whose custody is required by the Prosecutor or the Oral Criminal Trial Court as requests for expertise or confiscation.

B) SITE, EQUIPMENT AND ROLLING STOCK CONSERVATION SERVICE

The Concessionaire shall conserve the sites, equipment and rolling stock referred to in the concession contract and ensures their optimum conditions in order to comply with the service levels established in the contract.

C) CLEANING SERVICE

Cleaning services refers to regular cleaning of the entire concession area, which must be maintained free of rubble, waste, trash, etc.

D) BATHROOMS

The Concessionaire shall set up bathrooms for users of the Metropolitan Center for Vehicles Removed from Circulation and for the general public.

E) SURVEILLANCE AND SECURITY SERVICE

The Concessionaire should provide surveillance and security service within the Metropolitan Center for Vehicles Removed from Circulation.

To deliver said service, the Concessionaire must assign security guards for Access Area, Administrative Buildings Area and Parking Area, every day of the year and 24 hours a day, in addition to providing security Equipment, electronic security devices or technological surveillance apparatus.

F) INFORMATION SERVICE

The Concessionaire shall set up an information system to manage the database of vehicles removed from circulation and to deliver updated information to the general public, MOP, the Chilean Police, the Municipalities or another institution as determined by the Public Inspector.

G) INITIAL VEHICLE TRANSFER

The Concessionaire shall transfer all vehicles in custody to CMVRC regardless of their state of conservation to lots set up for said purpose in the municipalities outlined in the contract that solicit the transfer. The Concessionaire shall assume total responsibility for any accident that may take place during the transfer and in the subsequent custody in CMVRC.

All costs involved in said transfers shall be the sole responsibility of the Concessionaire. Once the vehicle is delivered to CMVRC, custody service begins and the Concessionaire can start charging for the service.

H) PARKING SERVICE FOR THE GENERAL PUBLIC

The Concessionaire shall provide parking service to the general public, located in the Administrative Building Area.

I) PAYMENT FOR THIRD PARTY CRAINE SERVICES

The Concessionaire should pay, entirely at its costs and responsibilities, fees charged by crane companies that delivered different transfer services should the Authority solicit another crane service in accordance with a.3). Whoever solicits the vehicle return shall bear the fee.

J) VEHICLE RETURN ACCESS SERVICE

In addition to the area(s) making up CMVRC, the Concessionaire must have available at least one area within the zone formed by a circle of 8 kilometers in radius centered in intersection of Monjitas Street and 21 de Mayo Street in the commune of Santiago. This area shall be used to process vehicle return when required by the owner and only once every time his/her vehicle is removed from circulation and held in custody service of the Concessionaire.

K) CUSTOMER SERVICE

The Concessionaire shall set up customer service offices within the public service area of CMVRC or in areas mentioned in article J) and in at least one additional office located in the Historic Center of Santiago.

COMPLEMENTARY SERVICES: Per Public Inspector request and in any moment during the concession period, the Concessionaire can propose complementary services, for which fees can be charged based on services such as:

Complementary Custody Service and RTE Service

The Concessionaire can provide Custody Service or RTE Service to vehicles removed from circulation and/or from public roads or spaces by order of Authority to Municipalities not included in Bidding Requirements.

1. Vehicle Auction Service
2. Carwash Service
3. Special Protection Service
4. Special Return Service
5. Repair Service

East-West System, Chile

I. PROJECT DESCRIPTION

a. Background

In 1995, the first Urban Concessions Program was created in the City of Santiago. The program included a set of four projects, considering the infrastructure needs of the capital's road system. The first one of these projects proposed for bidding was the East-West System, also known as Constanera Norte.

b. Project Rationale

In the 1990s, Santiago was home over 5 million people with an accelerated growth rate. The rapid urban population growth in large sectors of the capital, in addition to generating an increase in urban land and a high level of economic activities propelled by an annual growth rate of 7%, also causes greater transportation infrastructure demand that public investment were not capable of. As a result, congestion and air contamination increased, and this had a direct impact on the increasing costs of urban life and causes lower efficiency in the city.

c. Rationale for Private Sector Involvement

In this context, the Chilean government promoted the First Urban Concessions Program, with the main goal to reduce road network infrastructure deficit. Infrastructure should be financed by road users so as to not affect the fiscal budget and in this way, make users internalize the costs implicit in their decision to drive cars, and thus encourage a more rational use of private transportation through the demand effect.

d. Resources

The project is located in Santiago, with a string of developments occurring in eleven communes – including the ones with the highest and the lowest income – the latter of which was inhabited by around 1.5 million people. With an initial investment of 414 million dollars, the total length of the project was 42 kilometers, 35 of which corresponds to the Constanera Norte axis, 7 of which was the lateral tunnel under the Mapocho river. This particularity helped it win the best international project of the year in the Third Annual Latin American Leadership Forum in 2005 organized in Washington, D.C. since the river was a natural screen line separating the flows. To ensure adequate service level of highway entrances and exits as well as the functioning of the adjacent road network, the project included the construction of 9 bridges. The design speed was 80 to 100 km/h and daily traffic was estimated 120,000 trips. Also open for concession was Avenida Kennedy, preexisting infrastructure of 7 kilometers in length.

According to Chilean legislation, the Ministry of Public Works is responsible for public roads. Thus, the State is involved in a project like this, notwithstanding the foregoing and to not affect budget balances, public private partnership was chosen specially for the concession. The project is the result of a public initiative proposed by the Ministry of Public Works in the framework of the Urban Transportation Plan for Santiago.

e. Objectives

The main goal of the project was to improve urban connectivity, set in a general transportation plan and taking advantage of private sector's management capacity and efficiency.

f. Scope

The main products of the project are its basic services, which on one side is Traffic Management to ensure a good level of connectivity, and infrastructure maintenance throughout the Operation Phase on the other hand, which was quite a novelty given that under the usual scheme, the State would purchase the construction, which would up being so poorly maintained to the point of total neglect. To implement the project, the Ministry had to come up with new contracts. In general, these maintenance contracts were postponed to give way to other new infrastructure projects.

g. Key Outputs

The concession contract outlines the following types of services:

Basic Services

1. Infrastructure maintenance service: tasks aimed at conserving the infrastructure according to a series of indicated requirements
2. Traffic Control and Management Service: control tasks within the concession area to provide good service to users and ensure service in case of accidents, specifically:
 - a) Emergency Response Area
 - b) Emergency Intercom
 - c) Variable Signals
 - d) Video Cameras
 - e) Tunnel Gas Control
 - f) Control Room

Business Services:

The contract establishes that the concessionaire can provide, install or operate in the area of concession in the following ways

- a) Commercials
- b) Multiduct Services
- c) Underground Parking
- d) Recreational Installation and Community Equipment Areas
- e) Gas Station Areas
- f) Business Venue Areas
- g) Public Transportation Service operated by the Concessionaire or tendered to a third party

Under the proposed scheme, the concessionaire accepts the Bidding Requirements as Concession Contract and creates their own reference background based on information made available by the Ministry, in particular a preliminary engineering project, based on which detailed engineering projects should be developed and made into actual constructions.

h. Project Milestones

Activity	Schedule
1. Prefeasibility Study	1995
2. Business Study	1995

3. Pre-selection Call	1996
4. First Call to Tender	1997
5. First Tender Declared Deserted	1998
6. Second Call to Tender	July 1999
7. Bids Reception	November 1999
8. Contract Awarding	February 2000
9. Construction Begins	May 2001
10. Operation Begins	April 2005

In the pre-selection process, nine bidders (in some cases bidding groups) participated and four bids were received. The winning bidder was a consortium formed by an Italian Company *Impregilo S.P.A.*, and Chilean construction companies *Fe Grande S.A.* and *Tecsa S.A.* Other bids received were submitted by the Spanish enterprise consortium including *Sacyr, Actividades de Construcción y Servicios (ACS)* and *Fomento de Construcciones y Contratas (FCC)*; The *Necso Entrecanales y Cubiertas* company, subsidiary of Spanish Company *Acciona*; and the consortium formed by the French Company *Bouygues y Egis* and the Chilean Construction Company *Besalco*.

i. Special Feature

To minimize demand risk associated with opening new ways with no historical vehicle flows, the Chilean Government allowed for the option of a guaranteed minimum income mechanism (Spanish abbreviation IMG) as an income floor that makes a project bankable. Since these projects had no historical precedents, the finance sector penalized the expected removed vehicle flow and the income, for which reason the bidder opted for IMG.

Guaranteed Minimum Income ensures liquidity before debt services and a minimum annual income to the Concessionaire. The mechanism was designed with the idea that if the effective income were greater than IMG, the Concessionaire would have to share with the Government half of the surplus.

In terms of economic conditions, the bid considered three sections, the last of which consisted in the possibility of choosing a subsidy of up to 5% of the value of the construction, which is estimated in such a way to ensure project completion and approval by negotiations with the Ministry of Finance. Finally, the winning bid corresponded with another section and the subsidy was not used.

Additionally, in the years leading up to the project bidding, the Asian crisis happened, and the government decided to implement an optional currency hedging mechanism. However, the bidders did not take this option, as it had been designed for loans taken by foreign companies while in this case, the borrowers were local.

The main positive externality of this type of project is fuel consumption reduction, which results in lower air contamination, which is important for Santiago where air pollution is a problem. This reaffirms the need to implement this project, just like the entirety of Urban Concessions Program.

II. PROJECT STRUCTURE

a. Type of PPP Project

This is a Build Operate Transfer (BOT) type project, in which the Concessionaire builds, operates and transfers, all under the supervision of the Ministry of Public Works represented by a Public Inspector whose performance is evaluated by an external company.

b. Risk Allocation

In terms of project risks, as indicated, demand risk was addressed by applying for Guaranteed Minimum Income. Construction and maintenance risks were addressed by cost estimation through preliminary engineering and engineering studies. Economic policy risks were deemed insignificant thanks to the strong macroeconomic management of the Chilean government and the option of a currency hedging mechanism, which the bidders ended up not choosing. During the process, a spatial impact risk was detected, as the project would pass by a highly consolidated residential sector – Pedro de Valdivia Norte. The environmental legislation requires hosting public participation meetings, which provided the opportunity to disseminate the project and to explain previous planning efforts to minimize local impact.

The tax risk was managed through the pre-selection process, which allowed the Ministry to meet with the companies and/or with the interested consortiums to show the upsides of the project while addressing risk management. Gradually, trust began to form. Likewise, in Pre-selection Requirements, minimum accounting equity was limited to 16 million dollars.

Additionally, a bank warranty bill is required to demonstrate the seriousness of the bid, which during the initial construction had to be replaced by a construction warranty bill and later by an operation warranty, whose value is less since the concessionaire had already made an important investment in building the site, which became an implicit warranty.

c. Revenue Scheme

User's fee rate was set in three levels: Non-Peak Rate, Peak Rate and Saturation Rate, in correlation to demand in each period and thus seeking to influence demand. Due to lack of income sources, road use is charged through electronic toll to ensure a minimum level – the above-mentioned Guaranteed Minimum Income.

d. Project Features

One of the main characteristics of this project and of the first Urban Concessions Program as a whole, was that user fee is charged through a Free Flow Electronic Payment System, which is to say, the driver does not need to slow down to pay the toll. Rather, payment is made through scanning tags or transponders through devices located on the roads. The system was designed in such a way to be interoperable in all four concessions. This is to say, users could pass through all project with only one tag or one valid transponder for all. Likewise, the user receives only one toll ticket, corresponding to the concession with which the user signed the contract.

The concession is in charge of collecting fees at each concession and later pays every one of them a corresponding value. Implementing four projects almost simultaneously with easy operation for users contributed enormously to its launch and acceptance. Today the system is applied to intercity road concessions so that its users can also enjoy the benefits.

III. PROJECT ANALYSIS

a. Inception

The project started as part of the First Urban Concession Program, which chose four infrastructure works whose construction was outlined through the measurements indicated in Santiago's Urban Transportation Plan by the Ministry of Transportation. The Ministry of Public Works took charge of the project implementation, and opted for Public Private Partnership due to the amount of investment involved, taking advantage of the Concessions Law enacted a few years ago.

b. Project Preparation

The Department of Coordination of Concessions of the Ministry of Public Works specifically set up a Division of Project Development and Tendering, nominating a project manager supported by a multidisciplinary group which included professionals in engineering, space, environment, expropriations and transportation demand analysis. Meanwhile, the Project Manager wrote the Bidding Requirement with the help of the support team and lawyers. The Bidding Requirement would be form part of the Concession Contract.

c. Feasibility

Territorial analysis and profile engineering was completed. Succeeded by basic engineering and transportation baseline studies were carried out to define the preliminary project and analyze it through many disciplines. With respect to demand, measurements were taken in sectors near the project during three years in a university. Subsequently a demand forecast study was done by a state-of-the-art company using the latest transportation model.

d. Procurement

Authorities of the Ministry organized road shows in Europe to spread interest in the program. Formally speaking, the first step was the Pre-selection Phase only for the four projects of the Urban Concessions Program, in which a total of 9 companies/international consortiums participated. The main goal of his phase was to choose and get to know the interested companies, presenting projects to them and receiving comments and feedbacks to enrich the project. The selection criteria of the private companies did not have many restrictions beyond complying with the minimum capital requirement, the national legislation and the project document. Afterwards, every project had a separate Bidding Phase, during which the Bidders were presented with Bidding Requirements, which would then form part of the Concession Contract together with background information of the preliminary project.

Based on the above information, the applicants had to prepare their bid, which consisted of two parts: Technical Bid, which all required documentation had to be submitted and be deemed technically acceptable; and Sale Bid. The Technical Bid and Sale Bid had to be submitted at the same time in a public event called Bid Reception Ceremony and Opening of Technical Bids. Sale Bids remained closed during the revision of Technical Bids. If the Technical Bid was accepted, the Sale Bid is opened in another public event called Sale Bid Opening Ceremony.

Finally, once all Sale Bids are checked and deemed to be free of errors, the ministry had to inform the intention of awarding the concession to the applicant with the best bid.

Four bids were received for the Constanera Norte project, out of which one was disqualified for being technically unacceptable and the Sale Bid was returned without being reviewed.

Therefore, 3 Sale Bids were reviewed, indicating a good level of competition. The Bidding Requirements established a total of three bidding variables in the following order: first, payment to the State for Goods and Rights to Use the Concession; second, the possibility of postponing some of the works; lastly, the option of requesting a small subsidy offered by the State. Any Bid on the First Section won a bid on the Second Section, and any Bid on the second section was preferred to one on the Third Section. The open Sale Bids were on the First Section, which validated the bidding design philosophy.

The contract is valid for a fixed period of 30 years, from the publication of the Decree Awarding the Contract in the Official Gazette in February 2000. 15 days after beginning the concession, the Ministry assigns a Public Inspector for the Construction Phase to administrate and control the contract on behalf of the Ministry.

The first phase of the contract is the Engineering Phase divided in two parts: first, the Concessionaire must develop the detailed engineering plan of the project and present them for review, while the approval marks the end of the first phase. Once the Public Inspector approves the definitive engineering plan, the Concessionaire can begin the second phase and start building the sites. The contract established a maximum period for finishing the Construction Phase of 18 months in the Bidding Requirements. In addition, three Progress Reports are required at 5%, 40% and 80% completion of the construction.

e. Development and Delivery

When administering and managing the contract, including project and site review, the Public Inspector is supported by specialists of the Department of Coordination of Concessions, as well as by an external company hired as Technical Inspection Advisor for Construction. Reception of approval of the site is formally processed by the Ministry of Public Works based on reports submitted by the Public Inspector. In the end, this project Phase lasted a bit over 5 years, obtaining approval in April 2005, mainly due to the fact that the Concessionaire presented an alternative project including a section underneath the Mapocho River during the Construction Phase.

After the Construction Phase, the Operation Phase begins. To administer and manage the contract during this phase, the ministry assigns a new Public Inspector and hires a company as Technical Inspection Advisor during the operation.

f. Exit

Finally, the contract establishes that once the concession is close to finishing, the Public Inspector of Operation should take a series of measures to supervise service standards beyond the conventional ones to ensure that the ministry receives the site in optimum conditions of maintenance and operation.

The summary timeline from concession to the present is as follows:

Activity	Schedule
1. Prefeasibility Study	1995
2. Business Study	1995
3. Pre-selection Call	1996
4. First Call to Tender	1997
5. First Tender Declared	1998

Deserted	
6. Second Call to Tender	July 1999
7. Bids Reception	November 1999
8. Contract Awarding	February 2000
9. Construction Begins	May 2001
10. Operation Begins	April 2005

IV. FINANCING INFORMATION

a. Project Cost and Financing

The constructions initially considered in the contract had a final cost of approximately US\$ 520 million.

In terms of Project Financing, sponsors of the Concessionaire contribute equities of between 25% and 30% of investment, and the rest is contributed by the financial sector through debt financing against project flows, or more precisely, Guaranteed Minimum Income.

Source of financing includes issuing infrastructure bonds backed by monoliners, which have been placed in capital markets and acquired by Insurance Companies and Chilean Pension Fund Administrators.

b. Key Issues and Challenges

During these years, a series of additional, renegotiated (with the States) works have been incorporated through Complementary Agreements, reaching a total of 922 million dollars in investments made until the present day.

The complementary agreements were concerned with the implementation of new works not considered when the bid was carried out, although the state also had to pay compensations for delays in land delivery. As it is a new project in the transportation system of a large city, it is logical to consider the new needs emerged during the 15 years of concession period and allow for new ways of improving site operation and its surroundings. The contracts need to be flexible and consider the possibility of introducing necessary changes. This contract was one of the first of this magnitude.

V. ROLE OF THE DEPARTMENT OF COORDINATION OF CONCESSION OF PUBLIC WORKS

In 1991, the State enacted the Concessions Law. Afterwards, the Ministry of Public Works created the Department of Coordination of Public Work Concessions, and is in charge of developing, disseminating and managing private sector participation in public projects.

The Coordination of Concessions of the Ministry of Public Works were done through three divisions in accordance with the development phase of the project:

1. Division of Project Development and Bidding, in charge of designing, planning and disseminating the project, negotiating financing with the Ministry of Finance, managing relations with bidders and writing the Bidding Requirements that subsequently become

the main document of the Concession Contract. This division is in charge of the project until the awarding of the concession contract.

2. Division of Construction, in charge of administering and managing the project in the Construction Phase, which includes the definitive engineering plan and site construction.
3. Operation Division, in charge of administering and managing the contract in the Operation Phase until the end of the Concession. Once the contract is awarded, negotiations can take place in the Construction Phase and in Operation Phase, in case changes in external conditions call for modifying the project. These modifications are specified through a Complementary Agreement.

The mission of Coordination is to create public infrastructure works to preserve and improve the quality of life of people and their environment within the Public Private Partnership Agreement. Improvements to contracts have been introduced through the years, from function- and appearance-based requirements to supervision-based on standards and service level.

The proposed projects – as all projects that require some Government investment are evaluated socially according to methodologies established in the National Investment System by the Ministry of Social Development (MDS). In this case, benefits are calculated based on user time and fuel savings compared against costs of investment and maintenance valued at social prices.

From this analysis, social profitability indicators (social IRR, social NAV/National Added Value) are obtained. If the social profitability is higher than the threshold set by MDS, the project is approved and deemed beneficial for the community and can be tendered. Should subsidy be required to ensure the financial sustainability, it is negotiated with the Ministry of Finance, included in the bidding, and analyzed on a case-by-case basis. Subsidy is usually established as a bidding variable, and the winning bid will be the one requesting little or no subsidy. The subsidy is usually paid in between 10 and 15 installments during the concession operation. From the beginning to the present day, the Coordination Department has tendered a total of 78 contracts totaling over US\$18 billion.

VI. KEY LESSONS, EXPERIENCES AND OBSERVATIONS

This project is a good example of how Public Private Partnerships can provide the best possible solution for solving problems that affect the community overall and are not easily resolvable by the State.

There is a need to disseminate and define the project together with the community, local authorities and government departments to choose the best solution for all and make everyone feel like a part of the project in addition to reaching consensus.

It was important to discover that for such a complex project and the many players involved, the external conditions inevitably change and there is no permanently perfect solution, and the project has to be flexible enough in all its phases to be able to evolve with its surrounding and the requirements of the moment.

In this case in particular, contractual flexibility allowed the Concessionaire to propose, during Construction Phase, an alternative solution for a section that facilitated territorial incorporation and helped solve problems with residents of a densely populated area, in addition to creating an innovative solution using the riverbed of the main body of water that cross the city of Santiago.

Municipal Natural Gas Infrastructure Development Project PPP Case Study

I. PROJECT DESCRIPTION

a. Background

By the early 2000s, rapid economic growth and urbanization in the People's Republic of China (**PRC**) had resulted in a sizable infrastructure gap for future sustainable green growth. A challenge for the government was to close this gap while maintaining the fiscal discipline that had placed public debt at city level.

In 2004 the government stepped up efforts to encourage private sector participation in the downstream gas distribution market by launching "Administrative Rules on Concession of Public Utilities" (the **Concession Measures**) with template concession agreement, which formed the backbone of unique decentralized PPP development model in the PRC. It created a new contractual modality through which a private sector partner is responsible for the construction and financing of the infrastructure that supports the provision of a contracted services. Asian Development Bank (**ADB**) supported private sector participation in natural gas distribution in multiple cities based on such concession template.

b. Project Rationale, Objectives and Scope

The Concession Measures aimed to develop natural gas distribution infrastructure and address financial constraints faced by municipalities, two key obstacles to natural gas market development in the PRC. It transfers most of the project risks from the municipal governments to the private sector and limits the municipal governments' fiscal risk. The government's main responsibilities are political commitment and supporting legislations (e.g., lifting tariffs to cost recovery levels, strengthening technical standards, private ownership of the project, mandatory gas use for public transportation) which enable the private sector to enter into long-term contracts knowing that its interests are protected.

c. Resources/ existing capacity of the public and private partners

The PRC has abundant undeveloped indigenous natural gas reserves, estimated at approximately 2.46 trillion cubic meters which have significant potential to mitigate global climate change, address local and regional environmental concerns. The development of downstream gas distribution infrastructure at city-level was a bottleneck to scaling up the natural gas market.

Some cities had liquefied petroleum gas or coal gas distribution networks which were historically carried out by municipal gas companies under the control of municipal governments. Most of the investment costs were supported by the municipality. Often those gas sales to customers covered the running costs of the company, with a complementary subsidy provided by the municipality.

A significant amount of up-front capital expenditure as well as technologies and management expertise is required for the installation of natural gas distribution pipelines (green field) and conversion from liquefied petroleum gas or manufactured gas to natural gas (brown field).

d. Stakeholders

Pursuant to the Concession Measures (2004), municipal governments are responsible for granting concession through tender. The emerging opportunities in the downstream gas sector attracted new entrants and encouraged competition. New distribution companies were created. In 2005, among the private sector operators, ADB selected China Gas Holdings (CGH), as having an innovative business model with professional management and focused on smaller cities that could embody the PRC’s new policy direction. As of March 2006, CGH had obtained concession rights for 48 piped natural gas projects with serving residential, industrial and commercial customers in 11 provinces (autonomous regions and directly-administered cities), including Anhui, Guangdong, Guangxi, Hebei, Hubei, Hunan, Jiangsu, Liaoning, Shaanxi, Zhejiang provinces, and Chongqing.

e. Did this project envisage any firm or contingent liabilities for the Government by way of subsidies/viability gap financing?

The project did not require the government subsidies or viability gap financing. The retail natural gas prices are based on cost-plus, reflecting affordability, competitiveness of natural gas versus other fuels, efficiency, and where necessary, the capital expenditure.

II. STRUCTURE OF THE PROJECT

a. PPP Scheme

Each project has been undertaken on Design, Financing, Build, Operate, Own, Transfer basis for 30 years. The municipal governments’ main responsibilities are to provide exclusive concession right, facilitate approvals, and supervise construction and operation performance.

b. Outline of the key risk allocation

Risk Type	Sensitivity	Risk Period	Primary Risk Bearer	Comments
Land acquisition, site conditions	Medium	Throughout Concession Period	Concessioning Authority (municipal government)	Land is acquired by the municipal government and granted to private operator. Delay in land acquisition was not a major risk for this project. It is the municipal government’s responsibility to pay compensation for resettlement.

Design and construction risk/ environmental and social safeguard risk	Medium	Throughout Concession Period	Private Operator	The private operator was required to ensure initial construction (the backbone high and medium pressure pipeline networks and the city gate facilities) within 2 years. The second development phase involves last-mile connection with low pressure pipeline networks which takes 3-4 years to penetrate, while operation can commence from connected areas. During the construction period, the private operator was required to facilitate periodic government inspections on various aspects, including environment, safety. The private operator shall comply with applicable environmental and social laws.
Delay in obtaining Approvals/ Permits	Medium	Throughout Concession Period	Private Operator	The concessioning authority shall provide all necessary support to the private operator in obtaining the clearances and approvals.
Revenue Risk	Low	Throughout Concession Period	Private Operator	For the concession period, the concessioning authority agrees not to permit any future development of a similar operator. First-time natural gas connection fees for households are part of the government's preferential policy for gas usage and are subject to regulatory approval. The retail natural gas tariff is also set by local pricing bureaus. There are several measures to mitigate this risk: (a) tariffs for industrial and commercial clients are not subject to government regulations; and (b) in general, there are cost pass-through mechanisms such that the increase in gas supply cost can be transferred to end users.
Operations & Maintenance Risk	Medium	Throughout Concession Period	Private Operator	The private operator shall maintain standards during the construction as well as O&M period as per t detailed specifications. This risk was mitigated by capable and experienced private operators such as CGH, given its strong in-house technical and management expertise and its track record over the PRC. Specialized and dedicated teams handling the O&M of existing plants will be in charge of the operations of satellite cities.

Force Majeure and material adverse governmental action	Medium	Throughout Concession Period	Concessioneing Authority	In case of force majeure as a political event disrupting the project, the concessioneing authority shall reimburse the loss incurred by the private operator.
Default by Concessioneing Authority	Low	Throughout Concession Period	Concessioneing Authority	In the event of default by the concessioneing authority, the private operator would receive termination payment.
Foreign Exchange Risk	Medium	Throughout Concession Period	Private Operator	This risk arises from currency mismatches between the borrower's foreign debt service obligation to ADB and local currency receipts of the subproject companies. This risk is partly mitigated by dual-currency tranches backed by ADB's RMB bonds.

c. Explain how fiscal risks have been identified and managed.

Unlike typical PPP, the project does not involve guaranteed off-take by the municipal governments as the private operator takes the revenue risk. The municipal government does not have any cash exposure in the project either during the construction stage or the O&M period.

d. Describe any special features of the project structured included to make it an attractive business opportunity.

The concession template which defined risk allocation resulted in penetration of PPP into a wide range of cities including small cities across the PRC (see VII Key Lessons and Observations).

III.PROCESS ANALYSIS

a. Inception and Project Preparation

Each municipal government studies access to natural gas and makes a decision on initiation of PPP (as opposed to conventional public procurement). Such inception period takes 2- 4 years. The tender process is standardized across the nation based on the panel scores including the bidders' experience and qualifications, quality and cost of the proposed design, which usually takes around 6 months. Once the preferred bidder is selected, the municipal government negotiates the concession agreement over 2-3 months.

b. Feasibility and Procurement

Upon invitation to tender, CGH conducts feasibility study and risk analysis. Market readiness of largely depends on upstream gas supply. Initial design and engineering is required for tender document. After signing concession agreement, CGH will fine-tune design, and construction. Goods and services are selected through competitive bidding.

c. Development

In each city, the project development was undertaken in two stages. The first is to construct the city gate and high-pressure backbone pipelines. The second stage is to construct the low-pressure last mile pipelines. The municipal government issues the certificate on construction completion before commercial operation. During operation phase CGH is in charge of day-to-day supervision. The municipal government is in charge of annual safety and quality investigation.

d. Delivery

CGH expands coverage of gas distribution networks and connect new end users (residential, commercial and industry). Where cities have existing coal gas pipeline networks, CGH replaces outdated pipes and reconfigures network layouts; adds substations to control pressure throughout the network. CGH installs meters at each end user and introduces billing systems to facilitate payment (e.g., bank debit, prepaid cards, and cash at CGH service counters) and service improvements (e.g., 24-hour hotlines and rapid-response repair teams). Through these investments, end users benefit from increased natural gas availability, safety, and improved customer care.

e. Exit

At the end of the concession period, CGH has a right to negotiate the extension with the municipal government. If the concession is not renewed, the all immovable and movable property related to the project will be sold to the municipal governments at the replacement value.

IV. FINANCING INFORMATION

a. Project Cost and Financing Sources

In 2006, ADB provided a \$25 million equity investment CGH and a \$50 million direct loan together with another \$75 million in syndicated loan to two wholly owned and controlled subsidiaries of CGH, without sovereign guarantee. In 2010, ADB provided additional non-sovereign \$100 million direct loan and arranged another \$100 million commercial syndication to further support PPP penetration into smaller cities.

The project has unique features, including the fact that it is ADB's first multiproject financing facility for infrastructure. Since each city is too small to be directly financed by ADB, ADB has established a new structure whereby the loan facility is channeled to CGH's subsidiary which consolidates its natural gas project companies and the facility can be channeled as a part of project equity to a number of cities CGH undertakes gas distribution project. This financing structure allows ADB to leverage

locally available funds at the project company level up to 70% of total project costs. The portfolio approach also diversifies supply, tariff, political and other site-specific risks across several municipalities.

b. Economic and Financial IRR, NPV, and DE Ratio

Economic internal rate of return was calculated at 27% and exceeded the social discount rate of 10%. Financial internal rate of return was 20%. Debt to equity ratio is 70%:30%.

V. CURRENT STATUS AND KEY IMPLEMENTATION ISSUES

a. Current Status

With ADB's assistance CGH was able to build and operate natural gas pipeline networks in 137 cities (as of September 2013), up from 48 in 2006 and had built arterial pipeline networks totaling 44,400 km. CGH also completed natural gas connections for 9,597,530 domestic households, 2,407 industrial users, and 54,497 commercial end users. Following the government's policy on urban-rural integrations, ADB's second phase assistance focused on last-mile connection with satellite communities.

b. Implementation Issues

The project experienced domino effect penetration which gradually expanded natural gas market. A successful PPP in one city influenced political will in the neighboring cities. Primarily it is the municipal government decision to break status quo and invite private sector as opposed to conventional public procurement. Successful operation and tangible efficiency gain such as improved access and safety became a strong evidence to convince the neighboring municipal governments to launch PPP in their own cities.

VI. ROLE OF PPP UNIT/CENTER (IF APPLICABLE)

Not applicable. The central government selected city gas distribution sector as one of five priority sectors for PPP and also set the related legislations such as cost-recovery tariff. Each municipal government has been in charge of granting concession and implementation.

VII. KEY LESSONS AND OBSERVATIONS

a. Observations

The project is a fine example of private sector participation in the municipal infrastructure sector. The project accelerates replacement of coal and other fossil fuels with cleaner natural gas. It demonstrated the effectiveness of public private partnerships in municipal infrastructure and the role of private sector in building and operating gas distribution infrastructure while strongly advocating safety, social, and

environmental management.

b. Lessons

Facilitation of PPP penetration into small cities

PPP preparation requires substantial government capacity in process management. In case of natural gas distribution sector, necessary facilitation was initiated by the central Government ensuring standard process in tendering, necessary approvals for project development and risk allocation to the private operator during the concession period. One of the key success factors is a concise concession template which allows for the standardization of basic contractual terms, while leaving some local specific issues to be tailored to each municipality's needs, leaving them with a certain level of discretion. This was a critical element in the successful replication in the wide range of cities including small cities.

Managing fiscal risk with PPP

The municipal government creditworthiness and payment ability is an important credit consideration for financiers, as PPPs in some sectors rely on partial or full government support (such support could come in many form including for example minimum revenue guarantees, etc). The PRC innovated in this area by separating the end-users' payments from the local government's budgets which made PPP possible even in small cities.

PUBLIC-PRIVATE PARTNERSHIP (PPP) CASE STUDY

Beijing Metro Line 4, People's Republic of China¹

I. PROJECT DESCRIPTION

a. Background and Project Rationale

As of 2001, Beijing operated only 54 kilometres of metro lines and its subway development lagged well behind other major Asian cities such as Seoul, Hong Kong, China and Shanghai. Against a planned infrastructure investment of around CNY500 billion for 2002 to 2008 (including facilities for the 2008 Olympics), the Beijing Municipal Government's total annual revenue was of the order of CNY75 billion. Facing such tight fiscal constraints, the Beijing Municipal Government sought new ways of expanding its mass transit rail (MTR) system, and initiated development of Metro Line 4 as a PPP.

Key Facts

- One of the arterial lines in Beijing
- 28.2 kilometers in length
- 24 stations
- 11 interchange stations
- A run time trip of 48 minutes
- Connects the education area (Peking University, Tsinghua University, and Renmin University), high-tech area (Zhongguancun), and tourist attractions (e.g., Summer Palace, Beijing Zoo)

The project was the first officially approved concession-based subway project in the PRC, and the first subway project in the economy to involve foreign private capital for its construction and operation.

b. Resources/ existing capacity of the public and private

With a construction cost of CNY15.3 billion, the line runs through the north and south of the city, from Haidan district (Anheqiao North station) in the north to Majialou (Gongyixiqiao South station) in Fengtai district in the south.

Serving the north-south artery in the western urban areas of Beijing, the line stretches almost 28 km and has 24 stations. The concession agreement was signed in 2006, and the line was partially opened in time for the 2008 Beijing Olympics. Full trial operations commenced in September 2009 with a capacity of 400,000 passengers daily, against a long term target usage of 700,000 passengers daily. The subway line successfully cut travel times from around 2 hours by car to 48 minutes.

c. Did this project envisage any firm or contingent liabilities for the Government by way of subsidies/viability gap financing?

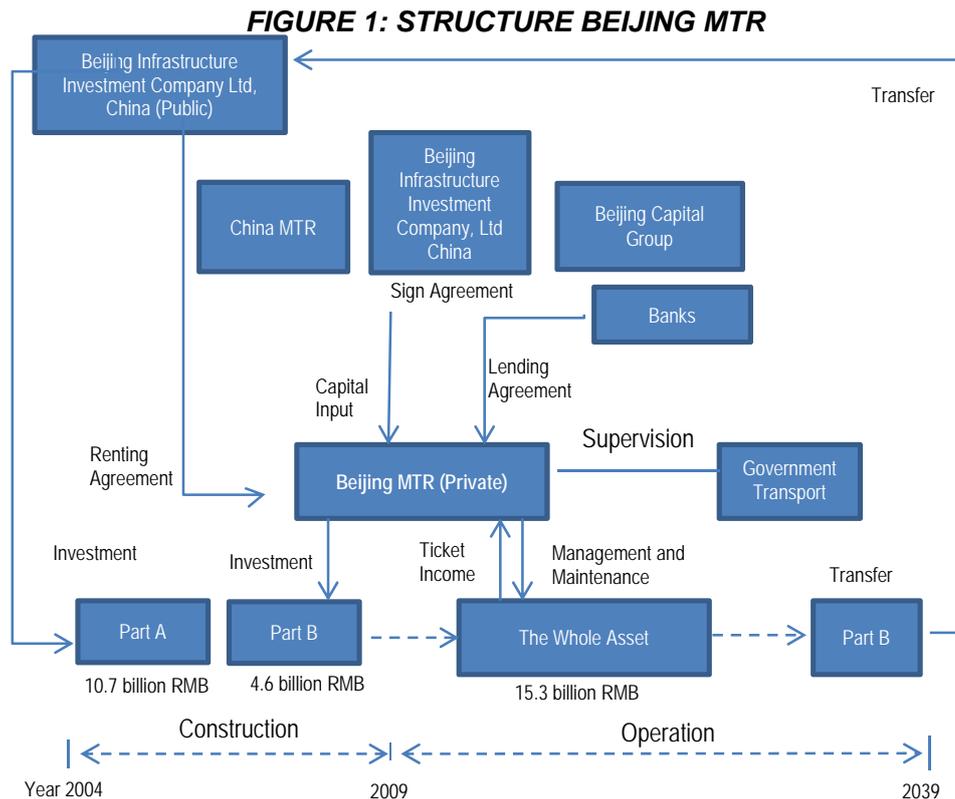
The concession period is 30 years. Over this period, the payment to the concessionaire is linked to patronage, fares, and costs. As a market-oriented project, the PPP requires a reasonable rate of return, and government subsidies are paid to help achieve the target rate of return. But when patronage exceeds forecasts, the government shares in the higher than expected revenue.

¹ This case study is based on the presentation of Mr. Yimin, Chief Executive Officer, China MTR Corporation Limited contained in ADB. 2014. PPPs in Urbanization. Workshop Report; ADB. 2010. Urban Innovations and Best Practices. Sustainable Urban Development in the People's Republic of China. Urban Public Transport: A Case Study of Public-Private Partnerships (PPPs) in Beijing. November (available at <http://www.adb.org/publications/urban-public-transport-case-study-ppp-beijing>); and Zheng Chang. 2013. Public-Private Partnerships in China: A case of the Beijing No. 4 Metro line. Transport Policy. 30:153-160 (available at <http://www.webssa.net/files/tp.pdf>)

II. PROJECT STRUCTURE

a. PPP Scheme

The Metro Line 4 PPP is held by the Beijing MTR, a joint venture established for the project. Beijing MTR is owned by: the Mass Transit Railway Cooperation of Hong Kong, China (China MTR, 49%); the Beijing Capital Group Company Limited (49%); and Beijing Infrastructure Investment Company Limited (2%).



Source: Wang, H., 2005. Chengshi Guidao Jiaotong Tourongzi Wenti Yanjiu. Studies on Urban Mass Transit Issues. Chinese Finance Press.

China MTR is the main private sector partner. Established in 1975, it was listed on the Hong Kong Stock Exchange in 2000. Although a commercial entity, China MTR remains a state-owned enterprise (SOE) that is 76.5% owned by the Government of Hong Kong, China. In 2007, China MTR merged with the Kowloon–Canton Railway Corporation, and by the end of 2012 had a market value of HK\$163 billion. China MTR operates nine metro lines, an airport line, and a light rail in Hong Kong, China, Beijing, Australia, and Europe. The total length of line operated is 218 kilometers, and the daily patronage is 5.1 million persons.

The Beijing Capital Group Company Limited is an SOE of Beijing Municipal Government. It has 3 business units—infrastructure, real estate, and financial services— and owns 6 listed company, 2 of which are listed in Hong Kong, China.

Beijing Infrastructure Investment Company Limited (BIIC) is also is an SOE, undertaking investment and financing and capital management in infrastructure. At the end of 2012, its rail investment in railway had reached CNY479.6 billion. The length of network BIIC owns will reach 561km by 2015. It was formed in 2003 when the Beijing Municipal Government restructured its

metro division into three independent corporations: the Beijing Infrastructure Investment Corporation (BIIC) with responsibility for project financing, Beijing Metro Construction and Management Corporation with responsibility for construction, and Beijing Metro Operation Corporation with responsibility for operations.

b. Outline of the key risk allocation

The risks taken by Beijing MTR included the construction cost, interest and exchange rates, operation costs, patronage risk, and force majeure.

c. Explain how fiscal risks have been identified and managed.

A feature of the Beijing Line 4 PPP is the separation into two parts. Construction of the track and stations made up Part A, and was undertaken by Beijing No. 4 Beijing Subway Line Investment Company. The rolling stock and other equipment (such as vehicles, ticket machines, signaling systems, air-conditioning, fire protection, escalators, elevators, control devices, and power supply facilities) made up Part B. This part also includes maintenance of all facilities, and the updating of all assets except for tunnel bodies.

An asset lease agreement was signed between Beijing MTR and the Beijing No. 4 Beijing Subway Line Investment Company to allow Beijing MTR to use the infrastructure. At the end of the 30-year concession, Beijing MTR will transfer its portion of the project to the Beijing Municipal Government, while the facilities under the asset lease agreement will be returned to the Beijing No. 4 Beijing Subway Line Investment Company.

d. Describe any special features of the project structured included to make it an attractive business opportunity.

China MTR manages the operations of the subway line, while BIIC monitors the assets, service quality, and safety management according to a set of operational and safety standards. BIIC also plays a role in stabilizing the profits for the joint-venture partners. BIIC will compensate the joint-venture partners if the ticket fares and actual passenger trips turn out to be substantially lower than expected, and will absorb any excess profits made on behalf of the Beijing Municipal Government.

III. PROCESS ANALYSIS

The Beijing municipal government obtained approval from the State Development and Reform Commission in 2004 to open up participation in the construction and operation of Beijing Line 4 to international investors. A small group of prequalified bidders were invited to take part in the tender process. After 12 months of negotiations, the winning bidder signed a concession agreement in 2006 with a concession period of 30 years (including the construction phase).

IV. FINANCING INFORMATION

Project Cost and Financing Sources

Of the total cost of CNY 15.3 billion, Part A accounted for CNY10.7 billion or 70%, and Part B accounted for the remaining CNY4.6 billion or 30%. Part A was funded by the Beijing Municipal Government through the Beijing No. 4 Beijing Subway Line Investment Company. The joint venture partners funded Part B; 30% as equity and the remaining 70% as loans from PRC banks. Very short term debt finance was secured, at an average annual interest rate of 6.3%,

because short term interest rates were lower than long term rates. Profits were expected from the third year of operations with the pay-back period expected to be about 10 years.

Beijing MTR is financed by fare revenue and the (very limited) commercial activities within the subway stations. The Beijing Municipal Government retains control over the level of fares, which are regulated based on a mileage system.

The PPP agreement establishes a mechanism to determine subsidy and revenue sharing based on a "shadow price" and "shadow patronage." The shadow price is effectively the estimated unit cost. Beijing MTR paid this as a guaranteed revenue per passenger, regardless of the actual fare charges. In 2006, Beijing Metro fares ranged from CNY3 to CNY7. Based on passenger forecasts, both sides agreed that the shadow price for Line 4 line would be CNY3.34. The shadow price was to be adjusted every three years, based on the consumer price index, and the shadow price was first adjusted in 2010 to CNY4. The shadow patronage is the expected patronage.

If the concessionaire were to exit because of losses attributable to poor management, the Beijing Municipal Government would be able to acquire Part B at a discounted price. But if losses were a results of a change in government policy, the concessionaire would be entitled to compensation.

V. CURRENT STATUS AND KEY IMPLEMENTATION ISSUES

a. Implementation Issues (Operations)

In 2007, the Beijing Municipal Government reduced metro fares to a flat rate of CNY2. As passengers usually take more than one line on each trip, the actual fare of Line 4 line was CNY1.04 in 2010. With the shadow price at CNY4, the municipal government paid a subsidy of CNY2.96 per passenger per trip.

Patronage was expected to be low during the initial years and then increase gradually. Actual usage, however, exceeded the projections. Against a 2010 daily shadow patronage of 564,000 passengers, the actual patronage in 2010 was 687,600, or 122% of the shadow level.

The Beijing Municipal Government attributed the higher than expected patronage to the fare reduction, which was not reflected in the original contract. It concluded the PPP agreement was too generous to the concessionaire and requested a modification. Under 2010 revisions to the agreement, the government will start to share revenue when actual patronage reaches 100% of the shadow patronage instead of the original 120%. If the actual patronage is between 100% and 110% of the shadow patronage, the government receives half of the higher than expected revenue, and if the patronage is higher than 110%, the public receives 60% of the higher than expected revenue.

b. Current Status and other developments

In December 2009, China MTR signed a contract for the Daxing line, an extension of Line 4. Unlike Line 4, the private sector was only responsible for operation and maintenance. The Beijing Municipal Government initially committed to an annual subsidy of CNY200 million to China MTR. The contract was for 10 years and the annual subsidy would be evaluated and adjusted every three years. China MTR's 2012 annual report reported profits from the Line 4 and Daxing lines of CNY70 million in 2011 and CNY200 million in 2012.

Beijing Line 14 is also being developed as a PPP on a similar basis to Line 4. The 47 km long and 37 stations are being developed at a capital cost of CNY50 billion. The CNY15 billion Part B is the responsibility of Beijing MTR. The initial phase of line 14 opened in May 2013, and the remainder is to open in 2015. Again, the concession period is set at 30 years. Outside Beijing, China MTR had earlier partnered with the Hangzhou Metro Group to construct the Hangzhou Metro Line 1. This 48 km line with 31 stations cost CNY22 billion, and opened in 2012 with a 25-year concession.

VI. KEY LESSONS, EXPERIENCES AND OBSERVATIONS

a. Observations

Many of the PRC's large transport infrastructure projects have been financed by public funds at the national, provincial, or local levels, or through bank borrowings by state-owned enterprises. Many continue to use this traditional public procurement model. City governments, however, face competing demands on a limited public purse, and the PPP model has been finding greater acceptance in recent years as an acceptable funding model. Benefits associated with PPP projects include greater transparency, improved operational efficiency and professionalism, lower costs, and stronger incentives for innovation.

There is substantial potential to expand the use of PPPs in developing the economy's mass transit rail systems. Subway systems have already been built in several metropolitan areas in the PRC—such as Beijing, Hangzhou, Guangzhou, Nanjing, Shanghai, Shenzhen, and Tianjin—and are being constructed or planned in other cities including Chongqing, Hangzhou, Harbin, Kunming, Shenyang, Qingdao, and Xi'an. According to a PRC National Development and Reform Committee, subways will be constructed in more than 30 cities in the PRC over the next decade. These projects are estimated to require investments of more than CNY600 billion.

b. Lessons

The success of Beijing Metro PPPs has shown how the PPP model can be used to address these demands. The use of the PPP model in Beijing Metro has offered a number of benefits. Firstly, it has allowed the Beijing Municipal Government to overcome a financial shortage and speed up the development of essential infrastructure. Secondly, it has saved costs.

The project's post-evaluation report by the Beijing Development and Reform Commission found that the PPP saved CNY4.6 billion—CNY600 million in additional investments, and CNY4 billion in replacement and renovation costs. A key source of the cost saving is the enhanced motivation of the PPP company to save costs while ensuring project quality and safe operations. Consumer satisfaction of the No. 4 line has been reported as much higher than of other lines, and has achieved a punctuality rate of 99.4% compared to only 90% in other lines. The new metro line is also boosting the city's competitiveness, and transferring technology and experience from Hong Kong, China and international markets.

The benefits of bringing the private sector into metro lines and rail more broadly are well recognized and these include the following:

- Efficiency, which saves time and resources;
- The introduction of commercial elements (e.g., shop, residential and other developments) to enhance the viability of a project;
- Improved risk management;

- Independent and multiple verification of project feasibility;
- Innovation, such as through the introduction of new technology;
- Reduced public sector staffing levels, and associated costs savings;
- Reduced political pressures on the setting of fares; and
- Best practice approaches to asset management.

There are further opportunities to adopt PPP innovations from the Hong Kong, China, where five lines are currently being developed as PPPs. Two lines are being developed as a rail plus property PPP in cooperation with China MTR. The “plus property” component is intended to fill funding gaps. Under the rail plus property PPP, China MTR will pay the full market price of the sites, the development cost of the property developments, and the construction and operating cost of the railway. China MTR will develop the sites both horizontally and vertically. It will bear the risks of financing the railway and property development, operating the railway, and the market fluctuations in rail and property markets. China MTR will, in return, receive the growth in the value of the land it purchases, the fare from the rail line, and non-fare revenues from the associated commercial developments.

The attraction of this “plus property” model for Government of Hong Kong, China is that it removes the need for a direct subsidy to the project. The government also benefits from the general increase in land prices and increase in the value of its shares in China MTR. This model provides a potential next step for the PRC’s metro systems, which typically incorporate very little commercial operations within the subway stations and high subsidies.

Shanghai Huadian Xinzhuang Industrial Park CCHP PPP Project

I. PROJECT DESCRIPTION

a. Project Background

Infrastructure is a key area in national economic and social development, but faces large financing gap. Public finance falls far short of the financing need.

On May 1, 2011, Shanghai municipal government enacted and implemented Administrative Measures of Shanghai Municipality on the Concession of Urban Infrastructure (orders of the People's Government of Shanghai, No. 55) to encourage private sector's participation in infrastructure construction and operation by way of concession. Against this backdrop, Xinzhuang Industrial Park Administrative Committee developed Xinzhuang CCHP Project in collaboration with China Huadian Corporation (hereafter referred to as "Huadian Corporation") using the modality of "Design-Build-Finance-Operate." The project company –Shanghai Huadian Minhang Energy Limited Company(hereafter referred to as "Huadian Minhang Company"), founded by Huadian Corporation, is granted the concession for supply of secure, stable, continuous heating, power and cooling.

Xinzhuang CCHP Project is located at Xinzhuang Industrial Park in Minhang District, to the south of Liuleitang, east of the Beisha Harbor, north of the Zhuanxing Road and west of the Huaxi Road.

b. Project rationale, objectives and scope

In the Xinzhuang CCHP Project, to achieve energy efficiency, emission reduction and pollution control and provide public goods and services of centralized heating and cooling to local companies, Xinzhuang Industrial Park Administrative Committee selected Huadian Corporation through market competition and is to build a "whole life" cooperative relationship with it. In accordance with the concession contract, the two parties would bring their respective advantages into full play and improve the quantity, quality and efficiency of public goods and services. The win-win situation created and the risk-sharing mechanism of the CCHP Project embody the conception of PPP and make it a typical PPP project.

c. Key outputs

Expected targets after the completion of Xinzhuang CCHP Project include:

1. Address local power demand, get around peak load period and bridge the peak-valley gap of local power system;
2. Lower the ratio of coal in the energy mix, stop disgorging soot into the air, drastically reduce emissions of carbon dioxide and nitrogen oxide and thus mitigate environmental pollution;
3. Effectively increase energy comprehensive utilization rate through cascade use of energy;
4. Deliver industrial gas, heating and cooling to Xinzhuang industrial park and neighboring areas so as to improve the investment environment of Xinzhuang industrial park, increase the level of the industrial park and create an enabling environment for enterprises therein.

d. Resources/ existing capacity of the public and private partners

In the Xinzhuang CCHP Project, Huadian Corporation possesses combined cooling, heating and power technology and advanced equipments. The project company-- Huadian Minhong Company, founded by Huadian Corporation, purchased the existing heating facilities and built new combined cooling, heating and power facilities to deliver secure, stable, continuous heating, power and cooling.

e. Stakeholders

Stakeholders of the project include Xinzhuang Industrial Park Administrative Committee (XIPAC), Shanghai Branch of Huadian Corporation, China CDM Fund and Commercial banks.

Xinzhuang Industrial Park Administrative Committee developed Xinzhuang CCHP Project in collaboration with China Huadian Corporation. The project company Shanghai Huadian Minhong Energy Limited Company was founded by Huadian Corporation. China CDM Fund provided concessional loans as viability gap funding (VGF), and the project also got loans from commercial banks.

f. Contingent liabilities for the Government by way of subsidies/viability gap financing

This project receives VGF, a combination of user payments and government subsidies. Shanghai Municipal Government provides RMB 20 million of VGF subsidy; and China Clean Development Mechanism Fund provides RMB 280 million of concessional loan as VGF.

II. STRUCTURE OF THE PROJECT

a. PPP scheme & roles of public and private sectors

The project uses the modality of DBFO (Design-Build-Finance-Operate), in which the private sector is responsible for the project's investment, financing, design, build, operation, maintenance and user service, while the role of the public sector involves managing the pricing of public goods and services, supervising the quantity and quality of public service, granting VGF investment subsidy and implementing relevant preferential policies.

b. Outline of the key risk allocation

	Risk type	Government bears the risk	Government and private operator bear the risk together	Private operator bears the risk
Political risk	Concession withdrawal/violation	√		
Construction risk	Availability of financing tools			√
	Improper design			√
	Default of subcontractor			√
	Construction/design quality			√
	Safety of construction site			√
	Access to labor and capital/equipment			√

	Land utilization	√		
	Low efficiency/ material waste			√
	Over-budget in construction cost			√
	Completion risk			√
	High financing cost			√
	Substandard skills			√
	Geological conditions			√
	Site accessibility/preparation	√		
	Project/operational change			√
	Public facilities service provision	√		
Operational risk	Over-budget in operational cost			√
	Default of operator			√
	Low service quality			√
	High maintenance cost			√
	frequent maintenance			√
	Inefficient operation			√
	Equipment maintenance			√
Legal risk	Bankruptcy of project company			√
	Equipment ownership		√	
Yield risk	Insufficient revenue			√
	Price rise of materials (gov)	√		
	Price rise of materials (private)			√
	Charges/tax change			√
	Market demand change			√
	Market competition			√
	Interest rate fluctuation			√
Other risks	Force majeure		√	
	Residual risk		√	

c. Financing & Revenue

The investment and financing structure of Xingzhuan CCHP Project is as follows: project company's initial investment mainly consists of loans from commercial banks, registered capital from its parent company and government's initial outlay subsidy; the project company is granted the concession on supply of heating, cooling and electricity in Xinzhuang Industrial Park, and responsible for the investment, build, operation of production facility and supporting networks of pipes; its responsibility also includes the purchase of or compensation for the assets of existing heating plant. The end users will pay for the cooling and heating to the project company and the power companies will purchase electricity from the project company.

d. Special features

Owing to the emphasis on the design of transactional structure in the project preparation stage, Xinzhuang CCHP Project registers well-organized investment and financing structure, contract architecture and regulatory system. Compared with other PPP projects, this project highlights viability gap funding (VGF), to guarantee investment returns and control rate of profits.

III. PROCESS ANALYSIS

a. Inception and Project Preparation

Xinzhuang CCHP Project was proposed by private sector, which is called “Unsolicited Proposal”. Xinzhuang Industrial Park Administrative Committee carried out thorough work in the preparatory phase, including the selection of PPP modality, the structuring of project investment and financing, contract architecture and regulatory system. In addition, the design of boundary conditions was postponed to the project negotiation phase because of the use of competitive negotiation in the selection of private investors.

The Committee carefully compared the scope of different modalities of PPPs, analyzed the project’s characteristics and finally decided to adopt DBFO in the project.

b. Feasibility

After the launch of Xinzhuang CCHP Project, relevant government agencies carried out preliminary review and assessments to ensure that the project keeps compliance with the state industrial policy and environmental policy and the development and planning of Xinzhuang Industrial Park. Then Huadian Corporation conducted pre-feasibility study and a detailed analysis of the project’s feasibility, allowing Huadian Corporation to get involved earlier in the project’s preliminary assessment, gain a comprehensive picture of the project and identify and assess project’s risk more accurately, which guarantees for the project’s successful operation.

c. Procurement

The CCHP project adopts the procurement method of competitive negotiation. An expert team was assembled to assess and select proposals based on feasibility, merits and defects of proposals, and cooperation intention of investors. Once investor was selected, the Administrative Committee further assessed feasibility, and negotiated cooperation details with the investor.

In Xinzhuang CCHP Project, X Corporation and Y Corporation joined competition when the Committee received an unsolicited proposal from Huadian Corporation. The committee chose Huadian after a year of “piecemeal” competitive negotiation with two corporations, comprehensively examining and assessing the feasibility, strengths, and weaknesses of proposals and cooperation intention of investors.

d. Implementation

In the early stage of Xinzhuang CCHP Project, a professional design institute and a consulting firm have been commissioned to carry out the project design and Huadian Distributed Energy Company Limited has been selected as the turnkey contractor responsible for construction. The project company has set up the Quality Administration Committee and Quality Supervision Team to regulate project quality and to report to the parent company on the progress and budget control of the project.

Xinzhuang Industrial Park Administrative Committee would carry out contract supervision over the project company. Finance bureau and other relevant government agencies would collaborate with the Administrative Committee to exercise administrative supervision and management over project company. The end users in Xinzhuang Industrial Park would monitor the services provided by the project company and are entitled to submit complaints and suggestions to the administrative committee as users/public monitoring party. Lenders would supervise the use of project's capital and repayment schedule. Because of the rights, interests and risks transmission mechanism, stakeholders of the project like project contractors, project supervisors, natural gas suppliers and electricity purchasers would exercise supervision and restriction on the normal operation and performance.

e. Development

The project will have two phases. In the first phase, there will be two sets of 60 MW-class combined gas-steam cycle unit. The second phase would involve another four prospective sets of 60MW-class combined gas-steam cycle units.

f. Delivery

Huadian Minhang Company, with granted concession, will deliver secure, stable, continuous supply of heating, cooling and connection to grid in Xinzhuang Industrial Park. The end users will pay for the cooling and heating to the project company and the power companies will purchase electricity from the project company. The end users would also monitor the services provided by the project company.

g. Schedule of Activities

The draft concession agreement was signed on August 17, 2011. The construction of Xinzhuang CCHP Project began on October 17, 2013 and operation is scheduled to commence by the end of September, 2014. The concession period lasts 30 years (the two-year construction period included) and its revenues are mainly from end user payments and sales of electricity.

IV. FINANCING INFORMATION

a. Project cost and financing sources

In the first phase, two sets of 60 MW-class combined gas-steam cycle unit with a static investment of 981,570,000 RMB and a dynamic total investment of 1,005,160,000 RMB would be built.

In the project, Huadian Minhang Company has RMB 80 million of registered capital; VGF provided to the project includes RMB 280 million of clean development concessional loan from China CDM Fund and RMB 20 million of subsidy from Shanghai municipal government. The project borrowed RMB 600 million of bank loan.

b. Economic and Financial IRR, NPV, and DE Ratio

Net Present Value (NPV) of the project is RMB 104.91 million (after tax), total investment return rate is 7.89%.

V. CURRENT STATUS AND KEY IMPLEMENTATION ISSUES

a. Current Status

By December 31, 2012, the RMB 50 million paid up capital has been put in place. New Energy Development Company Limited as the sole stakeholder owns 100% shares of the project company. According to the CCHP Project agreement, Xinzhuang Industrial Park Administrative Committee has put in place a normal regulation mechanism and a set of emergency management plans to regulate the construction and operation of the project company. But the output specifications, regulation criteria, regulation methods and penalties need to be further specified and improved.

VI. ROLE OF PPP UNIT/CENTER

Ministry Of Finance is leading the work on PPP in China. It has set up an inter-departmental PPP Leading Group, consisting of 7 line departments of MOF, including budget department, treasury department, finance department, economic development department, International Dept. and China CDM Fund. The Group is responsible for rule-making, regulation of PPP.

At the execution level, China CDM Fund acts as PPP management center at early stage. China PPP Center has six main roles and responsibilities: fundamental research; training and consultation; promotion and application; financial Support; information management and publication; and international cooperation.

VII. KEY LESSONS AND OBSERVATIONS

a. Observations

The use of PPP model in the CCHP Project allows the government to exploit social capital investment and transform the initial outlay unaffordable in the immediate period into long term end user payments, reduces and postpones as much as RMB 930 million immediate budget, thus lessening the immediate fiscal burden of the government. Xinzhuang CCHP was initiated through unsolicited proposal by Huadian Corporation, which has from the inception engaged in the project identification, feasibility study, financing and other project development related work. The early involvement of Huadian Corporation has guaranteed the technical and economic viability of the project and reduced the preparatory period and costs.

b. Lessons

Contract is the core bond of the public and private partnerships that should go through the whole of life of PPPs. As the basis of the contract spirit, Xinzhuang CCHP Project agreement pins down the rights, obligations, responsibilities and commitments of Xinzhuang Industrial Park Administrative Committee and those of the project company.

The “early involvement” of the private sector in the project development and design phase taps into additional capital, technical support, channels and management skills of the private sector, and substantially steps up the overall value of the project by creating better performance in terms of the quality of public products and services, energy efficiency and environmental protection, economic indicators and regional development.

The “more engagement” of the public sector in the mid to late period helps transform the role of the government from an “operator” to a “regulator”, instills the government the “don’ts” in market operation and the “dos” in regulation and. As the project agreement clarifies the two parties’ respective roles and responsibilities, public administration capacity and efficiency are increased and a win-win situation is created.

c. Room for Improvement

Despite the great success and highlights with demonstrating effects, Xinzhuang CCHP can be improved in the following five aspects:

Category	Item	Description
Project Initiation	Value for Money Analysis	Constrained by China’s PPP development and the existing PPP implementation practice, the government did not carry out a systematic value for money analysis to evaluate whether the PPP model should be adopted at the project initiation stage. Actual evaluation only covered part of VfM analysis.
Project Preparation	Engage Consultancy	The government did not engage a third party consulting firm at the project preparation stage to develop PPP transaction structure, regulation system, competition procedure and project agreements, leaving increased possibility of loopholes.
Competition Procedure	Efficiency	The project negotiation took over a year. Long time span led to delay of construction.
	Compliance	The competition procedure was not closely knit and companies participating in competition were less than three. A standardized competition procedure and evaluation criteria were lacking.
	Competition	As there were only two private sector investors, the competition pressure was relatively low.
Project Agreement	Early Termination	The project agreement does not have detailed provisions for compensations or indemnities of early termination and their payment mechanism.
	Project Transfer	The project agreement does not have provisions for project transfer upon expiry, transfer conditions, assets disposal methods or the extension of project agreement.
	Risk Allocation	Incomplete risk identification and imperfect provisions for risk allocations may lead to disputes in the future.
Safeguard Measures	Guarantee System	Guarantee System is lacking which may not guarantee good performance of the private sector over the life cycle of the agreement.
	Financing Guarantee	The draft concession agreement does not set a deadline for financing closure. The winning investor may fail to obtain the financing capital timely, leading to delay of works.
	Insurance Policy	Compulsory insurance coverage is lacking. The private sector alone decides the insurance policy for the construction and operation period. The insurance safeguard may not be sufficient.

Baiyinchagan-Yongtaigong Highway, Inner Mongolia

I. PROJECT DESCRIPTION

a. Background

Baiyinchagan-Yongtaigong highway (hereafter referred to as “Baiyong Highway”) strategically connects the east, middle and west of Inner Mongolia Autonomous Region. Yet its construction has been beleaguered with problems: local financial impotency, difficult financing for private enterprises, and incompatible time schemes of commercial loans. To remove these obstacles, China Development Bank has taken full advantage of its “bank-government cooperation” with the local government to Ulanqab. Focusing primarily on the top-level modelling, it has adopted a PPP model in which the government and the enterprise are to share risks and revenues. Two companies, according to this scheme, are to participate in the construction as the private sector in collaboration with the public (the government): they are Inner Mongolia Sunry Construction Group Co., Ltd (hereafter referred to as “Sunry Group”) and Inner Mongolia Vibor Construction Group Co., Ltd (hereafter referred to as “Vibor Group”). This model does far more than relieving the financial pressure weighing upon the local government. In addition, it has also resolved the incompatible time schemes of commercial loans, and has mobilized social funds. In this way, the funding needs of the construction has been satisfied, liberating many private companies from the awkward financing situation they often encounter. This has worked to motivate enterprises to participate in the undertaking of infrastructure construction, which also clears the ground for future inter-provincial highway construction in Inner Mongolia.

b. Project Background

Since the policy of Development of West China was launched in 2000, western China has witnessed rapid economic growth. The Chinese government has decided to accelerate the building of a comprehensive transportation network in western China, and to give top priority to the region in terms of highway construction. Given the strategic importance of Inner Mongolia in the policy of Development of West China, and the fact that Baiyong Highway represents a transportation hub between different regions of the province, this project will play a significant role in developing resources in western China. It serves to transfer resources into economic benefits, lift the remote region out of poverty, and as a result improve the livelihood of people along the highway.

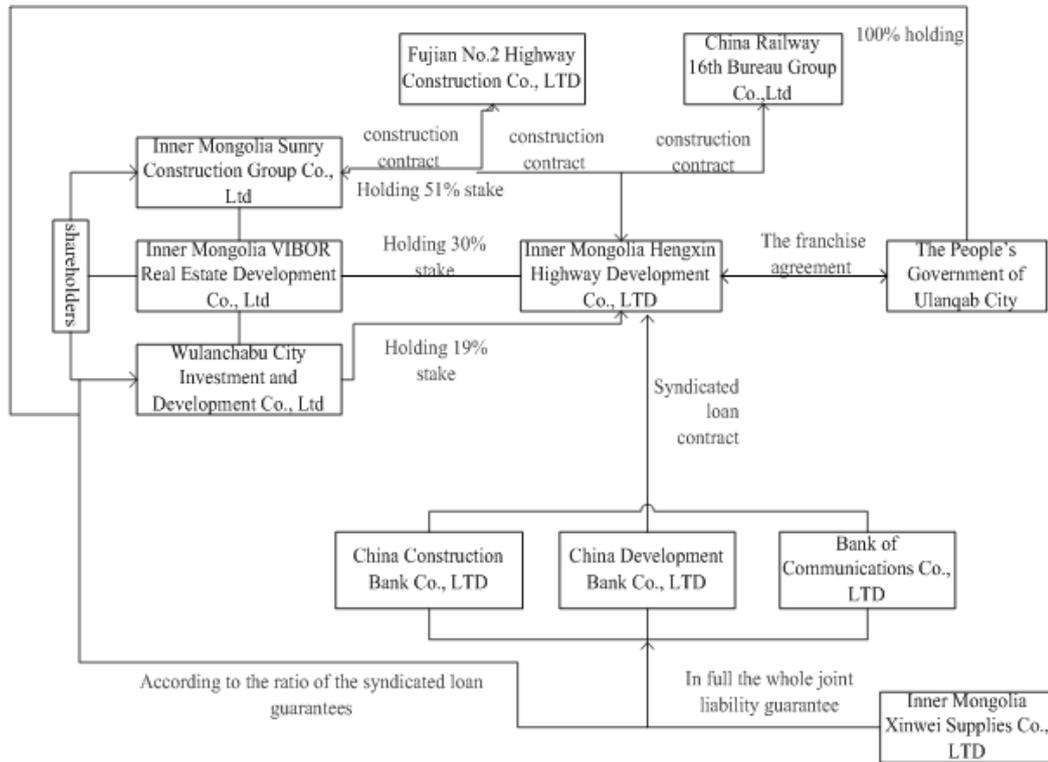
This project is confronted with three major difficulties. First, the place Ulanqab where this project situates is financially under-resourced, thus making it almost impossible for the local government to function as lead investor in such major infrastructure construction. Second, the borrower, Inner Mongolia Hengxin Highway Development Co., LTD (hereafter referred to as “Hengxin”), is a private enterprise with low creditworthiness in the banks, which has made its financing a challenging option. Third, the time needed for the financing is quite long, yet commercial banks, constrained by regulations, are unable to grant loans with appropriate terms.

To solve the above-mentioned difficulties, Ulanqab Investment and Development Company, the fund-raising platform of the People's Government in Ulanqab, acquired 19% of Sunry Group's shares and constructed the highway together with Sunry, Vibor via the BOT model. Not only has this arrangement mitigated the financial pressure on the government, but the advantage of development-oriented financing has also been brought into full play in resolving the incompatible loan terms of commercial banks. It also contributes to the channeling of private investments to real economy under standard regulation, to the guarantee of financial support for the construction of the project, and to the stabilization of local capital market.

c. Project Timelines

Name of the project	Baiyinchagan-Yongtaigong Highway
Type of the project	Infrastructure-highway construction
Economy or region	China
Address	Ulanqab in Inner Mongolia
Scale (km/km ²)	95.3km
Operational revenues	operational
Industrial field	Economic field-transportation
Model of construction and operation	Franchising
Date of the project launching	March, 15th, 2010
Date of fund delivering	April, 2011
Date of construction	April, 2011
Date of completion	2014
Date of operation	The end of 2015
Current state of the project	Complete 77 km of subgrade engineering of the highway and 1.8 km of tunnels

II. PROJECT STRUCTURE



a. Stakeholders

Local government

Ulanqab locates in central Inner Mongolia and governs 11 banner counties and cities. It has a population of 2.8702 and a total area of 55000 square km. Being within the Hohhot-Baotou-Yinchuan Economic Zone and Beijing-Tianjin-Tangshan Economic Zone, Ulanqab is blessed with obvious geographical advantage.

Initiator

Sunry Group boasts Grade 1 qualification of highway engineering, and is a member of China Entrepreneur Committee and an executive member of Inner Mongolia Brand Association. It has been awarded with many different honors, such as "Top 50 Self-innovative enterprises in Inner Mongolia", "May Day Labor Prize in Inner Mongolia", "Model of Learning in Inner Mongolia", "May Day Labor Prize in Erdos", "Harmonious Labor Relations in Erdos" and "Prominent Taxpayer".

Project company

Hengxin is a company founded by Sunry, the initiator of the project. Its establishment was especially for the construction of the Baiyong Highway. It is jointly invested by Sunry, Vibor and Ulanqab Investment and Development Corporation.

Lender

China Development Bank, as the leader of the banking groups, has helped to bring China Construction Bank and Bank of Communications together in raising 2.9 billion RMB for Hengxin the borrower. The process is accomplished with the method of partitioned syndicated loan, with the guiding principle of seeking common ground while reserving differences among all relevant parties. Among the sum, 1.8 billion is from China Development Bank, accounting for 62.1% of the total.

Project owner

Hengxin functions as the owner, borrower and subject of operation in this project. (For details, please refer to the part on “project company”)

Supplier

According to the construction contract, the constructor of the roads is Sunry Group. As to the roadbeds and road surfaces, the construction follows the lump-sum contract, in which the duty for construction and material purchase rests only with Sunry Group. Constructors of the tunnels are Fujian No. 2 Highway Construction Company and China Railway 16th Construction Group. The provider of materials for the tunnels is Sunvi Materials Company, decided after the bidding.

Contractor

The contractor of the project is Sunry (For more details, please refer to the part on “initiator”) which is responsible for the engineering of roadbeds and road surfaces; Fujian No. 2 Highway Construction Company and China Railway 16th Construction Group are responsible for the tunnels of the project.

Operator

The owner of the project, borrower and subject of operation is Hengxin. (For more details, please refer to “project company”)

III. PROJECT ANALYSIS

a. Preliminary preparations

In 2010, People’s Government of Inner Mongolia Autonomous Region agreed to adopt the BOT method, and after the bidding earlier in the year has approved of the Sunry Group to be the project investor. Upon that, Sunry founded Hengxin for the project construction. In April, 2011, Ulanqab government and Hengxin signed the *Franchising Agreement of Baiyinchagan-Yongtaigong Highway Construction in Inner Mongolia*. Since then, the project entered the phase of construction.

b. Prequalification

Before the bidding was held, the contractors have gone through the prequalification process, in which factors including their eligibility, financial condition, performances and management have been closely examined. After that, Sunry, Fujian No. 2 Highway Construction Company, China Railway 16th Bureau Group, Shanxi Mingtai Construction Company and China Railway 15th Bureau Group became the candidates of bidding.

c. Bidding

The notice of invitation has been publicized in line with relevant regulations. Bid and tender documents are collected for review; evaluation methods and items of bidding documents are determined; then bidders who pass prequalification should attend the bidding at a designated time and place.

d. Bid evaluation

The bid evaluation follows the rules of "lowest reasonable price". The bid evaluation committee grades the bidding documents which meet the essential requirements, and recommends the bid winner according to the scores. When the final scores are the same, the choice should be made in favor of the one with lower price; when the prices are also the same, the choice should be made in favor of the one that is granted a higher credit rating by local transportation departments in the province where the project is located or the one with earlier submission of documents.

e. Legal Environment

The laws and regulations involved include project examination, project planning and approval, approval of land used by the project, evaluation of the project environment. The project already passes the administrative approval.

f. Planning and approval

The project has already been listed in Inner Mongolia highway and waterway industrial planning and highway network planning. On April 11, 2011, the Department of Construction of Inner Mongolia approved the project with its *Approval of the Site Selection of Baiyinchagan-Yongtaigong Highway Project (Inner Mongolia Department of Construction [2011] No.133)*.

Project review

On May, 30th, 2011, the Development and Reform Commission of Inner Mongolia approved the report on the feasibility of the project with its *Approval of the Review of Baiyinchagan-Yongtaigong Highway Project (Development and Reform Commission of Inner Mongolia [2011] No. 1418)*.

Approval of land for construction

On May, 16th, 2011, Department of Land and Resources of Inner Mongolia has endorsed the use of the land for construction with its *Opinions on the Preliminary Review of the Land for Construction of Baiyinchagan-Yongtaigong Highway Project (Department of Land and Resources [2011] No.82)*; on April 21, 2014, Ministry of Land and Resources approved the land to be used for construction with its *Approval of the Land for Construction of Baiyinchagan-Yongtaigong Highway Project (Ministry of Land and Resources [2014] No.118)*.

Approval of environment evaluation

On April, 21st, 2011, Department of Environmental Protection of Inner Mongolia approved the environmental protection opinions with its *Opinions on the Review of Environmental Protection of the Baiyinchagan-Yongtaigong Highway Project in Inner Mongolia (Department of Environmental Protection of Inner Mongolia [2011] No. 49)*.

5. Other approvals

On December, 9th, 2010, the people's government of Inner Mongolia Autonomous Region approved Sunry as the investor of the project with its *Approval of Determination of the Investor of Baiyinchagan-Hohhot Highway (Inner Mongolian government [2010] No.257)*.

On March, 15th, 2010, the people's government of the autonomous region approved the adoption of BOT method with its *Approval of Adopting BOT Method for Baiyinchagan-Hohhot Highway (Inner Mongolia government [2010] No.52)*.

On April, 20th, 2011, Development and Reform Commission of Inner Mongolia approved the energy conservation registration form.

On April, 29th, 2011, Development and Reform Commission of Inner Mongolia approved the change of the project name with its *Opinions on the Name Changing of Baiyinchagan-Hohhot Highway and the Validity of Related Documents (Development and Reform Commission of Inner Mongolia [2011] No.88)*

IV. FINANCING INFORMATION

As approved by Development and Reform Commission of Inner Mongolia, the total investment on the project is 4.558 billion RMB, as opposed to the 4.501 billion RMB of total investment estimated by financial institutions based on review. Among the total investment, capital fund for the project stands at 1.601 billion RMB. On April 14, 2014, China Development Bank led the banking groups to grant a syndicated loan of 2.9 billion RMB with a term of 17 years, among which 1.8 billion is from CDB, accounting for 62.1% of the total.

V. RISK MANAGEMENT

The project is jointly invested by private enterprises and government, following the BOT model in which the government has the ownership while the private enterprises are held responsible for project construction and operation. It is not only in compliance with the law when it comes to administrative examination and approval, but is also supported by government credibility in terms of financing. It is flexible and compatible with the market in terms of project operation.

The capital fund of the project comes solely from shareholders according to their proportion of shares. As to the bank loans, shareholders provide full guarantees based on their respective capabilities of guarantee and introduce the third-party guarantee, Sunvi, which shoulders full guarantee and joint liability. Meanwhile, the tolling rights of the highway after the completion of construction and Hengda road serve as the pledge guarantee.

The major current risks are from construction and market. The construction risk is very low since the technologies of road construction are quite mature and the construction of tunnels is undertaken by Fujian No. 2 Highway Construction Company, China Railway 16th Bureau Group. As to the market risks, it is acknowledged that the volume of traffic on related road sections in recent years have increased rapidly which even led to congestion, and that there has been a robust demand for transportation along the highway. Yet it is estimated that the Beijing-Xinjiang (G7) highway and other alternative routes might constitute as competitors of this project. So we should pay particular attention to such market risks.

a. Special Feature/ Incentives

Grant franchise

The franchising agreement stipulates that the government grants exclusive franchising to the company, including: rights of fund-raising, investment, design and construction; rights of operation, maintenance and management; right of tolling; right of management of facilities within the regions along the line; right of management of advertisement in the regions along the line.

Government commitments and taxation preferential policies

The government should help the project company to fulfill the preliminary work, reduce any intervention by the third party, strictly control the approval of other projects which are potential competitors and return the construction tax of the project to Hengxin.

VI. KEY LESSONS

With BOT model, Baiyinchagan-Yongtaigong Highway not only reduces the financial pressure on the government, but also resolves the mismatching terms of commercial banks by taking advantage of development-oriented financing, effectively meets the funding needs, thus saving private enterprises from financing difficulties. It also serves to accelerate the construction of inter-provincial transportation in Inner Mongolia and boost the economy in western China. In general, the project has provided the following experience:

Thorough evaluation of the project's expected utility is the key to success

During the preparation period, the project has undergone thorough evaluation of its expected utility. With a knowledge of the current level of economic development in Inner Mongolia, and an estimation of sustained increase of car parc given the latter's positive correlation to the economic aggregate. Meanwhile, the carrying capacities of passengers and freight in the region have also been calculated by referring to statistical data in the transportation market of Inner Mongolia in recent years. Obviously, the project will greatly relieve the transportation pressure on the Hohhot-Jining section dominated by coal transportation. More importantly, judged against the parameter of the current highway standards in Inner Mongolia, the project's expected utility is evaluated as liable to reap economic benefits. Thanks to this fact, this project has drawn attention from private enterprises, and have promoted their participation in the project construction and operation.

PPP model pushes forward the establishment of mixed ownership

The private enterprises in Erdos have traditionally been preoccupied with industries featuring short terms and high profits, and have seldom turned to infrastructure construction with high capital coefficient and long-term benefits. The practice of Ulanqab Investment and Development Company to invest and purchase shares of the project company, and to cooperate with Sunry in the form of equity investment, has set up a good example of PPP model: it at once facilitates the establishment of mixed ownership and the integration of state capital and private capital.

The project not only gives full play to the marketization of private enterprises, but also foregrounds the privileges exclusive to infrastructure construction hosted by the government, including a boost to corporate credibility during financing, higher efficiency in approval and favorable policy of tax returns.

Improvement Project of Southern Main Pipe for Sewage Treatment, Shanghai

I. PROJECT DESCRIPTION

a. Background

In late 2012, Shanghai Municipal Sewerage Company LTD. launched the Improvement Project of Southern Main Pipe (Eastern Part) as part of the Sewerage Treatment project in Bailonggang Region, Shanghai. The project constructed the eastern part of southern main pipe so as to increase sewage collection rate of Pudong New District. Before the project, many existing pipes were with low transportation capacity while industrial waste water and life sewage were often discharged directly into inland rivers, which had greatly undermined economic growth. The project aims to solve the problems, improve regional water environment, and ensure residents' water supply. This BOO (Build-Own-Operate) project is of an operational nature with charging mechanism and stable cash flow. Shanghai Municipal Sewerage Company LTD. is in charge of the investment, construction, operation and management of the drainage, of the flood mitigation, and of the main sewerage pipes for central regions of Shanghai. It is granted the franchise of all the above-mentioned operations, and is responsible for the collection of drainage charge in Shanghai.

b. Project Background

In mid-1990s, to upgrade regional sewage discharge pattern and improve the water environment of Huangpu River, Suzhou River and their branches, lots of sewage collection, transportation and treatment projects were launched in Bailonggang region. The consideration back then was to postpone the construction of eastern part of southern main pipe due to the discrepancy between planned and real sewage volume. However, with the surging population growth and the influx of Puxi sewage, the above-mentioned problems gradually surfaced. In late 2012, to improve regional water environment and ensure residents' water supply, Shanghai Municipal Sewerage Company LTD. (hereafter referred to as 'the sewerage company') launched the Improvement Project of Southern Main Pipe (Eastern Part) for Sewage Treatment of Bailonggang Region, Shanghai (hereafter referred to as 'the project'), which was to construct the eastern part of southern main pipe to increase sewage collection rate of Pudong New District.

According to relevant regulations and principles, the sewerage company is in charge of the investment, construction, operation and management of the drainage, of the flood mitigation, and of the main sewerage pipes for central regions of Shanghai. It has been granted the franchise of all the above-mentioned operations, and is responsible for the collection of drainage charge in Shanghai. Since the project falls into the ambit of municipal administration, the sewerage company is thus in charge of its construction and operation. A state-owned enterprises as it is, the company is independent in settlement, operation, and profits and losses. Therefore the PPP model is adopted, granting the company with the constructive and operative right and responsibility of the municipal drainage system. In this way, the indebtedness of government will be effectively reduced, and more infrastructure construction with limited fiscal revenue will be promoted.

c. Project Timelines

Name	Improvement Project of Southern Main Pipe for Sewage Treatment of Bailonggang Region, Shanghai
Type	Infrastructure—Sewage Treatment Project
Nation/Region	P.R.C
Address	Bailonggang Region, Shanghai
Scale (km/km ²)	Main Sewerage: 26.1km; Area Covered: 1255 km ²
Profitability	Quasi-operational
Industry	Public Service-Drainage
Mode	Franchise
Starting Time	Late 2012
Current State	Under Construction

d. Stakeholders

Local Government

Shanghai Municipal People's Government is the government concerned in this project. In 2013, annual GDP of Shanghai reached 2.160212 trillion RMB with a year-on-year growth of 7.7% adjusted for inflation. Annual fiscal revenue was 410.951 billion RMB with a 9.8% year-on-year growth.

Initiator

The initiator of this project is Shanghai Municipal Sewerage Company LTD (the sewerage company). This company is an exclusive state-funded corporation with limited liability and independent settlement, operation and profits and losses in public service. By 2013, the total assets of it has reached 23.805 billion RMB, with 2.208 billion RMB from main business and an asset-liability ratio of 51.67%. The parent company of the sewerage company is Shanghai Water Assets Operation and Development CO.LTD, and the controlling shareholder is Shanghai Chengtou Corporation.

Project Company

There is no project company other than the sewerage company, which is in charge of construction and operation.

Lenders

The lenders of this project are syndicated loans, including China Development Bank, Shanghai Pudong Development Bank, China Construction Bank and Bank of China, of which China Development Bank and Shanghai Pudong Development Bank are leading banks, and others are participating banks.

Owner

The owner is the sewerage company.

Operator

The operator is the sewerage company.

II. PROJECT STRUCTURE**a. Risk Management**

Type of Risk	Description
Completion Risk	The completion risk refers to the situation where the project cannot be completed or is postponed. The sewerage company has a wealth of experience in drainage construction. In addition, given the controlling shareholder of the sewerage company is State-owned Assets Supervision and Administration Commission of the State Council of Shanghai, the sewerage company has a good coordinative ability in terms of administrative approval and construction of supporting facilities.
Operation and Market Risk	The sewerage company's chief operating revenue comes from its collection of drainage charge. Drainage volume of central regions of Shanghai has come to a steady level, yet the main factor that influenced the company's revenue is the charging standard of drainage. Over the past several years, due to strict discharge standards, the sewerage company has witnessed an increasing cost, which at certain points have exceeded the revenue. To solve this problem, Shanghai Municipal People's Government has adjusted the charging standard of drainage. The drainage charge for residents and non-residents have both increased by about 30%, which will effectively raise the revenue of the sewerage company.

b. Special Feature/ Incentives**Special Fund**

Central and municipal government have allocated a project-specific fund of 0.93 billion RMB as capital base.

Franchise

The sewerage company had the franchise to collect the drainage charge of Shanghai.

Business Subsidies

Due to increasing discharge cost these years, Shanghai Municipal People's Government would grant the sewerage company a certain amount of business subsidies, which are allocated by Shanghai Chengtou Corporation, the controlling shareholder of this company.

III. PROCESS ANALYSIS

This BOO (Build-Own-Operate) project is of an operational nature with charging mechanism and stable cash flow. The environment and project approvals were completed in 2009, and the land use planning and the land use approvals were completed in 2011. The sewerage company is a special state-owned enterprise with franchise, so there is no invitation to tender or submission of tender concerned. In late 2012, the sewerage company launched the project. The sewerage company is in charge of the investment, construction, operation and management of the drainage, of the flood mitigation, and of the main sewerage pipes for central regions of Shanghai. It has been granted the franchise of all the above-mentioned operations, and was responsible for the collection of drainage charge in Shanghai.

1. Regulations on Urban Drainage and Sewage Treatment

The Regulations on Urban Drainage and Sewage Treatment came into force on January 1, 2014. It explicitly stated that China encourages the franchise of urban sewage treatment. It also stated that after the construction and acceptance check of an urban drainage and sewage treatment project, the urban drainage administration, through invitation, submission or commission of tenders, should select the qualified institution to maintain and operate the facilities. Therefore, the franchise of the sewerage company meets the legal standard.

2. Regulations of Shanghai Municipality on Drainage Administration

Regulations of Shanghai Municipality on Drainage Administration came into force on May 1, 1997. It was amended for the fourth time on September 17, 2010. The regulations explicitly stated that urban public drainage system is in the charge of Shanghai Municipal Sewerage Company LTD, and that the construction cost of drainage facilities shall be raised through government investment, loan, beneficiaries' fundraising, institutional self-raising and other ways. Therefore, the sewerage company is eligible to take charge of the construction and operation of urban public drainage system.

3. Administrative Measures for Shanghai Combined Sewage Treatment Facilities

Administrative Measures for Shanghai Combined Sewage Treatment Facilities came into force on November 15, 1993, and on December 20, 2010, it was amended for the third time. The measures stated that according to the Administrative Measures for the Collection of Shanghai Drainage Facilities Charge, users of combined sewage treatment facilities shall pay the charge for the use of drainage facilities (drainage charge), and that the charge shall be calculated on 90% of water consumption amount.

4. Administrative Measures for the Collection of Shanghai Drainage Facilities Charge

Administrative Measures for the Collection of Shanghai Drainage Facilities Charge came into force on January 1, 1996, and it was amended on December 20, 2010. It stated that Shanghai Municipal Sewerage Company LTD is in charge of the collection and management of drainage charge, and that the water supply company is commissioned by the sewerage company to collect the charge of residents. Therefore, the sewerage company was entitled to the collection of relevant charge.

IV. FINANCING STRUCTURE

The total investment of this project is 3.03 billion RMB, of which 0.93 billion RMB comes from a specific fund issued by the central and local governments and allocated by Shanghai Chengtou Corporation. The remaining 2.1 billion RMB is from financing and syndicated loan. China Development Bank and Shanghai Pudong Development Bank are the leading banks, which provided loans of 300 million and 900 million RMB respectively; China Construction Bank and Bank of China are participating banks, which provided 700 million and 200 million RMB respectively. This project does not generate other direct measurable profits.

V. KEY LESSONS

This project is still under construction. PPP has substantially reduced the indebtedness of government, and has also promoted more infrastructure construction with limited fiscal revenue. From this project, we can gain the following experience:

PPP should be promoted as a priority in urban public service.

In PPP, the franchise of the construction and operation of urban public drainage system is granted to the sewerage company. Government and society have established a relationship of common benefits, shared risks and full cooperation, thus reducing financial burden of the government and the investment risk of society.

The size and increase rate of urban population has been comparatively stable. Therefore, compared with highway, railway, airport and other major infrastructure, urban public service such as drainage, water supply and power supply has more stable cash flow and predictability. Also, urban public service is less susceptible to external factors, and is usually free from the problem of multi-local-government supervision. Therefore, PPP in urban public service should be promoted as a priority. PPP in this field not only stands to provide a clearer picture of profit expectation to non-government capital, but also works to facilitate the process of obtaining capital support from financial institutions.

Reasonable pricing of public service—the key of PPP promotion

In this project, the main profit comes from drainage charge. With certain drainage volume, the unit charge has become main factor of profit. However, the pricing is set by government rather than market-based. PPP in public service should not be negligent to the profit-driven nature of capital. Without profit expectation, it will be hard to attract non-government capital. To make PPP more normative and sustainable, apart from devising appropriate legal frameworks, government should also set up market-based pricing mechanism to avert policy risk of projects. Public service pricing is closely related to people's welfare. In this light, government should also try to reduce the loss of non-government capital through reasonable financial subsidies and tax preference policies.

State-owned enterprises need improved franchise mode.

As a state-owned enterprise, the sewerage company also suffers from typical agency problems such as owner absence and soft budget constraint. To solve these problems, government can recruit enterprise managers in a market-based way so as to set up an external supervising mechanism of enterprise cost. Government can also explore market-based business to diversify the revenue, fostering favorable external conditions and a market-based environment for non-government capital.

Jamaica H2K Highway North-South Link Project

I. PROJECT DESCRIPTION

a. Background

Jamaican government initiated Highway 2000 Project (hereafter referred to H2K Project) in 1999 to connect the Capital Kingston with highly-populated cities so as to promote the development of land and economy along the road, and to improve infrastructure development of the economy in the long term. H2K North-South Link Project is a BOT investment project undertaken by CCCC Jamaica North South Highway Company jointly with Jamaican government. When completed, it will connect Kingston with the tourist city of Ocho Rios, and create ideal conditions for development of tourism, mineral and land resources along the road, thereby boosting social and economic progress of Jamaica. The project will provide Jamaica government a solution to its difficulties in building big infrastructure, build a convenient route for northern and southern regions, and enhance the transport service quality and transport support capacity along the line.

As a world-renowned tourist area, Northwest Coast of Jamaica is enjoying fast progress, but the progress is somewhat constrained by lengthy travel time from Kingston to the area. So in 1999, Jamaican government initiated Highway 2000 Project (or H2K Project), which is the biggest and most influential infrastructure project in Jamaica and even in the English-speaking Caribbean. It includes two links: East-West Link that connects Kingston and Montego Bay and North-South Link that connects Spanish Town and the tourist city of Ocho Rios. The first phase of the latter was planned to be built by Bouygues Travaux Publics, but left unfinished due to prospecting issues, and later China Harbor Engineering Company Ltd. took over the project as replacement on BOT basis.

b. Project Timelines

Scale (km/km ²)	65.192km
Construction & Operation Model	BOT
Project Initiation Date	July 2012
Financing Completion Date	August 2013
Commence Date	January 28, 2013
Completion Date	2016
Operation Date	August 6, 2014
Transfer Date	2066 (estimated)
Current Status	Project under construction with middle section estimated to be completed and put into operation on August 6, 2014

c. Stakeholders

In 1999, as a long-term plan to improve infrastructure and revitalize economy, H2K Project was initiated by Jamaican government to provide a safe and efficient road that diverts increasing traffic, connects Kingston and other densely-populated cities and promotes land and tourism development. This project is the North-South Link of H2K, a project high on implementation list of Jamaican government.

Project Company

Jamaica North South Highway Company Limited is the lender as well as the operator of the project. It was a project company founded on September 13, 2011 in Jamaica by a holding company registered in Barbados by CCCC International, China Harbor Engineering, CCCC First Harbor Engineering, CCCC Second Highway Engineering and CCCC Second Highway Consultants. It has a registered capital of USD 500, 000, and a wide business scope spanning over investment, construction, operation and maintenance of highways in Jamaica.

Project Owner

Jamaica National Road Operating and Constructing Company (NROCC) was established in February 1995 and was formerly named National Road Maintenance Company. On May 22, 2000, it was renamed National Road Operating and Constructing Company, responsible for constructing and operating highways in Jamaica under Jamaica Ministry of Transport and Works. Jamaica government owns 999 shares and Jamaica Development Bank keeps 1 share.

Lender

Project loans are exclusively issued from China Development Bank. On August 27, 2013, the project company and China Development Bank signed a long-term loan agreement. According to the long-term loan agreement, the ratio of matching capital funds to loans is set at 1:3 with project capital funds reaching USD 150 million and loans USD 425.5 million and RMB 200 million. The loan period is 20 years including a 3-year grace period (construction period included), and a repayment period from 2017 to 2033 with an agreed interest rate of 6 month Libor + 460BP.

Contractor

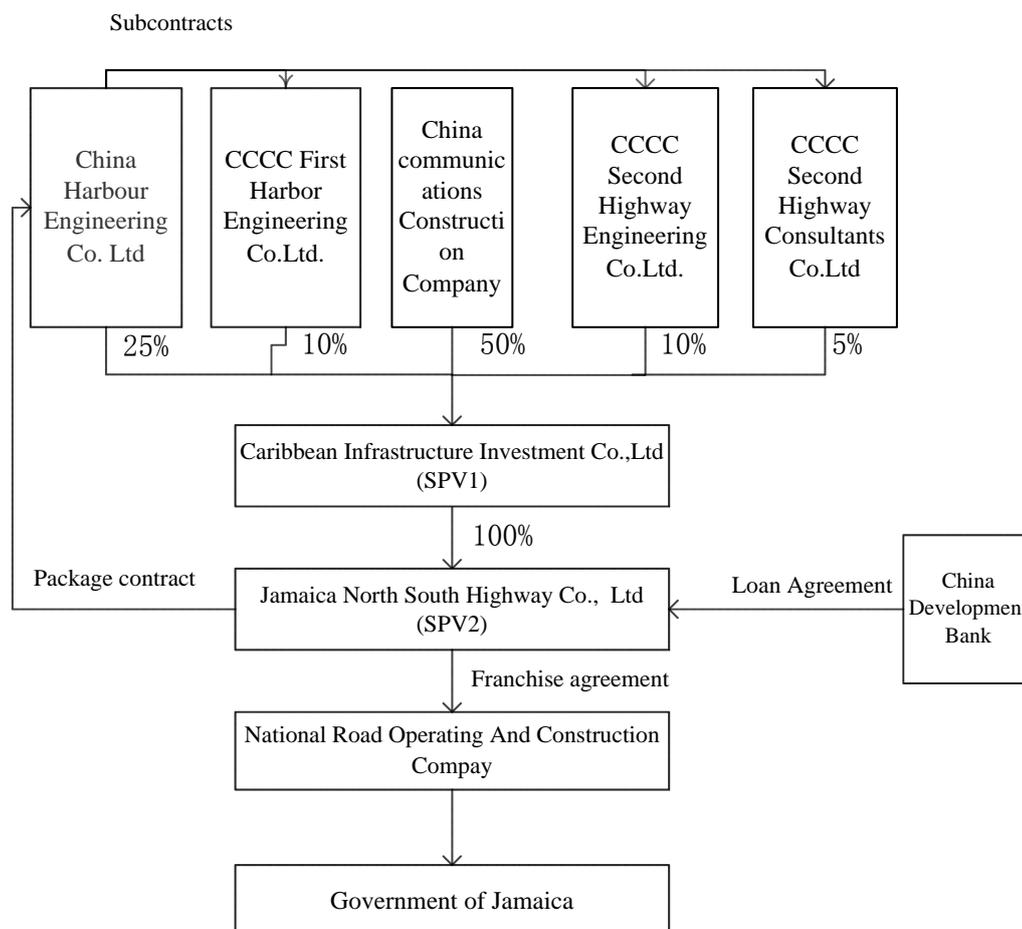
Project contractor is China Harbor Engineering Company Ltd. (CHEC). The company expanded business to Jamaica in 2008, and set up an American branch in Kingston, Jamaica in November 2013. The branch has five business departments, including engineering division, commercial law division, market division, finance division and general division. And its market scope has spread from 14 economies (US, Mexico, Bahamas, Jamaica, Cayman Islands, Barbados, Grenada, Trinidad and Tobago, Panama, Columbia, Guyana, Surinam, Brazil and Argentina) to the entire American region, and established permanent working groups or stationed business representatives in most economies in the region.

Operator

Project operator is Jamaica North South Highway Company Limited.

II. PROJECT STRUCTURE

The figure below shows contractual relations between project participants and project deal structure.



Jamaican government is heavily in debt, and its fiscal situation is further worsened by the financial crisis. The debt ratio is almost 140% of GDP, and 40% of state revenues are used to pay loan interest. But on the other side, as the government is borrowing money from multilateral organizations like World Bank, IMF and Caribbean Development Bank, if it defaults, it will never get external financing; this is why it values its credit in the international financial market so much and has never defaulted before. But strictly restricted by IMF in terms of debt and sovereign guarantee, it has not the financial strings to invest in or guarantee for massive infrastructure construction.

a. Risk Management

No.	Type of Risk	Descriptions
1	Credit & Political Risk	Credit and political risk may endanger assets safety, e.g., change of regime resulting in the collapse of Jamaica or disavowal of previous debts and agreements by the new administration.
2	Market & Operational Risk	Market and operational risk may endanger project operation, e.g., traffic and toll standard are not as expected, or poor management of borrower, increase of management cost, and force majeure like natural disasters.
3	Interest & Exchange Rate Risk	Interest and exchange rate risk may endanger the project, e.g. the project term is 20 years, but interest rate and exchange rate are highly

		unpredictable.
4	Completion Risk	Completion risk may endanger timely completion, e.g. complicated geological conditions, slow work of local companies, slow progress of land requisition and demolition, and discontinuity of land requisition.

b. Special Feature/ Incentives

On Concession, Jamaican government grants 50-year concession to the project company, and promises favorable toll and pricing mechanism. In addition, the borrower and Jamaica government agree that in concession period, Jamaica cannot construct new competitive roads, railways and light rails or upgrade any existing roads unless H2K is saturated with traffic.

The Usufruct of 5 Sq. Km of Land along the Road 5 km of profit-oriented land along the road is independently developed by the project company which owns the earnings.

Some of the Tax Incentives are on:

- **Income Tax** -According to tax provisions in the execution agreement, in the first 20 years of operation, Jamaica North South Highway Company Ltd. is subject to 0% income tax rate.
- **General Consumption Tax**- Jamaican government applies zero-rating to road toll during operation and applies 0% GCT or refund to investors, contractors and subcontractors in the first 25 years of operation.
- **Customs**- In terms of customs, from effect date of concession agreement to 25th year of operation, investors, contractors and subcontractors importing construction equipments, transport vehicles (except cars) and materials relevant to the project are subject to 0% customs tariff.
- **Capital Gains Tax**- As a 100% owned subsidiary of Barbados SPV, Jamaica North South Highway Company Ltd. is exempt from capital gains tax on dividends.
- **Others**- Stamp duty, withholding tax on interests, property tax and property transfer tax are exempted as well.

III. PROCESS ANALYSIS

a. Preliminary plan

Originally, the project was undertaken by Bouygues Travaux Publics in 2007. Yet due to poor geological prospecting, the company suspended the project with 1.5 km of road left unfinished (incl. 500 meters of potential landslide slope) when running out of budget. In July 2012, China Harbor Engineering Company Ltd. (CHEC) signed a concession agreement with Jamaica government and NROCC, receiving the approval to build and operate North-South Link of H2K on BOT basis along with a 50-year concession of the project in the name of the project company (Jamaica North South Highway Company Limited). CHEC and the project company signed a 3-year (starting from January 28, 2013) EPC contract on December 21, 2012.

b. Bidding

There was no bid document, and the agreement was reached between CHEC and Jamaica government by bid negotiation. Key Factors for Winning the Bid involves the closely-followed and long-stalled problem confronted by financially constrained Jamaican government was solved, producing good economic and social effect.

c. Legal Environment

Adopting UK legislative framework, Jamaica has a well-established legal system. The existing constitution that took effect on August 6, 1962 stipulates that Governor-General appoints majority leader in House of Representatives as Prime Minister who nominates Ministers. The Cabinet that reports to the Parliament is comprised of Prime Minister and no less than 11 Ministers. Concession of highway in Jamaica is justified by *Toll Road Act*. Highway concession agreement should be submitted to Jamaica Ministry of Transport and Works for review and takes effect after approval of the Cabinet. Other legislations concerning roads include *The Road*

Traffic Act and *The Main Road Act*.

There is no specific legislation for foreign investment in Jamaica, so all foreign investors enjoy the same rights as domestic investors.

There is no specific legislation for account regulation, so the contract is what relevant parties rely on. If there is an agreement between Jamaica Commercial Bank, lender and borrower, then the agreement is what they rely on for execution. Normally, when borrower defaults, according to the loan agreement, lender can designate some individual or entity to take over the project company of borrower temporarily and decide corporate operation directly, and has the right to dispose the bank account and all the assets of the borrower. In this way, lender's rights and interests are secured.

IV. FINANCING STRUCTURE

Proposed length of the project is 65.19 km, estimated investment RMB 4,792,075,75 (USD 706,607,671), and costs per kilometer RMB 73,507,112 (USD 11,008,425). On August 27, 2013, the project company and China Development Bank signed a loan agreement. According to the long-term loan agreement, the ratio of matching capital funds to loans is set at 25:75 with project capital funds reaching USD 150 million and loans USD 425.5 million and RMB 200 million, and the loan period is 20 years including a 3-year grace period (construction period included), and a repayment period from 2017 to 2033.

V. KEY LESSONS, EXPERIENCES AND OBSERVATIONS

H2K North-South Link has been put into operation. The project has solved the difficulties of Jamaican government in building big infrastructure with PPP model. We can draw following experiences from the project:

Risk Assessment Should Be Given Full Attention in an Overseas Project

Originally, the project was undertaken by Bouygues Travaux Publics in 2007. But for poor geological prospecting and ill-preparation for construction difficulties, the company overspent budget and suspended the project, and later the talks over investment increase between the company with project owner and Jamaican government broke down. Then, as a replacement, CHEC was approved to build and operate North-South Link of H2K on BOT basis.

Compared to domestic projects, overseas projects have many uncertainties, such as administrative approval, project prospecting, land requisition and demolition, cost control, legislations, etc. Failure of Bouygue highlights the importance of risk assessment in an earlier stage. In this regard, domestic experts can be invited to carry out field visits and research to realize domestic assessment, planning and operation of overseas projects.

BOT Legislations in Jamaica are Worth Learning

Adopting UK legislative framework, Jamaica has a well-established legal system. Concession of highway in Jamaica is governed by *Toll Road Act*. Highway concession agreement should be submitted to Jamaica Ministry of Transport and Works for review and takes effect after approval of the Cabinet. Other legislations concerning roads include *The Road Traffic Act* and *The Main Road Act*. Legal system of an economy, especially legislations on PPP model, largely decides whether the interests of project participants will be guaranteed. In China, there are only administrative regulations on PPP model, which are low in legal hierarchy and weak in professionalism. So Jamaica's BOT legislations are worth learning.

Domestic Enterprises Can Expand into Overseas Market with PPP Model

For domestic enterprises, Jamaica H2K North-South Link Project is the first road investment project undertaken by CHEC or even CCCC. Success of the project will help Chinese enterprises to expand new business scope, scale up overseas business, and compete for other sectors and regions, demonstrating the feasibility of expanding into overseas market with PPP model.

The syndicated-loan-funded construction of Xinxiang-Changyuan section of Jiyuan-Dongming Highway

I. PROJECT DESCRIPTION

a. Background

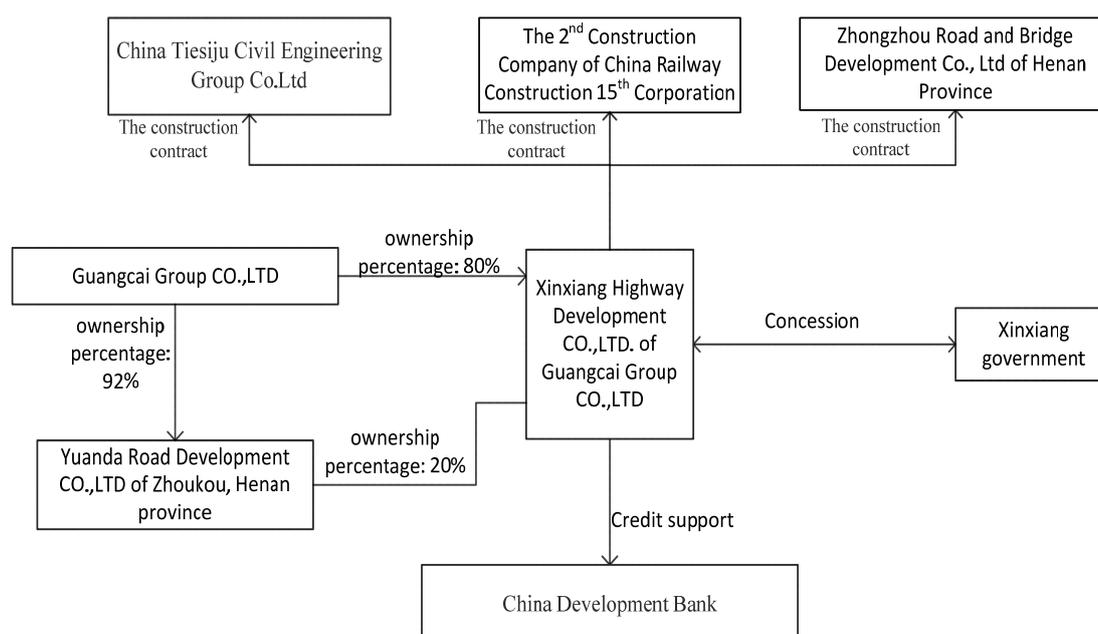
The syndicated-loan-funded construction of the Xinxiang-Changyuan section of Jiyuan-Dongming Highway is financed and developed by Guangcai Group CO.,LTD in Henan province. The Xinxiang Highway Development CO.,LTD, a wholly owned subsidiary of Guangcai Group CO.,LTD, signed with the local governments the Franchising Agreement whereby the subsidiary is granted by the government. Also granted by the agreement is the right to operate the highway on project completion, along with the right to manage the construction and operation, to collect the road toll and make advertisements during the franchising period. This BOT mode serves as a good demonstration case not only for its being able to channel non-governmental funds into local governments when confronted with financing deficiency, but for its conducive effects on local infrastructure development as well.

The Jiyuan-Dongming Highway connects national highways including G55 Highway, G4 Beijing–Hong Kong–Macau Highway and G45 Daqing–Guangzhou Highway. The Xinxiang-Changyuan section is part of the Jiyuan-Dongming Highway in Henan’s highway network planning. To its west the Highway connects the highway network of Shanxi province, and to the east the highways of Shandong province, running through three cities of Henan province, namely Jiyuan, Jiaozuo and Xinxiang and linking stated-planned highways such as G55, G4 and G45. Its length within Henan province reaches 239 kilometers, making it the longest east-west inter-provincial highway to the north of the Yellow River in Henan province. By joining the highway networks of Shangxi and Shandong provinces, the Jiyuan-Dongming Highway will connect the south of Shanxi province and the north of Henan province with harbor cities such as Rizhao and Qingdao, functioning as a major route of coal transportation from Shanxi province.

Henan local governments, with limited financial means, could not be fully answerable for a massive infrastructure project like this. To solve this problem, we have adopted the mode of Build-Operate-Transfer (BOT) in developing the Xinxiang- Changyuan section of the Jiyuan-Dongming Highway, a move that works to channel non-governmental funds into local governments confronted with financing deficiency, and to accelerate local infrastructure development as well.

Project name	The syndicated-loan-funded construction of Xinxiang-Changyuan Section of Jiyuan-Dongming Highway
Project type	Infrastructure-highway
Economy/area	China
location	Xinxiang-Anyang
Scale(km/km2)	Overall length 72,718 kilometers
Type of income	operational
Sector/industry	Economic area-transportation
Mode of development and operation	BOT/PPP
Date of completing financing	July 27, 2004
Starting date	Oct. 2004
Completing date	Oct. 2007
Operation starts from	Oct. 2007
Project status	completion

II. PROJECT STRUCTURE



a. Stakeholders

Local governments

The local governments in this project refer to the government of Xinxiang city and the government of Anyang city. In 2013 the regional GDP of Xinxiang, Henan province reached 176.61 billion RMB, a record high, up 9.5% compared with previous year. The government revenue in 2013 increased by 19.5% to 12.95 billion RMB. In 2013 Anyang achieved an annual growth of 10.6% to 168.4 billion RMB. Anyang's government income totalled 16.01 billion RMB, up 6.5% in 2013.

Project company

The Xinxiang Highway Development CO.,LTD of Guangcai Group CO.,LTD is the project company, responsible for the finance, construction, operation and maintenance of Xinxiang-Changyuan section of the Jiyuan-Dongming Highway and developing and operating the related businesses. It is founded and financed by Guangcai Group CO.,LTD of Henan province and Yuanda Road Development CO.,LTD of Zhoukou, Henan province, with Guangcai Group CO.,LTD being the actual controller.

Lender

The project is funded by a syndicated loan led by China Development Bank with a total credit of 1.7 billion RMB.

Project owner

The project owners here are the government of Xinxiang and the government of Anyang.

Constructor

The project constructors include China Tiesiju Civil Engineering Group Co., Ltd.(CTCE), the 2nd Construction Company of China Railway Fifth Construction Corporation and Zhongzhou Road and Bridge Development CO.,LTD of Henan Province.

Operator

The project operator is The Xinxiang Highway Development CO.,LTD of Guangcai Group CO., LTD.

b. Risk Management

Type of Risk	Description
Policy risk	Policy risk includes the suspension of franchise or tax cut, tax rise, unfair fees, new policies, and risks brought by administration changes etc. The key to controlling such risks is the formulation of proper agreements at the early stage of projects.
Market risk	In highway projects, actual traffic flow may be vary as against the estimated value, government-designated price may be vary as against the market price, and competition may rise from alternative routes or means of transportation. These risks may ultimately protract the payback period.
External risk.	If other related projects cannot be completed as scheduled, the function and efficiency of the project would be undermined. Currently, this risk is the most relevant factor affecting the project.

c. Special Features

This project has been granted with franchise. The franchising agreement stipulates that the government grants the company with an exclusive franchise which includes the right of construction, management and operation, the right to charge tolls on passing vehicles, and the right to publish advertisement.

III. PROCESS ANALYSIS

a. Preliminary plan

Related parties are communicated, and the overall plan of the project is made in line with rules and regulations made by the local governments on competitive bidding, displacement and resettlement, along with the construction implementation. The project is evaluated in terms of the project company's development and capital operation.

b. Bidding

Companies should first form groups and sign up as joint bidders at the registration office of Henan Development and Reform Commission, as is stipulated in the Notification on the Preliminary Review of the Corporate Capacity of the Bidders for the Xinxiang- Changyuan section of the Jiyuan-Dongming Highway (document and information have been publicized by the government at an earlier point). The collective bidders then submit relevant materials and certifications, get qualified through preliminary examination, and obtain bidding-invitation documents. The bidder may then compile the bidding documents in line with the bidding-invitation and submit the portfolio thereafter.

c. Bid evaluation

The bidding document submitted by the project company is evaluated by the bid evaluation committee. The evaluation is subject to public supervision and is monitored by the Henan Province Development and Reform Commission, Department of Communications and Transportation of Henan Province and the Xinxiang (Xinyang) Supervisory Bureau. After going through the process, the project company wins the bidding.

d. Construction and operation

The project construction began in Oct. 2004 and was completed in Oct. 2007. After its completion, the project went into a two-year test run until Oct. 2009. On Nov. 8, 2004, the Xinxiang Communications Bureau and Anyang Communications Bureau, authorized by governments of Xinxiang and Anyang, signed the Franchising Agreement with the Xinxiang Highway Development CO.,LTD of Guangcai Group CO.,LTD on the project of Xinxiang-Changyuan section of the Jiyuan-Dongming Highway. The franchising period lasts 30 years starting from Nov. 2004.

e. Legal Environment

The project has fully met the standards set by the four examinations needed for approval, and is in line with the relevant rules and regulations.

f. Planning and approval

The project has been included in the *Highway Network Planning of Henan Province*, and the sections leading to the Jiyuan-Dongming Highway in the adjacent provinces of Shanxi and Shandong have also been listed in the highway network planning of the two provinces. In August 2009, the project of Dongming Bridge over the Yellow River has been reviewed and approved by the National Development and Reform Commission.

Environmental approval

In January 2005, the Department of Environmental Protection of Henan Province approved the project with *Approval of the Review on the Environmental Impact Report of the Xinxiang-Changyuan Section of the Jiyuan-Dongming Highway (Department of Environmental Protection of Henan [2005] No.10)*.

Approval of land for construction

In August 2005, the Ministry of Land and Resources officially approved the project's land for construction with *Approval of the Review on the Land for Construction of the Xinxiang-Changyuan section of the Jiyuan-Dongming Highway (Ministry of Land and Resources [2005] No.830)*.

Project approval

In June 2004, Development and Reform Commission of Henan Province approved the project with *Approval of the Review on the Feasibility Report of the Xinxiang- Changyuan section of the Jiyuan-Dongming Highway (Development and Reform Commission of Henan [2004] No. 1233)*. In September 2004, Henan Province Development and Reform Commission approved the project with *Approval of the Review on the Preliminary Design of the Xinxiang- Changyuan section of the Jiyuan-Dongming Highway (Development and Reform Commission of Henan [2004] No. 1683)*. In July 2007, Henan Province Development and Reform Commission approved part of the project's design alternations with *Approval of the Review on the Design Alternations of the the Xinxiang-Changyuan section of the Jiyuan-Dongming Highway (Development and Reform Commission of Henan [2007] No. 1011)*.

IV. FINANCING STRUCTURE

The investment in the syndicated-loan-funded construction of the Xinxiang-Changyuan section of Jiyuan-Dongming highway totals a 2.63815 billion RMB; the syndicated loan amounts to 1.7 billion RMB, including a loan of 850 million RMB from the China Development Bank; 850 million RMB has been granted.

IX. Operation and Key Problems.

The syndicated-loan-funded construction of Xinxiang-Changyuan section of Jiyuan-Dongming Highway started in October 2004 and was completed in October 2007. The entire Jiyuan-Dongming highway connects G55 highway in the west of Shanxi province and continues towards Rizhao Harbor in Shandong province. The Xinxiang-Changyuan section, invested and managed by the contracting company, crosses Yellow River Bridge in Dongming, Shandong province and ends in Rizhao Harbor. Yet the Dongming Bridge across the Yellow River had not been completed by the time. As a result, the company's income from toll-taking did not reach the expected level, which impacted the company's performance.

V. KEY LESSONS, EXPERIENCES AND OBSERVATIONS

The syndicated-loan-funded construction of Xinxiang-Changyuan section of Jiyuan-Dongming Highway is a highway project supported by China Development Bank, Henan branch in 2010. Guangcai CO., LTD of Henan province was responsible for the financing and construction of the two projects, which are already completed and put into use. The following experiences have been obtained from the projects:

Study the project characteristics and be fully awake to external risks.

As the construction of other connecting highways was not completed as scheduled, the profit expected Xinxiang-Changyuan section of Jiyuan-Dongming highway has not been reached. Guangcai Company as the private contractor hence suffered a direct loss.

When compared to other PPP projects like electricity and water facility, the construction of transportation infrastructure such as railways, highways and airports features larger volume of investment, longer payback period, and greater reliance on external environment. Usually these PPP projects are not isolated, but integral to the infrastructure of a larger area. Their being one juncture in a systemic project will inevitably mean their susceptibility to the situation of other related infrastructure projects in terms of construction and profits. Private contracting companies cannot solve these problems on their own. Therefore, in adopting the mode of PPP, the government should take the initiative to coordinate an overall plan, and to analyze the potential external risks when initiating the project and studying viability. Local governments should establish unified coordination mechanism for PPP-related projects to reduce external risks of the projects. Local governments should also establish inter-regional consultation and coordination mechanism such as an inter-regional PPP center to counter potential inter-regional risks.

Focus on the risk of policy sustainability

The syndicated-loan-funded construction of Xinxiang-Changyuan section of Jiyuan-Dongming Highway was carried out by Xinxiang municipal government. China Development Bank gave the government a latest credit rating of AA. But administration changes and other unpredictable changes would change or invalidate the agreements. Contracting companies should pay high attention to this risk and formulate legal agreements at the early stage of the project to ensure its completion and operation.

Umbulan Water Project – East Java, Indonesia

I. PROJECT DESCRIPTION

a. Background

The Umbulan Water Supply project will deliver Umbulan Water –one of the world’s finest natural drinking water- through the development of approximately 97 Km transmission line. It is expected to deliver 4,000 liters/second (around 345 MLD) of bulk water to approximately 1.3 million people within five regencies and cities in East Java through PPP scheme.

Initiated since 1980s, the project has been set to answer the need of clean water distribution and improved sanitation system in the area, as well as efficient utilization of high quality water resource.

b. Rationale

The project had carried out a long procurement processes, which lasted from 1988 to 1999. Although three bidders were short-listed, financial closures had never been successfully acquired. Missing components were only realized in 1997, this was the lack of financial support to increase financial feasibility such as:

- Capital Subsidy (one of the failed winner was planned to receive Autonomous Trade Preference-Grant, that serves as capital subsidy), and
- Government Guarantee.

Learning from the experience, Government of Indonesia (GoI) now has ready instruments along with other fiscal facilities aiming to increase financial feasibility for basic infrastructure projects. These supports however can only be secured when they are implemented using PPP scheme. Private sector involvement is expected to play important role in providing technical know-how, innovation, sustainable operation, as well as capital investment.

c. Project Scope

Project Company (PC) will provide upstream infrastructures such as transmission pipeline, offtake reservoirs, other related facilities, as well as the services needed to deliver bulk water to 16 offtakes during the concession period (see below figure).



d. Key Outputs

Distributed bulk water will surpass World Health Organization standard drinking water quality. Sustainable operation is expected with 24/7 water accessibility, equal or lower than 20% of non-revenue water, achieved the agreed rate allocation of 4,000 liters/second, adequate pressure level at households. Infrastructures must have a minimum lifetime of 50 years.

e. Externalities which drives this project to be procured using PPP

Most of the regional state-owned water enterprises (PDAMs) lack the capacity to carry sustainable upstream-downstream operation, unable to procure majority of water projects using Business-to-Business scheme, and have not fully recovered their investments. It is also linked with tariff policy influenced heavily by political decision in most areas.

II. PROJECT STRUCTURE

a. PPP Scheme

Umbulan Water Project will be facilitated with a Build Operate Transfer (BOT) scheme with 25 years of concession period. PC is expected to build, operate, and maintain the required upstream infrastructures. The concessionaire is then expected to deliver bulk water to provincial-owned water enterprise (PDAB) where the water would then distributed to five offtakers in five regional areas.

b. Entities

The five offtakers are five PDAMs responsible for water distribution to end users including the necessary investment, construction, operation, maintenance, and user charge collection. Each represents its regional government (Pasuruan Regency, Pasuruan Municipality, Sidoarjo Regency, Surabaya Municipality, Gresik Regency).

c. Revenue Scheme

Revenue stream for PC will be sourced from PDAB bulk water payment. Similarly, PDAB will receive payment from five PDAMs. Acting as Government Contracting Agency (GCA) is East Java Provincial Government that has full responsibility to the project.

d. Risk Allocation Matrix

Project Risks	Responsible Party	
	Contracting Agency	Project Company
Damage to Recharge & Catchment Area	√	
Bulk Water Quantity & Quality	√	
Permits Issuance	√	√
Land Acquisition	√	
Financial Close	√	√
Technical Design		√
Inappropriate Design and Delay in Construction		√
Testing, Commissioning, and Cost Overrun		√
Operational & Maintenance (O&M)		√

Demand Risk	√	
Financing Risk		√
Regulatory Change	√	
Force Majeure	√	√

e. Fiscal Support

GOI through Ministry of Finance (MoF) introduced fiscal incentives such as Viability Gap Fund (VGF), which aims to enhance financial feasibility while keeping end user tariff low. This incentive is available through PC's request and act as the only bidding parameter. Another fiscal tool introduced is Indonesia Infrastructure Guarantee Fund (IIGF) with intention to mitigate political risk. Other supports are including non-financial fiscal contributions such as land acquisition and EIA (AMDAL) study.

f. PPP Financial Statement in Public Financial Report

The project structure allows PC's financial condition to be reflected inside GCA financial report accessible by public.

III. PROCESS ANALYSIS

a. Inception

Prior to be elected as PPP showcase, GCA succeeded to exhibit another pre-qualification stage in July 2011 which was attended by several international consortiums. Shortlisted parties were then invited to attend series of meetings including one-on-one consultations.

b. Project Preparation and Feasibility

Furthermore, GCA established steering committee and technical team in an effort to start preparation phase and to carry out prefeasibility study. In order to fully implement an effective PPP process and government supports, MoF assigned SMI to facilitate GCA in public procurement and project management until financial close.

There are numerous international consultants involved in project preparation phase such as IFC, Norton Rose, DHV, Mott-McDonald, as well as notable local firms and individual experts as reviewers.

c. Procurement

GCA is currently preparing for final bidding documents. Winner will be appointed based on its ability to achieve required output specifications, as well as commercial aspects.

IV. FINANCING INFORMATION

Investment value is expected to be around Rp 2.07 Trillion. With Debt to Equity ratio of 70:30, economic internal rate of return is calculated to be around 17%. When VGF is applied at the maximum level and debt sculpted to minimum of 1.5 DSCR, the obtained result of financial internal rate of return is around 14.1%.

V. PROJECT STATUS AND KEY IMPLEMENTATION ISSUES

a. Project Milestones

1	Market Sounding	Feb 2011
2	Pre Qualification (followed by One on One meeting)	July 2011
3	Final RFP (current phase - awaiting for VGF and Guarantee approval by MoF and IIGF respectively)	N
4	Bid submission	N+45 days
5	Contract Awarding	N+90 days
7	Financial Close	N+180 days
8	Construction Period	2 years
9	First Day of Operation	2 years after financial close

b. Implementation Issues

As a PPP showcase, the project is expected to provide model for similar infrastructure development in Indonesia. However, high level interest along with great expectation of a success story contributes to an even greater risk-adverse perspective and occasionally put the implementation level to halt.

Moreover, as the project extends through five cities and regions, stronger understanding of PPP in local government is needed. Therefore, Gol is committed to establish various incentives along with nurturing PPP awareness through workshop and capacity building events.

VI. KEY LESSONS, EXPERIENCES AND OBSERVATIONS

Subject	Issues	Areas for Improvement
Political will & Institutional coordination	Lack of political will to implement PPP	Stronger leadership
	5 year executive & legislative election cycle	
	Lack of coordination among high level institutions	PPP Unit that has ability to design, plan, fund, implement, support, monitor, enforce, and evaluate past-current-future PPP projects and policies
Regulations	Regulatory dissonancy which confines PPP implementation	Regulatory audit
	PPP is not fully supported by current state budgeting mechanism	
	Insufficient authorization of presidential decree	PPP Act Initiation
Government fiscal support	Absence of regulatory framework that support "Availability Payment"	"Availability Payment" to be accomodated in regulatory

		framework
	Difficulty to implement other forms of fiscal incentives	To consider real implementation of tax holiday, "bundled" regional areas, availability payment, currency risk guarantee, etc
Guarantee	Lack of shareholders understanding regarding fiscal guarantee	Streamlining guarantee procedure and mechanism
	Congest and complicated regress mechanism	
Project structure	Government inability to enter direct commercial contract or agreement with private gives inflexibility to project structure	Guidelines for general project structure and its supporting regulations
Sectoral & Regional Government readiness	Lack of PPP understanding within public institutions including GCAs	Capacity building, stronger political will, leadership, and policy enactment
	Lack of resources and capacity to support PPP implementation	
	No incentive & disincentive mechanism	
Subject	Issues	Areas for Improvement
Project preparation	Hasty identification and preparation for most PPP projects	Reasonable planning
	Lack of local wisdom among international consultants. Lack of PPP knowledge among local consultants	Synergy between local and international consultants
	Disharmony between Procurement Act and the requirement (especially about consultant procurement)	Dedicated budget for project development
	Mechanism for success fee payment (payable by the bid winner) is hard to be implemented	Stronger regulatory framework to support success fee mechanism

Indonesia: Central Java IPP

I. PROJECT DESCRIPTION

a. Background

The demand for electricity in Indonesia has grown quickly in the last decade. Facing greater consumption by industry, increasing residential demand, and a push to bring electricity to rural areas, the government aims to dramatically expand power generation and transmission capacity. In 2005, it designated a proposed new coal-fired power plant in Central Java as a top priority and moved to implement new regulations to attract private investment. IFC was transaction advisor in this project, which will use the cleanest commercial coal-fired generation technology available.

b. Scope

A consortium consisting of J-Power, Itochu Corporation and Adaro Power won the bid for a 25-year contract to build, own, operate and transfer the new facility, which will use ultra-super critical technology. The project includes a 2,000 MW power plant and transmission facilities which are expected to improve access to electricity to 7.5 million people and mobilize \$3.5 billion in investment. The project was the first to be implemented under the economy's new PPP and guarantee regulations, laying the groundwork for future private infrastructure projects. The agreement was signed in October 2011. The plant is expected to start operations in 2016.

Devco provided a technical assistance grant for IFC's advisory work. Devco, a multi-donor program affiliated with the Private Infrastructure Development Group, is funded by the United Kingdom's Department for International Development, the Dutch Ministry of Foreign Affairs, the Swedish International Development Agency, and the Austrian Development Agency.

c. Project Rationale

Indonesia's economic recovery following Asian financial crisis in 1997 led to a large increase in the demand for power, both for industrial and residential use. In 2005, demand for electricity was expected to grow by over eight percent per year. The government of Indonesia estimated that \$31.4 billion in investments would be required to meet the economy's power needs by 2013.

d. Rationale for PPP

In response, the government sought to dramatically increase power generation capacity in the economy, in part by encouraging private sector investment. But issues with risk allocation and government support to backstop the single offtaker's payment obligations resulted in very few financial closings. Furthermore, PLN, the state-owned energy corporation responsible for most of the economy's power generation, transmission and distribution, had suffered financial difficulties in the Asian currency crisis of the late 1990s and had been unable to make payments to independent power producers (IPPs).

In 2005, the government organized the Indonesia Infrastructure Summit to encourage the use of public-private partnerships (PPPs) in infrastructure, and identified the Central Java IPP, a proposed 2,000MW greenfield coal-fired power plant, as one of ten model infrastructure projects.

e. Multilateral Agency Support

IFC provided advice to the PLN to structure and implement a PPP to find a private-sector investor through a transparent, competitive tender process in a difficult business environment.

IFC's input included the following:

1. Thorough technical, legal, environmental and financial due diligence to identify key transaction issues;
2. Coordinating with and supporting the government on developing a risk management and guarantee frameworks for the power sector;
3. Marketing the project to potential investors;
4. Preparing and supporting negotiations for the power purchase agreement (PPA) and related agreements to efficiently allocate risk;
5. Addressing technical issues, which included supercritical and ultra-supercritical technology, system planning and stability and environmental standards;
6. Working with key stakeholders to revise PPP and guarantee legislation;
7. Supporting the bidding process through closing.

f. Stakeholders

As a neutral broker, IFC worked with key stakeholders, including the PLN, the National Development Planning Agency (BAPPENAS), the Ministry of Finance, and the newly-established Indonesia Infrastructure Guarantee Fund (IIGF) and qualified potential investors to structure a bankable transaction.

II. PROJECT STRUCTURE

a. PPP Structure

IFC recommended structuring the transaction as a 25-year build, own, operate and transfer (BOOT) project. Under this arrangement, at the end of the contract period, the operator will transfer the plant to PLN, which will run it for the remainder of its useful life (a minimum of 40 years). IFC also proposed a risk allocation structure in the PPA to maximize bankability of the IPP while minimizing the risks to PLN.

b. Guarantee Mechanism and Government Subsidies

Since the government sets retail electricity tariffs and PLN receives state subsidies, a guarantee scheme was required to manage offtaker payment risk for the IPP. The government introduced a new guarantee scheme with participation from the IIGF and supported by revised regulations. IIGF and the government, acting through the Ministry of Finance, provided a guarantee to the project to cover payment defaults and termination payments under required buyout scenarios.

This was executed through a single guarantee agreement supported by recourse agreements to provide for reimbursement by PLN for claims made under the guarantee.

III. PROCESS ANALYSIS

a. Procurement

Interest in the project was strong, with about 30 firms expressing interest and [15] requesting pre-qualification documents. Seven consortia were pre-qualified based on their technical and financial strength.

Of these, four consortia—Marubeni (Japan), J-Power (Japan), Shenhua (China), and Guangdong Yudean (China) —submitted bids in April 2011. The winner, a consortium between J-Power, Itochu Corporation and Indonesia's Adaro Power, was the lowest bidder for the price of electricity among those who met administrative and technical criteria. The consortium was awarded the project in June 2011.

The project agreements, including the PPA and the Guarantee Agreement for the Central Java IPP project, were signed in October 2011.

b. Delivery

The project will bring improved electricity services to 7.5 million people in Java, the most densely populated island in Indonesia.

c. Exit

Upon financial close, the investment will mobilize \$3.5 billion in foreign direct investment (both debt and equity). The project contributes to the Indonesian government's policy to rapidly expand power generating and transmission capacity.

IV. LESSONS

The guarantee mechanism and revised PPP regulations will pave the way for future PPPs in infrastructure in Indonesia, bringing much needed investment to the sector.

Haneda Airport International Passenger Building (Transport Infrastructure)

I. PROJECT DESCRIPTION

a. Background

Internationalization of Tokyo International Airport (Haneda Airport¹) is an important national project in Japan. To cope with the increase in demand for air travel worldwide, Japanese government decided to internationalize Haneda Airport that had been the domestic gateway for a long time.

Haneda Airport had become the domestic gateway since the establishment of the New Tokyo International Airport (Narita Airport) in 1978. After that, Haneda Airport accepted domestic flights, while Narita Airport accepted international flights.

In late 1990s, the capacity of both airports reached to the limit and there were no room for the additional flights. This is the reason why the Ministry of Land, Infrastructure, Transport and Tourism (hereafter, MLIT) started to consider the expansion of the Haneda Airport and the establishment of new airport in Tokyo metropolitan area. In 2001, Japanese government decided to expand the Haneda Airport. The expansion started in 2008 and the operation of a new terminal building for international flights has started in 2010.

b. Project Rationale

To expand the capacity the Haneda Airport, the construction of the new runway (D runway) had started. At the same time, MLIT planned to build a new terminal building for international flights and considered to adopt PFI method to this national project. To explore private sector's expertise on project finance and pave way in spending 100 billion JPY (10billion USD²) for the project, PFI method was considered as its financing option.

c. Objectives, Scope, and Key Output

The main purpose of Internationalization of Haneda Airport was to expand the capacity and the development of various networks.

As Narita Airport had no room for additional flights, Haneda Airport needed to accept international flights urgently. The Cabinet determined the "Basic Policies 2002 for Economic and Fiscal Management and Structural Reform" in 2002 and decided to expand and internationalize Haneda Airport. Then, MLIT conducted feasibility study from 2004 to 2005. As a result of the study, MLIT adopted PFI method and selected sponsors for this project.

d. Stakeholders

¹ Haneda Airport, the largest Japanese airport, opened in 1931 and more than 68.7 million people used this airport in 2013.

² Assumption: 1USD=100JPY as a reference (same as above)

A consortium sponsored by Japan Airport Building Co. (representative company) and 14 other companies (financial institutions, railway companies, and energy-related companies) won the bidding and established a special purpose company (hereafter, SPC), Tokyo International Airport Terminal Co., Ltd. (hereafter, TIAT).

e. Risk Allocation

This project is the first adaptation of PFI method to key infrastructure in Japanese transportation sector. As for the risk sharing, the unique point is that the SPC receives no unitary charge from public sector and owes the demand risk and force majeure risk. As for the other main risks, the table below shows how public sector and private sector allocate them.

Risk Allocation Matrix

Class of risk	Type of risk	Burden	Content
Social risk	Demand activities of residents	Principle: Government Part: SPC	Demand activities and appeal of local residents concerning the presentation conditions of the government
Economic risk	Interest rates	SPC	Due to changes in market interest rates
	Funding	SPC	Matters relating to the securing of necessary funds
	Price fluctuation	SPC	Increase in construction costs and operating expenses from price fluctuations in the contract later
Default risk	Aborted and postponement of business	Government	Due to deterioration of the economy with the instructions and policy change in the government
	Risk of members, etc.	SPC	Due to deterioration of the economy with the instructions and policy change in the government
Force majeure risk	Damage to the facility Industrial accident	SPC	those caused by natural disasters human disaster war, radioactivity, etc. of terrorism, fire, earthquake, typhoon, etc.
		SPC	Work-related injuries of employees of SPC by accident or force majeure, failure of the
Demand fluctuation risk	Policy change	Government	The policy change by the arrival and departure times limit and Services by the Government
	Utilization trend	SPC	Changes in the airport the number of users needs
	Commercial risk	SPC	Fluctuations in demand in the commercial facility part

【Source: MLIT】

II. STRUCTURE OF THE PROJECT

a. Project Scheme (identify the functions undertaken), Revenue

TIAT is responsible for the design, construction management, and the management and operation. This SPC is owes the demand risk and recovers the construction and O&M costs from PSFC (passenger handling facility charges) and tenant fees and, etc.

b. Special Features

In Australia and Europe, especially in UK, several airports have been privatized. In Japan, PFI projects that recover costs from unitary charge are popular. The unique point of the PFI adaptation to Haneda airport is that the SPC owes the demand risk and receives no unitary charge.

III. PROCESS ANALYSIS

a. Inception, Feasibility, Procurement

The internationalization of Haneda Airport was an urgent issue and predicted to cause the great impact on Japanese economy. In 2000, an independent committee was established and selected the expansion plan from 15 proposals. In 2004, MLIT selected EPC contractor for building the new runway. Besides with the construction of new runway, MLIT decided to build the international passenger building through PFI method. In 2006, MLIT selected the contractor for the PFI project.

b. Delivery

As the SPC owes the demand risk, not only PSFC (passenger handling facility charges) but also tenant fees from terminal building are important income sources. TIAT enhanced the attractiveness of terminal building by making the shopping mall with Japanese traditional atmosphere and the planetarium

c. Environmental consideration, Security, Disaster prevention

TIAT carefully considered the impact on the environment by an appropriate method. The SPC introduced geothermal heating system and NAS batteries (large capacity batteries). As for the disaster prevention, it is important to introduce the high level of security system to prevent airport users from terrorist's attacks. TIAT introduced adequate level of security system.

d. Development, Exit

The Project term is 30 years and divided into two periods: the construction period is from October 2008 to May 2010 and O&M period is from October 2010 to April 2038. At the end of the project term, government or an entity named by government has the right to buy facilities.

e. Provide a calendar of events from start to finish

"New Growth Strategy" was approved by the Cabinet in May 2010, launched the policy to make Haneda airport as a new international hub airport operating 24 hours. As the increase of passengers is predicted, MLIT decided to expand the international passenger building in 2011.

IV. FINANCING INFORMATION

a. Key sources of financing, Refinance, Amendment, Renegotiated

First, TIAT funded 84 billion JPY (8billion USD) to construct the terminal building. Then, TIAT funded 41 billion JPY (4billion USD) to expand the terminal building. As for the both funding, borrower is TIAT, and lenders are three commercial banks as Lead arrangers and 17 other banks. The total amount of facility is 125 billion JPY (12billion USD).

b. Project's economic, IRR, D/E ratio

As a result of this project, employment and tax revenue have increased. In addition, adoption of the PFI method generated value for money in terms of quantity (cost reduction) and quality (enhancement of commercial facilities).

V. CURRENT STATUS

a. Project Status

The new runway has constructed and Haneda Airport is now one of the main international terminals in Japan. As for the passenger building, the expansion started in 2011 and a part of the building is under the operation from March 2014. In September 2014, some facilities such as hotel would start operation in the building.

b. Performance

There are 120 PFI projects under the jurisdiction of MLIT (i.e. including project cooperated with local government), among them, MLIT itself engaged 25 PFI projects.

VI. ROLE OF PPP UNIT/CENTER

This PFI project did not involve PFI Promotion Center of the Cabinet, but MLIT proceeded it as role of PPP center. Also, there are the 120 reviews PFI projects that MLIT under the jurisdiction (Cooperation projects with local government), among them, there is record of 25 items in PFI projects of the MLIT subjected.

VII. KEY LESSONS

For the knowledge gained from this project, there will be the following points.

- In the case of pioneering Independent Accounting business, it would have helped the market expansion.
- The introduction of private capital for airport management which is a very bankable project-participated Japan's leading company in the business.
- Accumulation of know-how on the airport operation business, which can be connected to the airport concession thereafter; Sendai Airport.

Kawai Water Purification Plant Rehabilitation Project, Yokohama, Kanagawa Prefecture

I. PROJECT DESCRIPTION

a. Background

This is the introduction of PFI project that rehabilitated and operates the Kawai water purification plant in Yokohama city. This PFI project is the first example in Japan to rehabilitate, operate and manage the whole water purification plant. This plant adopted the membrane filtration system with maximum capacity of 172,800 cubic meter.

The Kawai water purification plant is located in Yokohama¹, the second biggest city in Japan. This plant is the oldest and primary plant that was built in 1901 and had been repaired several times between 1950's and 1980's. As the plant got old, Yokohama city decided to rehabilitate the plant.

b. Rationale, Objectives and Scope

The Yokohama Waterworks Bureau (hereafter, Waterworks Bureau) adopted a membrane filtration (hereafter, MF) system to rehabilitate the Kawai water purification plant. One of the benefits of introducing PFI method is the adoption of MF system². Waterworks Bureau had never used the MF system; hence this technology posed as an incentive to partner with private companies who has the know-how.

c. Key Output

According to Waterworks Bureau, the special purpose company (hereafter, SPC) of this PFI projects has two main roles:

1. To build the purification facility efficiently and effectively and transfer to the MF system.
2. To supply water in prescribed condition.

As for the construction of facility, SPC needs to address environment and disaster prevention concerns. 20% of the construction area should be kept as the tract of green land. In addition, high level resistance for earthquake and manual for disaster management is also required. In case of disaster, SPC has to submit a report to Waterworks Bureau.

Moreover, security is an important issue for good supply condition. This includes locking of doors, 24 hours camera monitor and twice-a-day checks by guards to prevent unauthorized entry in the plant's premise.

d. Stakeholders

On February 27, 2009, Waterworks Bureau signed the project agreement with Water Next Yokohama Inc, a SPC established by METAWATER³ Inc. etc.

¹ It is said that Japanese modern water supply system was established in Yokohama.

² To purify the water, the MF system puts pressure and isolates certain size of impurities from water. The MF system is smaller than the older system, purification using sands.

³ METAWATER Inc is the leading company in water treatment business.

Sponsors and Operators	<p>METAWATER</p> <ul style="list-style-type: none"> - Manufacture of membrane filtration equipment, EPC, O&M <p>METAWATER-Service</p> <ul style="list-style-type: none"> - O&M <p>Mitsubishi UFJ Lease</p> <ul style="list-style-type: none"> - Financial adviser, Financial management <p>TSUKISHIMA KIKAI</p> <ul style="list-style-type: none"> - Sludge effective use management <p>TODEN KOGYO</p> <ul style="list-style-type: none"> - EPC, O&M <p>TODEN Environmental Engineering</p> <ul style="list-style-type: none"> - O&M <p>Tokyo Electric Power</p> <ul style="list-style-type: none"> - Energy (electric power) supply <p>KAJIMA</p> <ul style="list-style-type: none"> - EPC <p>Tokyo Architect Office</p> <ul style="list-style-type: none"> - Design, construction supervision
Adviser (public)	<p>Japan Economic Research Institute</p> <p>Nihon Suido Consultants</p> <ul style="list-style-type: none"> - Technical adviser
Lender	<p>Mizuho Corporate Bank -Lead arranger</p> <p>The Bank of Yokohama, Development Bank of Japan - Arranger</p> <p>Other 4 banks</p>

e. Term

The project term is 25 years (from February 2009 to March 2034). The SPC needs to build and operate the new facility and remove the old one.

There are two construction phases:

- First Phase: April 2004 to March 2014, is for the design and construction of the new facility.
- Second Phase: April 2014 to March 2015, is for the removal of the old facility.

SPC is going to operate the new facility for 20 years from April 2014 to March 2034.

II. STRUCTURE OF THE PROJECT

a. Functions

The type of this PPP arrangement for this project is BTO (Build-Transfer-Operate). The SPC built and transferred the ownership of the new facility, and is the operator of the facility. SPC is also in charge of removing the old facility.

b. Risk Allocation

The risk allocation is similar to that of other PFI projects. Those who can manage a risk

appropriately would take the risk.

Risk Allocation Matrix

Risk	Type of Risk	Responsibility	Contents
Inflation risk	Price fluctuation	Principle: Public Sub: SPC	Waterworks Bureau mainly owes this risk. SPC also owes certain amount of risk prescribed in the project agreement.
Force majeure	Typhoon, storm and flood	SPC	SPC owes this risk and needs to supply water under the attacks of typhoon, storm and flood.
	War, riot, natural disaster, etc.	Principle: Public Sub: SPC	Waterworks Bureau mainly owes this risk. SPC also owes certain amount of risk prescribed in the project agreement.
	Earthquake	Principle: Public Sub: SPC	Waterworks Bureau mainly owes this risk. SPC needs to pay, at most, the equivalent amount to 1% of O&M fee.
Water condition risk	Change of water condition	Principle: Public Sub: SPC	Waterworks Bureau mainly owes this risk. SPC needs to pay, at most, the equivalent amount to 1% of O&M fee.
Residents risk	Opposition movement of residents against the project	Both of Public and SPC	Waterworks Bureau owes the risk related to the construction plan of the facility. SPC owes the risk related to SPC's task, such as construction, operation and maintenance.
Construction risk	Environmental pollutant	SPC	SPC owes the known risk before entering contracts. Waterworks Bureau owes the other risk.

c. Revenue

Waterworks Bureau pays the unitary charge prescribed in the project agreement. The unitary charge is equivalent to the construction cost and O&M fee.

- (1) Equivalent amount to the construction cost
SPC, financed by lenders, pays the construction cost. Waterworks Bureau repays the equivalent amount to the construction and finance cost during the project term.
- (2) Equivalent amount to the O&M fee
Waterworks Bureau quarterly repays the equivalent amount to O&M fee.

III. PROCESS ANALYSIS

a. Preparation

In 2006, Waterworks Bureau released the rehabilitation plan of the water purification facility in

the long term vision. Then, Waterworks Bureau hired Japan Economic Research Institute and Nihon Suido Consultants to conduct the feasibility study. Based on the results of this study, Waterworks Bureau decided to rehabilitate the facility using PFI method.

b. Process

Waterworks Bureau launched the PFI project in December 2007 and selected the contractor in September 2008. Independent committee conducted the selection.

c. Exit

Waterworks Bureau would take over the operation of facility at the end of project term. SPC needs to certify the ability of facility and owe the repair cost for one year after the succession.

IV. FINANCING INFORMATION

a. Finance

The SPC, Water Next Yokohama, funded the project costs from Japanese commercial banks. Borrower is the SPC, Lenders are Mizuho Corporate Bank as Lead arranger, Development Bank of Japan and Bank of Yokohama as Arrangers and 7 other banks. The total amount of senior facility is 14 billion Yen (US\$ 140million⁴).

The project cost (including construction cost and O&M fee during project term) is 27.7 billion Yen (US\$ 277million). The value for money compared to usual public works is approximately 6%.

V. CURRENT STATUS AND KEY IMPLEMENTATION ISSUES

a. Current Status

SPC accomplished the construction and started its operation on 1 April 2014.

b. Strengths, Capacity of public and private partners

Yokohama City Water Director-General addresses the project concerns during an interview. "Because of the adoption of a membrane filtration system, water-supply district also expanded and water treatment capacity is increased by this project. Processing capacity increased to about 170,000 tons from about 100,000 tons, number of customers also expanded to about 31 million units from about 19 million units.

Number of customers for the entire city of Yokohama is about 177 million units, number of customers from Kawai water treatment plant so that up to 18% increased after the update of the facility. Also after update of the plant, we can ensure the water supply at any disaster with power outage.

Water Authority also maintain a watershed protection forest with upstream of the river from about 100 years ago, I have a role that Kawai water purification plant to carry high-quality water. At the same time, it is also the responsibility of the water authority to ensure water supply to

⁴ assumption : 1USD=100JPY as a reference (as above)

each household that private sector has processed.” (Japan Industrial Economy Shimbun (2014.04.28))

VI. KEY LESSONS EXPERIENCES AND OBSERVATIONS

This case is an example in which PFI system was carried out in operation and maintenance of water facilities, an upgrade of the entire water treatment plant facility is first time in Japan.

By the purpose of introduction of membrane filtration system through a state-of-the-art technology, in which with the public sector has no experience on. The government took advantage of the know-how and superior technology such as membrane filtration system of Japanese private sector. This water treatment plant with membrane filtration system have the ability of processing water the largest in Japan has ever been realized.

There is the advantage of less affected in the event of a disaster, because the maintenance is easy, to use membrane filtration method for local governments suffering from lack of successor shall succeed to the technology of the future.

In addition, as a result of introduction of the PFI, renewable energies were also introduced by the private partners like the installed solar panels on the roof of the drainage pond.

Trans-Tokyo Bay Highway (Tokyo Bay Aqualine) (Road Infrastructure)

I. PROJECT DESCRIPTION

a. Background

Trans-Tokyo Bay Highway, also known as the Tokyo Bay Aqualine is a 15.1 km marine crossing highway through the Tokyo Bay, consisting of a shield tunnel (9.6 km) and a bridge (4.4 km) which is the longest one in Japan. It connects both sides of the Tokyo Bay; Kawasaki City in Kanagawa Prefecture (Tokyo side) and Kisarazu City in Chiba Prefecture (Chiba side).

Tokyo Bay Aqualine plays a vital role to connect Keihin area (Tokyo and Kanagawa) and Bousou area (Chiba). Keihin area embraces increasing of population and urban development; on the other hand, Bousou area still reserves rich natural environment and remaining capacity for urban development (such as the science park etc.). From inner city of Tokyo, the highway is designed to be an effective access to some recreational opportunities in Bousou area. Moreover, with taking the highway, Bousou area can be positioned as commutable region of the center of Tokyo. Originally, together with construction of a ring road network, Tokyo Bay Aqualine was also designed to take a role to reduce traffic congestion inside Tokyo city. Currently, the ring road network has not been fully in service and, as a result, the original function of highway as one part of the circle has not been performed.

The planning and feasibility study for the construction of the project had been mainly conducted by Japanese national government, but we would introduce the project as a case study in which a joint public-private venture had taken a main role and private sector know-how was successfully utilized.

b. Project Rationale

Based on this background, the Japanese national government began to look into the feasibility study of Tokyo Bay Aqualine in 1960s. Through such a study, the government commenced to consider a foundation of a joint public-private venture for this project in 1970. As a consequence, in 1971, the government published a report "Construction of Trans Tokyo Bay Highway with Utilization of Private Sector" which compared outcomes of the project run by public sector and outcomes of the project run by private sector. The report argued that the project run by public sector should bring disadvantages such as (i) exceeding concentration of public fund investment into the particular district and (ii) huge needs for finance from private sector. By contrast, the report stressed advantages of utilizing private sector such as (i) managing the business of project in an efficient way by private sector, (ii) saving the resource of public sector which enables investments into other regions, and (iii) encouraging regional development of the district surrounding the highway (e.g. housings and recreation facilities). Even though the report asserted advantages to utilize private sector, a lack of understanding from involved parties and a basic policy of government to appoint public institution eventually postponed the foundation of a joint public-private venture at that time. As a result, the government had to wait for founding of a joint public private venture "Trans Tokyo Bay Highway Corporation" (operating company of the Aqualine) until 1986 when it gained a momentum of society to support the use of private sector's fund for public projects.

c. Rationale for selecting PPP

In addition to what mentioned above, it is assessed that joint public-private venture scheme in this project had an advantage to shorten the work period due to its flexibility as a private institution. Especially, the project company could secure adequate human resources as temporary seconded staffs from private sector; like general construction contractors. Over the construction period, such seconded staffs made exertions to proceed the project.

d. Objectives

The main objective of the project is to build a transportation infrastructure crossing through the Tokyo Bay. Moreover, by utilizing a joint public-private venture scheme with funds raised from private sector, the project has another aspect as a case of public work which could successfully transfer some extent of project risks to private sectors.

e. Scope

On 1965, Ministry of Construction (currently reorganized as Ministry of Land, Infrastructure, Transport and Tourism) of Japan conducted an initial feasibility study, and Japan Highway Public Corporation was handed over the study about 1975. Based on the study by the government, Japan Highway Public Corporation led the study and planning of construction until the foundation of the project company; "Trans Tokyo Bay Highway Corporation". Such a project company had commenced the construction of the highway at 1989 and, finally, it reached the opening at 1997. Over the project period, the project had been developed by two arms: Japan Highway Public Corporation and the project company. It divided these two corporations' responsibility; the former had taken a role of fundamental study and design, and the latter had taken a role of precise design and actual construction.

f. Parties responsible for the project

Although direct debt guarantee is not offered to the project, the debts used for construction in this project are eventually structured to be covered from amortization repayment by Japan Expressway Holding and Debt Repayment Agency. The agency is a legal entity founded 2005 for the purpose to possess transportation facilities in Japan and to make repayments of construction debts for such facilities. Because of an importance of the credit of the agency, it is appraised as quasi-sovereign rating.

II. STRUCTURE OF THE PROJECT

a. Identify the functions

Trans Tokyo Bay Highway Corporation undertook design and construction works, and, after the completion of the construction, it transferred all assets belonging to the project to Japan Expressway Holding and Debt Repayment Agency. Mentioned as above, Trans Tokyo Bay Highway Corporation itself procured debts for construction, but the amortized repayment of such debts are incurred by Japan Expressway Holding and Debt Repayment Agency.

b. Risk allocation

From a financial institution perspective, in respect of credit risk, the debt redemption of this project can be seen to depend on the credit of Japan Expressway Holding and Debt Repayment Agency. In terms of demand risk, we can assume the public sector takes the demand risk of this project. The project originally set its toll fare and estimated its traffic volumes through the

highway based on the fixed assumption over the project period. In such an assumption, the project is assumed to recover all of its construction costs over forty years after its opening. However, once the highway had been actually in service, the toll fare was forced to be revised in accordance with actual traffic volume which is smaller than initial expectation. In respect of the debt redemption in this project, no matter how the actual traffic volume is different from the initial expectation, the repayment of debt redemption has been and will be covered by Japan Expressway Holding and Debt Repayment Agency. From this respect, we can assess this project as the public sector takes a demand risk.

c. Revenue

For Trans Tokyo Bay Highway Corporation, a major source of revenue comes from its management of a service area located in the middle of the highway. Apart from it, the source of debt redemption is an amortized repayment by Japan Expressway Holding and Debt Repayment Agency, as mentioned above.

III. PROCESS ANALYSIS

a. Inception

In the late 1950s, the government had started initial feasibility study for an access crossing through the Tokyo Bay, and it became a full scale study to build a highway in 1966. Through further studies, the project of Trans Tokyo Bay Highway was certified by the national government in 1985 and it led to the foundation of Trans Tokyo Bay Highway Corporation in 1986.

b. Feasibility

Different from the fully completed structure, the project was initially planned to have a shielded tunnel at the middle of the highway and two bridges on each side of the bay. However, such an initial structure had possibility to disturb traffic of vessels inside the Tokyo Bay, as a result, the plan was settled as having a tunnel at Tokyo side and a bridge at Chiba side. Also, for building a tunnel, the project adopted a shield tunneling method for the purpose to take care of natural environment. In terms of traffic demand, the initial estimation had to be revised downward during the construction phase. At the same time, in respect of toll fare, the toll has been reduced at 1/5 standard of initial fare (under a case to use ETC system, public sectors (such as Chiba Pref.) owe part of toll fare), reflecting criticism toward such an expensive setting of initial fare.

c. Calendar of events

Mentioned above, people can go through the Tokyo Bay Aqualine with dramatically discounted fare compared to what was initially planned, due to the change of toll fare standard at nationwide level accompanying with the change of traffic infrastructure system.

IV. FINANCING INFORMATION

In the initial estimate, the total project cost was calculated as 1 trillion JPY (10 billion USD). But due to the delay of construction work, the project cost eventually reached 1.4 trillion JPY (14 billion USD). The funds for construction were procured as below.

Government-guaranteed bonds	583.7 billion JPY(5.8billion USD ¹)
Government budget to develop roads	375 billion JPY(3.7billion USD)
Loan from private financial institutions	175.2 billion JPY(1.8billion USD)
Bond (Government Underwriting)	214.5 billion JPY(2.1billion USD)
Equity	90 billion JPY(900million USD)

a. The project's economics

Before the project had been in service, it should take about a 100 km of bay root to access through the bayside of Tokyo to Bousou area in Chiba prefecture. After COD of Tokyo Bay Aqualine, the highway has cut down the distance to access to Bousou area from Tokyo into about 30km, and such a shorter distance also comes off shorter required time. Initially, it was planned that the project should generate a positive economic effect at 200 million JPY (2 million USD) per day from its shorter access, however, such an effect as of today might have decreased because the actual traffic volume is less than that of initially planned.

V. CURRENT STATUS

a. The status, the key issues faced in implementation

Since its implementation at 1997, the project has been in existence for 16 years. During its operation, the project has experienced a countrywide change of traffic infrastructure (such as the prevalence of ETC system and the change of toll fare standard) and the regional development surrounding the highway (such as opening of a big outlet mall at Kisarazu area and connecting of new highway networks with the project). From these reasons, the traffic volume of this project is gradually increasing in these days.

VI. KEY ISSUES

This infrastructure projects said that difficult to achieve with only public was completed by introducing the latest technology and know-how of the private sector by the PPP. However, since some issues such as excessive demand forecast, price cut that was not originally anticipated etc. have occurred, the evaluation of this big project is divided.

On the other hand, there is not doubt that this huge project to transform the function of the economy was carried out in PPP and incorporated a great deal of civil latest technology of Japan at that time.

In addition, it should be noted that the present structure is assumed to have affected the PFI in a subsequent project at a position ahead of availability based type PFI-called BTO system.

¹ assumption:1USD=100JPY as a reference (same as above)

Creating a comprehensive legal and institutional framework for PPPs in Korea¹

The Korean government defines a PPP as an initiative that involves the public and private sectors to provide infrastructure and public services. Several factors contributed to the success of the PPP model for delivering infrastructure projects in Korea since the late 1990s, starting with a robust legislative framework. A developed institutional framework and the establishment of instruments in support of PPPs are also participated in making PPPs an important infrastructure investment tool in Korea.

a. Background

633 PPP projects are currently in construction or in operation in Korea, with more than 120 projects implemented in 2007 alone. Infrastructure investment through PPP in fact increased drastically from 1999 to 2007, reaching \$10.4 billion (PPP contract amount) in 2007. In 2012, \$5 billion were invested by the government in PPP infrastructure projects. Build-transfer-operate (BTO) and build-transfer-lease (BTL) are the most common types of projects.

b. Comprehensive legal framework

The **PPP Act of 1994** defines the eligible infrastructure sectors, the roles of public and private entities, and the procurement process as well as procedures for conflict resolution/termination. The Act *de facto* overrides other Acts in case of conflict. It has been amended twice since its inception, mainly in order to broaden eligible sectors and investors.

The PPP Act is supported by an **Enforcement Decree**, which regulates matters delegated by the PPP Act and those necessary for the enforcement of the Act (ex: implementation procedures and management of project).

A **Basic Plan for PPPs** also supports the PPP Act. It articulates the government's policy directions on public-private partnerships, detailed project implementation procedures, financing and re-financing guidelines, risk-sharing arrangements and payments of government subsidies, support and incentives.

Implementation guidelines and standards have also been developed for specific sectors to support project implementation, and they include feasibility and value-for-money tests, requests for proposals and standard agreements for both build-transfer-operate and build-transfer-lease facilities, as well as for project refinancing. Output specifications have also been developed for a number of different sectors (e.g. education, defense, environment and culture).

c. Responsible Entity/ies

The **Ministry of Strategy and Finance** is responsible for developing and implementing public-private partnership policies – including the PPP Act and its Enforcement Decree – formulating national investment plans and the state budget. Importantly, the Ministry of Strategy and Finance chairs the high level PPP Review Committee that must give final approval to projects, as in most economies. The rationale for the ministry having the final say obviously relates to PPP budget obligations (e.g. construction subsidy, revenue guarantee and/or government payment).

¹ Sources: OECD (2012), PPP Meeting

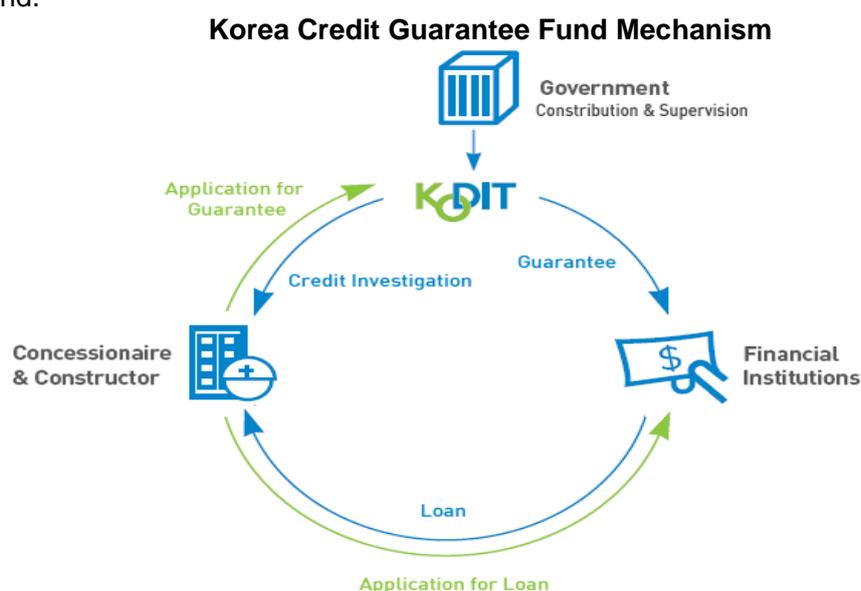
The Public and Private Infrastructure Investment Management Center (**PIMAC**) plays a key role in integrating public investment management and budgeting for PPPs. It is the merger of the PPP unit with the public investment unit, and support to the government both for traditional procurement and public-private partnership projects. Assuming both roles was needed in order to achieve consistency in project assessment and efficiency in human resource management. It is located within the Korea Development Institute, and counted almost 80 staff members in 2012.

With respect to PPPs, PIMAC has four major functions. First, it provides policy research and strategy, including the development of the Basic Plan for PPPs on behalf of the Ministry of Strategy and Finance. Second, it provides technical support to the Ministry of Strategy and Finance to review proposed public-private partnership projects using feasibility studies and value-for-money tests, as well as to formulate requests for proposals and other necessary project documentation. Third, it promotes public-private partnership projects to foreign investors. Finally, it develops education programmes on public-private partnership systems to line ministries/local governments and private partners.

d. Guarantee Funds

On the financial markets side, the Korea Development Bank shepherded projects by financing PPPs at early stages, before investment banks joined in with long term financing. Infrastructure bonds were launched through the **Korea Infrastructure Credit Guarantee Fund (ICGF)** to make project financing even more viable for PPPs.

ICGF was established under the PPP Act 1994 to guarantee the credit of a private partner that intends to obtain loans from financial institutions for a public-private partnership project. The Fund is managed by the Korea Credit Guarantee Fund and funded by the Ministry of Strategy and Finance using government subsidies, guarantee fee and investment returns. It guarantees loans and borrowing from financial institutions by concessionaires as well as infrastructure bonds. This can be done up to KRW 100 billion for a single company (or where unavoidable, then KRW 200 billion). When the project guaranteed by the Fund defaults, the ICGF subrogates on behalf of the project company. Figure 3 provides an overview of the institutional mechanism behind the Fund.



The Landfill Gas Resource Project, Korea

I. PROJECT DESCRIPTION

a. Background and Resources

The Sudokwon Landfill Site is an area measuring 15,410,000 m² that is used for the disposal of waste from Seoul, Incheon, and 58 cities, counties, and districts within Gyeonggi-do. Originally, it was slated to receive a total of 2,780,000 tons of waste between 1992 and 2022. The first landfill site included total landfill facilities of 2,510,000 m² out of a 4,040,000 m² lot area; by October 2000, disposal had been completed for 64 million tons of waste there since 1992, and a second site was put into use for disposal. Disposal of 78 million tons at the second site is expected to be complete by February 2015, at which point third and four sites would be constructed nearby. Once they have been built, the area is expected to be able to accommodate waste for disposal through 2044.

The Sudokwon Landfill Site Today



	Description
Project Title	Sudokwon Landfill Gas Resource Project
Location	Sudokwon Landfill, 58 Baekseok-dong, Seo-gu, Incheon
Scale	<ul style="list-style-type: none"> ▪ Power Facilities: One 50MW steam turbine ▪ Lot Size: 38,000m² ▪ Electricity Transmission: One three-phase circuit (154 KV)

Source: Sudokwon Landfill Site Management Corporation, <http://www.slc.or.kr/design/index.asp>

The Sudokwon Landfill Site has been used since 1992 for the disposal of waste from the Seoul Metropolitan Area. The input and burial of over 20,000 tons of waste matter on average each day has resulted in the production of harmful substances, including methane. The government has allocated significant amount of budget to prevent the serious threat to the surrounding environment from the stench and atmospheric warming. The Landfill Gas Recycling Project was introduced as one such response measure, designed to develop alternative energy sources and reduce environmental pollution by making use of landfill gases (LFGs), such as methane (CH₄) and carbon dioxide (CO₂) from the waste disposal process.

b. Project Details

The project involves developing power generation facilities (per Asterisk 2 in Article 4 of the Enforcement Decree for the Wastes Control Act) designed to capture LFGs from the first and second landfill sites, which qualify as waste energy according to the Act on the Promotion of the Development and Use of Alternative Energy, and convert them into electric energy. The basic idea is to build a resource cycling system in which horizontal and vertical gas collection ducts (facilities) installed within the landfill are used to capture all of the LFGs produced during the disposal process, after which they are sent to the power generation facility (steam turbine) and converted into energy. **The goals of the project are two-fold: One, to develop new energy resources and improve the quality of the surrounding environment. Two, to generate an energy substitution effect and economic value-added through electricity production.**

The table below provides a detailed description of the project's status. The effort is especially noteworthy in that it was pursued as a PPP solicited project, with a concession agreement signed under a build-transfer-operate (BTO) scheme for the profits generated from the sale of LFG-derived electricity. It was 100% privately funded, without any government financial support in the form of construction subsidies, and minimum revenue guarantees (MRGs) were granted for electricity sales, creating a structure where government and private operators shared the attendant risks.

c. Objectives

The project aims to reduce environmental pollution by converting LFGs into resources and generating economic value-added through electricity production

Technical Details on the Landfill Gas Resource Project

	Details
Major Facilities	<ul style="list-style-type: none"> ▪Header Pipe: Landfill gas collection and transfer ▪Condensation Water Removal Well: Facility for removing condensation water in landfill gas ▪Incinerator: Landfill gas incinerator ▪Simple Incinerator: Landfill stench removal
Treatment Statistics	<ul style="list-style-type: none"> ▪Holding Capacity: 868,256 m³/day ▪Incinerator Treatment Capacity: 346,320 m³/day ▪Power Generation Capacity: 531,936 m³/day
Power Generation Facilities	LFG power generation output of 50 MW

Source: Sudokwon Landfill Site Management Corporation, <http://www.slc.or.kr/design/index.asp>

d. Stakeholders

The Landfill Gas Resource Project is a solicited project according to the Act on Public-Private Partnerships in Infrastructure, with a concession agreement signed in 2003 by the competent authority in this case, the Ministry of Environment of the Government of the Republic of Korea, and Kimpo Energy (now Ecoenergy). The project company assumed responsibility for building LFG power generation facilities to collect LFGs from the landfill and convert them into electrical energy, and was granted a concession period of 11 years of free use. The Sudokwon Landfill Site Management Corporation was made responsible for installing and equipping LFG collection facilities, while the project company was tasked with management and maintenance.

e. Project Timeline

The RFP Announced on October 2, 2000. Concession Agreement Concluded: March 21, 2003, Construction Period for 33 months started March 8, 2004–December 15, 2006. While its operation Period: 132 months (March 7, 2007–March 6, 2018).

Date	Event	Note(s)
November 13, 1998	Round table on LFG resource development for related agencies	Ministry of Environment
March 3, 1999	42nd meeting of Seoul Metropolitan Area Coastal Landfill Coordination Committee	
March 18, 1999	Agreement to establish Landfill Gas Resource Project Planning Team, with participants from Ministry of Environment; Ministry of Trade, Industry and Energy; three cities and provinces, Korea Electric Power Corporation; and Korea Environment Corporation	
May 1, 1999	Working-level committee meeting for Coordination Committee	
May 1, 1999—June 20, 2000	Project feasibility analysis and basic plan commissioned for Sudokwon Landfill	Ministry of Environment, Korea Environment Corporation
September 20, 2000	Decision to proceed as PPP project	
October 2, 2000	Basic plan announced for PPP project (RFP)	Ministry Environment Announcement No. 2000-117.
October 17, 2000	Examination of PICKO (former PPP unit)	
May 10, 2001	Designation as potential PPP project and solicitation of bidders	Announcement Period: 60 days
August 6, 2001	Preferred Bidder selected	PICKO
March 21, 2003	Concession agreement signed and project company designated	Ministry of Environment, Kimpo Energy
March 8, 2004	Detailed Implementation Plan approved	
March 22, 2004	Construction begins	

December 15, 2006	Construction completed	
March 7, 2007	Operation announced	

II. PROJECT STRUCTURE

The landfill gas project was introduced in accordance with the PPP Act on social overhead capital (SOC), with a BTO scheme adopted as per the Basic Plans for PPP and the Enforcement Decree of the PPP Act.

Under these terms, ownership of the project facilities and operating equipment as per the Detailed Implementation Plan would revert to the government upon completion, while the project company would receive management and operation rights for the project from the Minister of Environment upon completion of power generation facility construction, with an eleven-year period granted for use and profit generation. The contract entitled the company to profits from electricity sales with an 8.44% after-tax real rate of return.

a. Government Subsidies

The project was funded entirely by private investors, without any government financial support in the form of construction subsidies during the building stages. Because the project site was located within the Sudokwon Landfill, however, free access to the site was granted by the government, along with support for timely construction of the LFG collection facilities.

b. Risk Matrix

Risk	Urgency	Period	Stakeholder(s)	Details
Site Selection	Low	-	Sudokwon Landfill Site Management Corporation	Granting free usage of lot within Corporation site
LFG Use	Low	Whole period (2007-2018)	Government	Free usage of LFGs
Design and Construction	Low	-	Government & Project Company	Corporation responsible for installing, equipping collection facilities Company responsible for private investment and construction
Permits & Approvals	Low	-	Government	Permit/approval risk low because of government's firm commitment to privately funded environmental projects

Revenue Risks	Moderate	Whole period (2007-2018)	Government & project company	<ul style="list-style-type: none"> • Project company generates profits from electricity sales. Some potential risk from LFG quantities measured • Some mitigation from government acceptance of part of risks. Government shares project risk through MRGs
Operation, Maintenance & Repairs	Moderate	Whole period	Project company	Renovation, repair, and replacement of individual ducts to ensure stable power generation throughout project
Collection Facility Risks	Low	-	Government	Establishing stable footing for project through timely installing collection facility. Some concerns that installation delays may result in decreased LFG usage
Environmental Risks	Moderate	Whole period	Project company & surrounding communities	<ul style="list-style-type: none"> • Concerns about resident complaints over treatment of stench and wastewater from disposed waste • Concerns about leachate leakage in landfill layer, leakage due to rainwater
Electricity Purchasing Contract	Low	Whole period	Power company & project company	Legal binding: Providers of new/renewable (alternative) energies empowered to sell all power produced
Exchange Rate Volatility	Low	Whole period	Project company & government	In the event of excessive losses or gains from exchange rate, decision on compensation to be made by agreement between project company and government

Source: 1) Sudokwon Landfill Site Management Corporation, <http://www.slc.or.kr/design/index.asp>
2) Table based on concession agreement for Sudokwon Landfill Gas Resource Project, Ministry of Environment et al. (Mar. 21, 2003).

c. Revenue Mechanism

The project is structured so that profits from the electricity are generated when LFGs from the Sudokwon Landfill are collected, sent to generation facilities, and used as fuel. Revenues from electricity sales are the sources of profits, and the project was planned with an estimated electricity sales price of KRW 50.06 per kilowatt-hour (in May 2011 constant prices).

Estimated electricity sales from the project are based on estimated transmission capacity and LFG collection quantities, with government MRGs calculated according to the difference between real and estimated revenues following revenue settlement. According to the MRG method adopted, compensation is granted for the difference when real revenues to the project company during the concession period fall below 90% of projections, while the government would redeem the surplus if real revenues exceed 110% of projected revenues.

d. Special Features

Guarantee Period is up to 11 years. Guarantee level of up to 90% of anticipated electricity sales if a shortfall occurs; excess revenues redeemed in the event of 110% surplus. With the conditions that compensation of electricity revenue shortages through government financial support and there is extension of free usage period.

III. PROCESS ANALYSIS

a. Inception and Project Preparation

Since waste matter was first brought to the Sudokwon Landfill in 1992, all LFGs produced by the disposal process have been subjected to simple incineration. The emergence of environmental pollution as a major issue in the early 2000s, along with international coordination efforts on it, soon prompted the Korean government to change its policy approach. In June 2006, plans were sought for converting LFGs into an alternative energy source through a feasibility study and basic plan report for the Sudokwon Landfill, and it was eventually concluded that the PPP format might be a more suitable framework for the project. The government selected a preferred bidder via a public announcement for the basic plan on the Sudokwon Landfill Gas Resource Project as a potential PPP project. In March 2003, Kimpo Energy (now Ecoenergy) was selected as the project company and a concession agreement was concluded.

b. Feasibility

Initial analysis of the project's feasibility was conducted by the Ministry of Environment and Korea Environment Corporation (June 2000). Technical analysis involved examining overseas examples of LFG resource development and determining their applicability to the Korean context, as well as deciding on the use of a 50-MW steam turbine for power generation, in view of the characteristics and scales of the first and second landfill sites at the Sudokwon Landfill.

Additional analysis focused on the anticipated LFG quantities, a source of both social benefit and profit risks of the project, with a model used to project quantities in view of current and anticipated waste disposal volume. It was also decided that a technical examination should be conducted to supplement the existing LFG extraction and collection system to allow for power generation. Sale of the electricity produced was not given separate consideration, as the power company would be obligated to purchase power generated through alternative energy sources as per Article 20, Item 4 of the Electric Utility Act. Because no regulations existed for specific sales prices, however, an analysis was conducted using an avoidable cost calculation as per the Korea Electric Power Corporations' "Plan for Mandatory Purchasing of Power Generated with Alternative Energy Sources" (February 2000).

In addition to economic feasibility, other factors examined for policy feasibility included the location of the target site, the optimal facility placement, and regulations and permit/approval considerations for the different usage plans, with an additional assessment conducted for environmental impact.

IV. FINANCING INFORMATION

The total investment cost is estimated at US\$ 86.4 million. While the estimated project cost announced in the first Request for Proposal Plan (RFP, October 2000) was approximately KRW 68,600 million (US\$62.4 million), the final amount included in the concession agreement following financial projections was KRW 77,242 million (US\$70.2 million).

Ecoenergy Holdings and Korea Infrastructure Fund2 behaved as typical financial fund investors, acquiring equity from construction investors (Hyundai Mobis, Doosan Heavy Industries and Construction) and pursuing long-term investment on the brown field project once construction was complete and project stability had been verified.

While the concession agreement initially had five investors including Hyundai Mobis for the SPV (Kimpo Energy), equity share changes following the completion of construction resulted in Ecoenergy Holdings owning all shares as of 2014. The investor equity covers 25% of the total cost with 75% of costs coming from PF borrowings in the form of financial institution loans.

The real rate of return for the project as per the concession agreement was estimated at 8.44% after taxes (11.6% nominal). The sales price for electricity, which served as the standard for estimated revenues, was projected at KRW 50.06 per kilowatt-hour in May 2001 constant prices. The project was also selected for verification of equipment installation under the Feed in Tariff (FIT) system, applied as of May 2002 as part of a policy effort to supply electricity from new and renewable sources, which qualified it for a rate of the system marginal price (SMP) plus KRW 5 per kilowatt-hour.

The actual revenues from electricity sales between 2007 and 2013 amounted to 189% of projections, giving an excess of 79%. In addition to the excess from sales revenues, other revenues from the Feed-In-Tariff (FIT) system have also been contributing to state coffers. Projected demand for the project (design debate) has far exceeded actual demand, but actual revenues have been greater because the rate has been SMP plus KRW 5 per kilowatt-hour, rather than the projected sales price of KRW 50.06 /kWh (4.55 centers/kWh in May 2011 prices) from the initial concession agreement.

As of 2012, the Korean government had redeemed KRW 96.9 billion (US\$88.1 million) from the project, which, given the initial investment about of KRW 95 billion (US\$86.4 million as of May 2001), suggest a savings of as much as KRW 200 billion for the government. Moreover, settlement on 2013 revenues from electricity sales are still under way, and with the agreement set to expire in 2018, revenues for the government are predicted to grow even further.

Total Investment	KRW 95 billion (as of May 2011, 5% estimated rate of inflation) - Total Private Project Cost: KRW 95 billion (US\$86.4milli) - Construction Subsidies: None
Yearly Operation Costs	KRW 7,247 million (constant price)
Financing	<ul style="list-style-type: none"> • Equity (25%): KRW 23,742 million (US\$21.6mil, Korea Infrastructure Fund2 30%, Ecoenergy Holdings 70%) • Debt (75%): KRW 71,258 million (US\$64.8mil, IBK KRW 42,755 million, Korea Infra structure Fund2 KRW 28,503 million)
MRGs	<ul style="list-style-type: none"> • Guarantee Period: Up to 11 years • Guarantee Level: Up to 90% of anticipated electricity sales if a shortfall occurs; excess revenues redeemed in the event of 110% surplus • Conditions: Compensation of electricity revenue shortages through government financial support, extension of free usage period

Note: US\$1 = KRW 1,100

Source: Sudokwon Landfill Site Management Corporation, <http://www.slc.or.kr/design/index.asp>

Total Project Cost and Total Investment Cost (Units: US mil \$)

Items		PPP	Notes
1.	Assessment	256	0.23
2.	Design	2,117	1.92
3.	Construction	66,835	60.76
4.	Lot and Hindrance Compensation	849	0.77
5.	Incidentals	4,540	4.13
	Feasibility assessment	150	0.14
	Environmental impact assessment	226	0.21
	Supervision	2,042	1.86
	Construction insurance	619	0.56
	Construction performance bond premiums	66	0.06
	Financial incidentals	1,437	1.31
6.	Operating equipment	210	0.19
7.	Taxes and charges	124	0.11
8.	Operation preparations	2,311	2.1
9.	Total project cost (Σ 1--8)	77,242	70.22
10.	Price escalation	12,939	11.76
11.	Interest during construction	4,790	4.35
12.	Total investment cost (=9+10+11)	94,971	86.34

Note: 1) Constant prices as of May 2001 and US 1\$ = KRW 1,100

Source: Table based on concession agreement for Sudokwon Landfill Gas Resource Project, Ministry of Environment et al. (Mar. 21, 2003).

Project Investors (Units: Billions of KRW, %, US \$ mil)

Initial Investment			After Equity Share Changes (6/8/09)			After Equity Share Changes (8/17/11)		
Company	Amount	Percentage	Company	Amount	Percentage	Company	Amount	Percentage
Hyundai Mobis	17.69 (16.1)	74.5	Korea Infrastructure Fund2	7.12 (6.47)	30.0	Korea Infrastructure Fund2	0	0
Doosan Heavy Industries & Construction	2.25 (2.0)	9.5	*Ecoenergy Holdings	16.62 (15.1)	70.0	*Ecoenergy Holdings	237.4 (21.6)	100
Bongsun Tech	1.9 (1.73)	8.0						
*Total ENS	1.88 (1.71)	7.9						
ENV21	0.02 (0.18)	0.1						
Total	23.74 (21.6)	100	Total	23.74 (21.6)	100		237.4 (21.6)	100

Notes: 1) Total ENS later changed its name to Ecoenergy Holdings.

2) US 1\$ = 1,100 Korean Won

Sources: PPP progress report, PIMAC internal data, Ecoenergy data.

Operating Revenues

	2007		2008		2009		2010	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Demand (MW)		197,354	411,445	357,530	377,596	363,259	352,935	343,570
Revenues		17.7	24.6	451	24.3	39.7	23.5	41.1
Avg. SMP (KRW)		85		121		104		114
Actual/Planned Ratio			183%		163%		175%	
	2011		2012		2013		Total	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Demand (MW)	411,420	358,673	347,905	344,467	362,906	256,835	2,264,207	2,221,688
Revenues	28.4	46.2	24.4	55.1	25.7	39.7	150.9	284.6
Avg. SMP (KRW)		124		156		136		840
Actual/Planned Ratio	163%		126%		154%		189%	

Note: Actual demand amount for 2007 reflects aggregate transmission volume for period from Mar. 7 to Dec. 31. For 2008 to 2013, the amount is the aggregate of transmission volume from Jan. 1 to Dec. 31.
Source: Drafted by KDI from PPP status report, PIMAC internal data, and Ecoenergy internal data.

Breakdown of Government Redemption (Units: Millions of KRW, US\$ mil)

	2007	2008	2009	2010	2011	2012	Total
Redemption Amount	3,528.8 (3.21)	18,939.8 (17.22)	13,461.9 (12.24)	16,094.8 (14.63)	14,906.7 (13.55)	29,975.7 (27.25)	96,907.6 (88.1)

Notes: 1) Settlement currently in progress for revenues from 2013 electricity sales.

2) US 1\$ = 1,100 Korean Won

Source: Data provided by Ecoenergy.

V. CURRENT STATUS

Execution of the project enabled electricity to be supplied to approximately 180,000 households through power generated at the 50-MW LFG site. Use of LFGs as fuel has generated energy import substitution effects of approximately KRW 40 billion per year (equivalent to 500,000 barrels of crude). The use of gases containing around 50% methane gas (CH₄), which has a global warming index fully 21 times higher than that of carbon dioxide, as a power generation fuel has contributed to preventing contamination of the surrounding environment and to combat global warming through the reduction in greenhouse gases.

From the Korean government's standpoint, the project's timely implementation, without additional costs such as construction subsidies or MRG payments, has resulted in economic gains, including the financial contributions from the excess operating revenues.

Based on these factors -- the timely implementation, the generation of economic gains without additional inputs from the government budget, the "energy welfare" from electrical service supplies to the private sector and the prevention of pollution of the surrounding environment -- the gains from the project appear to be substantial.

As noted previously, the project is structured so that LFGs are used to generate power at a 50-MW plant, with profits generated from the sale of all output on an electricity exchange. This section outlines recent trends in electricity transactions and sale price.

Another element of the project's structure designed to mitigate risk is the government's obligation to make up the difference if the project company's actual revenues fall below 90% of projected revenues, and the right to redeem the difference if actual revenues exceed 110% of projections. Between the project's completion date in 2007 and 2013, however, the government was never required to compensate for any shortfall; indeed, the surplus from exceeding 110% of projected revenues has contributed consistently to the Ministry of Environment's budget. Moreover, the fact that no construction subsidies or other assistance was provided means that the project has been a success in terms of contributing to national finances.

a. Issues

The contracted eleven-year free usage period is set to expire with the contract in 2018, after which the equipment is to be turned over to the government. The expiration, the concession agreement states that discussions on facility inspection specifics are to take place one year before the period elapses, with the competent authority and project company conducting a joint facility inspection six months prior to the end date. Thus, procedures for an agreement with the competent authority on a plan for the agreement's expiration will need to begin around 2016.

b. Conflict Resolution

Because very little remains unclear with regard to the scope of assets and equipment to be relocated upon expiration, no major issues are expected. Contracts with outside businesses are renewed on a yearly basis, so no issues are foreseen with regard to the transfer of related contracts. The economic lifespan of a power generation facility is typically around 30 years, but in view of the particularity of the project and its use of LFGs as fuel, among other considerations, the facility lifespan is expected to be more along the lines of 20 to 25 years. As such, few major repairs are expected when the agreement expires. One issue that is expected to arise in terms of operating the world's largest LFG power generation facilities is the continued employment of the technical personnel currently managing them. Another potential concern has to do with the inefficiencies that may arise when the government inherits the facilities, due to delays in decision-making, audits, and the like.

VI. THE ROLE OF THE MINISTRY OF STRATEGY AND FINANCE IN KOREA AND PPP UNIT (KDI PIMAC)

a. Background

As seen in the Project Implementation table, there has been two years of discussion of whether to adopt the new LFG project among the Government Ministries. After the analysis of the project's feasibility study was completed by the Ministry of Environment and Korea Environment Corporation (June 2000), Ministry of Planning and Budgeting (currently Ministry of Strategy and Finance) made the decision to push through the project as a PPP project in September 2000.

As for the examination of the project, although this project began before the establishment of a PPP support office in the KDI Public & Private Infrastructure Investment Management Center (PIMAC), that center's predecessor (the Private Infrastructure Investment Center of Korea in the Korea Research Institute for Human Settlements) conducted an examination of the project in 2001 and participated in selecting and assessing preferred bidders afterwards.

b. Performance of PPP Unit

Many of Korea's PPP projects were marked by a lack of discussion on or consideration of facility transfer conditions at the time of a concession agreement's expiration, or plans for future management. A PIMAC study titled "Management Plans for Public-Private Partnership Projects with Expiring Agreements" suggested some ideas for legal and institution adjustments at the time of expiration, and for encouraging PPP projects. The center has assisted throughout the PPP process, providing feasibility examinations and negotiation and evaluation services along with future management plans for once the operation period has ended.

VII. KEY LESSONS, EXPERIENCES AND OBSERVATIONS

The Sudokwon Landfill Gas Resource Project is one of the world's largest facilities for generating and selling electric power by collecting landfill gases and supplying them to a steam turbine. The Sudokwon Landfill began accepting waste from the Seoul Metropolitan Area for burial in 1992. Early on, LFGs were disposed of entirely through incineration, before the PPP format was adopted per government policy through the basic plan of the Sudokwon Landfill Gas Resource Public-Private Partnership Facility Project in June 2000.

Most crucially, the fundamental context that allowed this project to move forward was the Basic Plans for PPP and the amendment of the Act on Private Participation in Infrastructure to allow new and renewable energy projects to follow the PPP format. The government's risk sharing efforts (through its MRGs) and policies to promote new and renewable energies were also prerequisites for the project's successful implementation.

Perhaps the next most important factor behind the project's success was the selection and planning of an endeavor that was both innovative and practicable. In addition to its suitability in terms of the public interest goals of improving the environment and generating electric power, it also reduced the costs attendant on site selection and land expropriation by making use of existing landfill area. This was both technically feasible and, when joined to the government's new and renewable energy policies, conducive to generating financial profits. It would not be overstating the matter to say that the success or failure of PPP projects like these hinges on suitable project selection and careful planning founded in experience and expertise.

Another important factor in the success of the construction and operation processes was the way in which private sector creativity and efficiency could be displayed to optimal effect. For instance, one area in which the PPP format confers an advantage over typical government investment is the promptness with which emergency situations can be handled when they arise. When a project is owned by government and entrusted to the private sector, it can be difficult for operators to respond quickly to facility service interruptions and other emergencies because of the bureaucratic process needed to analyze the cause and determine where responsibility lies. In this project, such interruptions did indeed occur, but could be dealt with promptly because the project company bore all of the operation risks and was empowered to make decisions. Indeed, the power generating facility operation rate of around 93% is regarded as quite high for facilities of this scale. Also, while LFGs possesses different properties from ordinary fuels and requires caution to prevent the release of toxic substances, actual operation is, in the project company's estimation, proceeding without hindrance because that company bears the operating risks.

In addition to the rational project plan, another important factor may have been the technical examination, in which outstanding examples in foreign economies were carefully studied and applied in a way that was suited to the Korean context. Because new and renewable energy projects have not been standardized, and because so few examples are available at the planning time of such project, they present arguably the largest risk in terms of technical issues.

Also, yields and collection rates may vary depending on the type of refuse and climatic or environmental conditions, which necessitates appropriate application based on close technical examination. Therefore the fourth success factor may be the execution of a rational financial examination based on data from this technical analysis.

Finally, the last factor in the project's success may be the timeliness of assistance from the government, a reflection of the Korean government's policy commitment to environmental projects and the newfound importance of new and renewable energies. Because the project's structure has the project company bearing the operating risks and the government offering MRGs on profits, it can distribute both the risks and the rewards between the government and the company. Also contributing to the profitability is the fact that the private investor executed promptly even with 100% private investment, bearing the risks associated with fluctuation on LFC yield.

VIII. APPENDIX

A. Atmospheric Pollution Reduction

The Landfill Gas Resource Project involves collecting LFGs, incinerating unnecessary components in an incinerator, and transmitting the usable gas for use as a generation fuel to produce usable electricity for sale. LFGs consist of roughly 47% methane and 38% carbon dioxide, both greenhouse gases.

Components of Sudokwon Landfill Gas (Units: %)

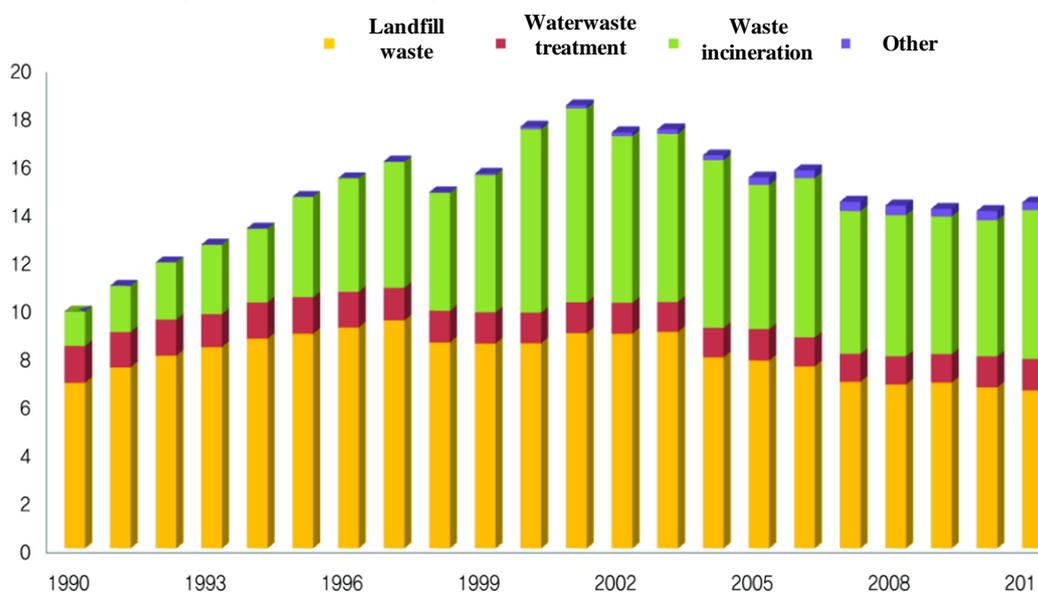
	CH ₄	CO ₂	O ₂	N ₂
Percentage	46.6	38.1	0.3	15

Note: LFGs also contain ammonia, hydrogen sulfide, and a number of other contaminants, but the combined total is under 1% (2013 data).

Source: Data provided by Ecoenergy.

Total emissions of greenhouse gases from waste stood at 14,402 Gg CO₂eq. in 2011, or approximately 2.1% of all emissions for the economy. In terms of categories, landfill waste accounted for around 45.7% of emissions, while landfill incineration amounted to 43.1%. Methane made up the largest portion of greenhouse gases at 48.3%, followed by carbon dioxide at 41.3% and nitric oxide at 10.4%.¹

Emissions by Waste Disposal Type (1990--2011) (Units: Millions of tons CO₂eq)



Source: 2013 National Greenhouse Gas Inventory Report, Greenhouse Gas Inventory & Research Center of Korea, Feb. 2014

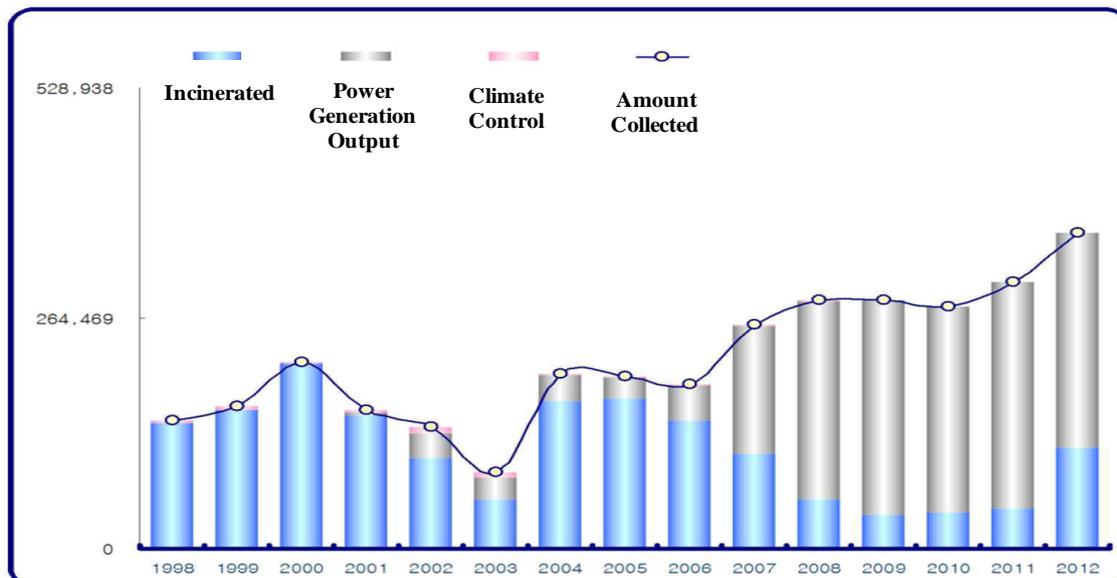
Landfill gas resource development facilities to collect landfill methane for power generation and heating were first introduced at the Sudokwon Landfill in 1998; by late 2011, an additional 18 facilities had been added. From this, it can be determined that methane has been collected through the project, resulting in reductions in a chemical that is responsible for greenhouse effects.

Methane Recovery from Managed Landfills

Year	1998	1999	2000	2001	2002	2003	2004
Amount Recovered	56,305	62,490	64,511	45,547	50,789	47,786	102,039
Year	2005	2006	2007	2008	2009	2010	2011
Amount Recovered	102,015	104,369	134,867	137,819	131,818	137,058	138,712

It can be seen that daily collection of LFGs from the Sudokwon Landfills amounted to 868,256 m³, with 346,320 m³ incinerated and 531,936 m³ used as fuel for power generation. LFGs were collected and incinerated over the period from 1998 to 2006, prior to the project's implementation, but that methane collection has risen consistently since the project's start, with an accompanying rise in power generation output.

¹ "Emission by greenhouse gas type," 2013 National Greenhouse Gas Inventory Report, p. 235.

Collection, Processing, and Usage of Landfill Gases (Units: Thousands of m³ per year)

Source: 2013 *Sudokwon Landfill Statistical Annual* (Vol. 11), Sudokwon Landfill Site Management Corporation, July 2013.

B. Energy Resource Substitution

Power generation from LFGs collected through the project rose steadily over the period from 2007 to 2012. The succeeding table below indicates the increase in power output from the project, as well as the rise in sales.

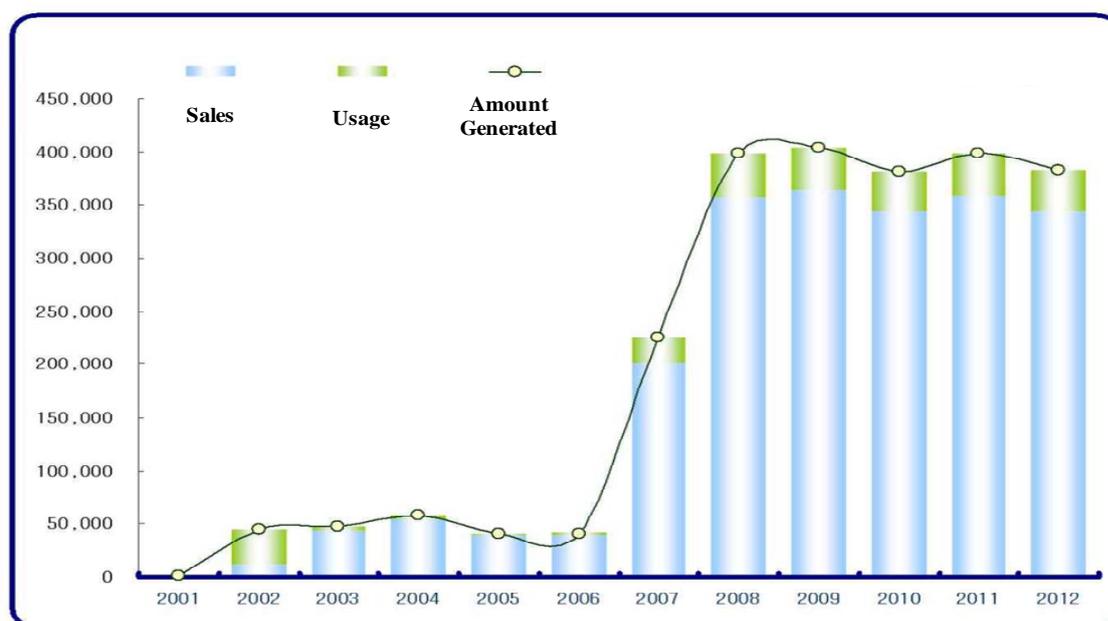
Power Generation from Sudokwon Landfill Gases (Units: MWh/year)

Year	2007	2008	2009	2010	2011	2012	2013
Power Output	222,229	397,862	402,967	380,959	397,795	382,131	290,839
Sales	197,354	357,529	363,259	343,570	358,673	344,467	-
Usage	24,875	40,333	39,708	37,389	39,122	37,664	-

Note: Data for 2007 to 2012 taken from Sudokwon Landfill statistical annual. Data for 2013 were provided separately by Ecoenergy and do not include totals for sales or usage.

Source: 2013 *Sudokwon Landfill Statistical Annual* (Vol. 11), Sudokwon Landfill Site Management Corporation, July 2013.

Power Generated from Landfill Gases (Units: MWh/year)



Source: 2013 Sudokwon Landfill Statistical Annual (Vol. 11), Sudokwon Landfill Site Management Corporation, July 2013.

Reductions in economic costs from the project were analyzed indirectly through the import substitution effects of LFG power generation output on crude oil and other fossil fuels. The substitution equivalent of 2.67 million drums of crude oil was achieved through operation from 2007 to 2013, amounting to approximately KRW 448.8 billion (US\$408 million) in savings.

Analysis of Fossil Fuel Import Substitution Effects from the Landfill Gas Resource Project
(Units: MWh/year, kcal, drums, L, millions of KRW, US \$mil)

Year	Power Output from LFG	Caloric Value of Electricity	Caloric Value of Crude Oil	Crude Oil Substitution		
				Crude Oil (drums)	Cost (L)	Amount
2007	222,229	2,150	9,900	241,309	527	25,412 (23.1)
2008	397,862			432,022	757	65,415 (59.47)
2009	402,967			437,565	719	62,894 (57.18)
2010	380,959			413,668	772	63,893 (58.08)
2011	397,795			431,949	987	85,285 (77.53)
2012	382,131	2,110	9,950	405,174	1,089	88,219 (80.20)
2013	290,839			308,377	935	57,694 (52.45)
Total	2,474,782	-	-	2,670,064	-	448,812 (408)

Notes: 1) Necessary quantity of crude oil calculated by dividing the product of LFG power generation output and caloric value of electricity by the caloric output of crude oil.

2) One drum is equivalent to 200 L; price of crude oil calculated based on bunker C value given by Korea National Oil Corporation.

3) Caloric values calculated from <http://co2.kemco.or.kr/toe/toe.aspx>.

Source: Analysis based on data provided by Ecoenergy.

Restructuring of the Geoga Grand Bridge Project, Korea

I. PROJECT OVERVIEW AND RESTRUCTURING BACKGROUND

a. Project Overview

Located in the East-South Coast Industrial Belt of the Korean Peninsula, the region encompassing Busan and Gyeongsangnam-do is Korea's second largest metropolitan area. The region also has political, economic, social and cultural significance as a gateway linking the Asia-Pacific and Eurasia regions. Aimed at performing a more vital function in international trade and finance and taking a central role in the Pacific Rim in the 21st century, the Korean government proposed an urban development project in its Third Comprehensive National Development Plan. To that end, the government presented a strategy to expand social overhead capital investments by aggressively attracting private capital.

The Geoga Grand Bridge Project Location Plan

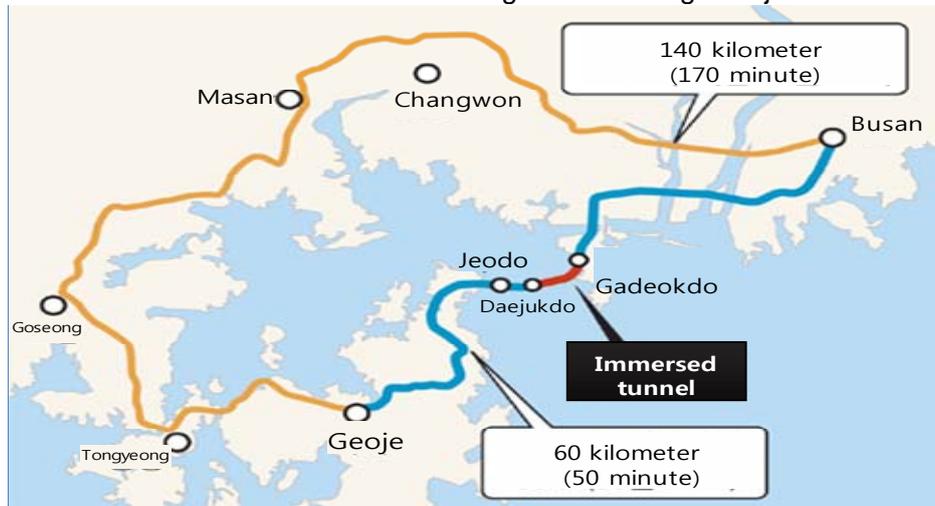


rs (user fees) while private investment costs and minimum opportunity costs in excess of the is a private public partnership (PPP) project linking the Daejeon-Tongyeong highway, Namhae highway, Gyeongbu highway and Daegu-Busan highway in U-shape. The project was aimed at ensuring smooth handling of freight traffic between the shipbuilding industrial complex in the Southern coast and the industrial complexes surrounding Busan New Port, so as to stimulate regional and national economies. In particular, the project was initiated to drive up the nation's competitiveness by reducing costs and time to handle industrial/port logistics and by establishing an infrastructure covering a wide area extending from the western part of Busan to the southern coastal area of Korea.

b. Objective

To drive up the nation's competitiveness by adding port capacity and develop a hub port in Northeast

Potential Benefits of the Geoga Grand Bridge Project



Panoramic View of Geoga Grand Bridge



Project details	
Project name	The Geoga Grand Bridge PPP project)
Area	From Geoje, Gyeongsangnam-do to Busan
Size	Length: 8,204.4 meters, Breadth: four lanes One immersed tunnel and two cable-stayed bridges Other incidental facilities
Competent authorities	Gyeongsangnam-do, Busan metropolitan city

II. CURRENT STATUS

c. Status of Implementation

Opened to traffic on January 1, 2011, Geoga Grand Bridge linking Geoje and Busan via cable-stayed bridges and an immersed tunnel was expected to carry tourist traffic to and from Geoje and to provide better local connections for freight from the Busan New Port and the nearby manufacturing plants. However, the project faced financial troubles as the actual traffic fell short of the projected demand with the industrial vehicle traffic coming in at only 10-20% of the projection. Lower-than-expected traffic of industrial trucks was due to declining demand for parts from shipyards and related companies in Geoje amid a slowdown in the shipbuilding industry. While industrial trucks were expected to cross the bridge twice a day during the initial demand projection, their actual traffic from Busan to Geoje fell short of the forecast due to the shipbuilding slump. Moreover, some trucks still opt to drive the Namhae highway despite the longer travel time because of higher traffic fees charged for use of Geoga Grand Bridge. As such, the actual traffic volume falls far short of the projected demand.

The actual traffic on the bridge came in at 70.2% of the projected traffic volume in 2011 and 64.8% in 2012. The difference varied by type of vehicles. Small vehicles (including micro cars) represented 60% of total traffic volume as shipyard workers who used to reside in Geoje and traveled to and from Busan only in weekends became commuters on the launch of Geoga Grand Bridge. Commuters created a considerable demand base.

In contrast, the actual traffic volume of medium, large and extra-large vehicles represented only 9-19.7% of the projection, which dealt a major blow to the project's operation revenue. Lower-than-expected traffic volume of larger sized vehicles was due to a sharp decrease in freight transportation from Busan to Geoje amid the shipbuilding slump. Much higher traffic fees (KRW 30,000, or US\$27.27, for large cars) compared to small vehicles prompted drivers to make a detour on the Namhae highway instead of travelling on the new route.

Projected Traffic vs. Actual Traffic on Geoga Grand Bridge

	2011			2012		
	Projected traffic (daily)	Actual traffic (daily)	Actual traffic as % of projection	Projected traffic (daily)	Actual traffic (daily)	Actual traffic as % of projection
Total	30,335	21,281	70.2%	32,071	20,695	64.8%
Micro cars	18,500	1,304	106.1%	19,558	1,608	98.15%
Small cars		18,330			17,587	
Medium cars	4,674	625	13.4%	4,942	747	15.1%
Large cars	3,282	645	19.7%	3,470	438	12.62%
Extra-large cars	3,879	377	9.7%	4,101	418	10.2%

Source: Busan Metropolitan City Government's internal data

Projected Revenue vs. Actual Revenue on Geoga Grand Bridge
(Units: Millions of KRW, %, US \$ mil)

	2011	2012

	Projected revenue	Actual revenue	Actual revenue as % of projection	Projected revenue	Actual revenue	Actual revenue as % of projection
Total	153,664(140)	79,817(73)	52%	162,077(147)	77,573(71)	48%
Micro cars	62,680(57)	2,345(2)	106%	66,109(60)	2,906(3)	98%
Small cars		64,217(58)			62,088(26)	
Medium cars	23,755(22)	3,382(3)	14%	25,057(23)	4,058(4)	16%
Large cars	27,800(25)	5,783(5)	21%	29,324(27)	3,946(4)	13%
Extra-large cars	39,428(36)	4,090(4)	10%	41,586(37)	4,575(4)	11%

Note: As the current traffic fee at present is 1.4 times higher than that of agreement, the projected revenue is adjusted accordingly.

The gap between the projected revenue and the actual revenue in 2011 and 2012 was similar to the traffic volume. There was little difference between the projection and the actual revenue from micro cars as the actual traffic demand by commuters and tourists were largely in line with the forecasts. In contrast, the actual revenue earned from medium, large and extra-large, heavy-duty vehicles stood at a mere 10-21% of the projection. With the actual traffic volume missing forecasts, the actual revenue also fell short. Consequent payment of excessive MRG translated into huge financial burdens on local governments.

d. Restructuring

The Geoga Grand Bridge project applied for the MRG program in 2011 and 2012 as the actual traffic demand fell short of the forecast after its opening to traffic. The table below shows that the MRG offering to the single project (Geoga Grand Bridge) represented 4.3% of the Busan municipal government's road-related transportation/traffic budgets (covering road, urban railway, marine transportation, harbor, air transportation, airport, public transportation, logistics and so on) and 12.4% of Gyeongsangnam-do in 2013. It suggests that the local governments' fiscal condition has been under enormous pressure due to the MRG payment for the project.

The Geoga Grand Bridge Project's MRG and Local Governments' Transportation/Traffic Budgets (Road) (Units: Millions of KRW, %, US \$ mil)

	MRG requested (A)		Road-related budgets (B)		MRG requested as % of budgets (A/B)	
	2011	2012	2012	2013	2012	2013
Busan	23,201(21)	30,157(27)	546,315(497)	687,072(625)	4.25%	4.39%
Gyeongsangnam-do	23,201(21)	30,157(27)	229,722(209)	242,344(220)	10.10%	12.44%
Total	46,402(42)	60,314(54)	776,037(705)	929,416(845)	5.98%	6.49%

The project needed to undergo restructuring as the project company faced financial difficulty and the competent authorities were under fiscal stress as well. The competent authorities asked the Ministry of Strategy and Finance to review possible restructuring solutions. Upon the request, KDI PIMAC conducted a quantitative analysis to identify merits of the restructuring measure proposed by new potential investors from the perspective of the concerned parties. The final restructuring measure was reviewed by the Ministry of Strategy and Finance and KDI PIMAC, and was given a confirmation.

III. PROCESS ANALYSIS

a. Restructuring Details

MRG is to assure the government's provision of the minimum revenue, a certain percentage of the projected toll revenue (revenue from traffic fees). Meanwhile, risk sharing via restructuring is to guarantee a project company the recovery of investment costs (sunk costs) and the minimum rate of return.

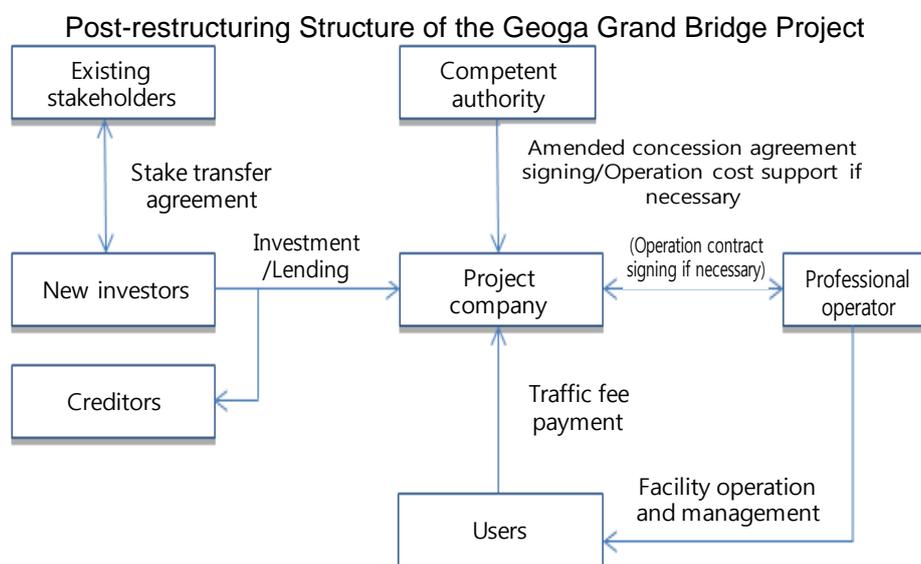
Structure of the Minimum Cost Compensation (MCC) Model

	Guaranteed amount		Project operating revenue
Competent authority provides fiscal support	<ul style="list-style-type: none"> ·Depreciation of management and operation rights value ·Expected return on management and operation rights value ·Operation and maintenance costs ·Tax and dues 	>	Toll revenue + excess net profit from ancillary business
Competent authority collects the difference	<ul style="list-style-type: none"> ·Depreciation of management and operation rights value ·Expected return on management and operation rights value ·Operation and maintenance costs ·Tax and dues 	<	Toll revenue + excess net profit from ancillary business

More precisely, MCC is to maintain the BTO scheme in which private investment costs are recouped through the fees paid by infrastructure/facility users (user fees) while private investment costs and minimum opportunity costs in excess of the user fee revenue raised are compensated by a competent authority. The scheme reduces investment risk while keeping the BTO model's purpose and operation mechanism intact. MCC ensures a project company can recoup private investment costs not covered by user fee revenue in a stable manner while easing a competent authority's payment burden by lowering the rate of return compared to MRG.

If the MRG period matches the length of the period to exercise infrastructure management and operation rights, a project company does not take on demand risk in practice. In that case, a project company may face greater risks when switching to the MCC model, and therefore it would be difficult to seek an agreement from a project company. Meanwhile, the Geoga Grand Bridge project's MRG period was set at 20 years out of 40 years of the management and operation rights exercise period. In such a contract, there is room for negotiation depending on project conditions since the demand risk born by the project company can be transferred to the competent authority.

b. Concerned Parties of Restructuring



Restructuring (MCC) usually involves a change in investors. It is a negotiation process to find mutually beneficial solutions for existing investors, new investors and the competent authorities. For existing investors comprised of construction investors (CIs), an incentive to agree to restructuring is that investment can be recouped more quickly by selling stake in the project at the market price that reflects the MRG value after construction completion. Therefore, for the construction investors, the risk of making a long-term investment until the project's completion is eliminated once the project is restructured. In particular, for a project like Geoga Grand Bridge where the actual demand fell short of the projected levels and therefore continuation of the project is uncertain, chances are high that investors will agree to the stake transfer proposal if they can liquidate initial investment through the stake sale.

For new investors, MCC provides an inducement to include the project in a portfolio as a low risk investment alternative because it guarantees a minimum rate of return on investment costs, including the costs of stake purchase and debt refinancing. MCC, which was proposed as a restructuring measure of the Geoga Grand Bridge project, lowers investors' risks by placing demand risk and the risk of changes in the benchmark interest rate on a competent authority. Furthermore, the costs of project financing (borrowing interest rate) have been lowered amid the low interest rate environment in Korea, which allows refinancing at much lower yields. MCC could be an optimal investment approach for those who prefer low-risk, low-return investments such as build-transfer-lease (BTL) projects as it provides a stable return on total investment over the long term.

A huge MRG payment deteriorates fiscal conditions of a competent authority, which becomes a cause of public criticism. The Geoga Grand Bridge project was able to be restructured toward the MCC model as competent authorities preferred MCC as a way to reduce an enormous MRG payment burden despite a bit higher project risk.

IV. FINANCIAL INFORMATION

KDI PIMAC analyzed the financial effects of the restructuring toward the MCC model for each concerned party. According to the study, the main benefit for existing investors was that they could recover KRW 430 billion (US\$391 million) in equity capital and KRW 163.2 billion (US\$148 mil) in premium, the opportunity costs during the investment period, more quickly. In particular, as a majority of existing investors were CIs, an incentive to quickly recover equity capital was that they could redirect the funds to other development projects.

Total investment	KRW 1,983.1 billion (US\$1,803 million)
Government subsidies	KRW 571.8 billion (US\$520 million)
Total private investment	KRW 1,411.3 billion (US\$1,283 million)
Fund procurement	Equity capital: KRW 430 billion (US\$391 million, 30.47%) Debt capital: 981.3 billion KRW (US\$892 million, 69.53%) KRW 1,411.3 billion (US\$1,283 million)
Traffic fees	KRW 10,000 (US\$9.09)
MRG rate	77.55%

The table below shows a comparison between investors' current IRR under the MRG and MCC models. As a comparison, new investors are assumed to put KRW 1,594.8 billion (US\$1,450 million, the sum of equity value, debt capital costs and other expenses) for the purchase of the management and operation rights in October 2013 and the simulation of rate of return was performed using MRG of the existing concession agreement and post-restructuring MCC. The study shows that change in the project's structure lowered new investors' rate of return and financing costs, which reduced the competent authorities' fiscal burden by KRW 5,357.9 billion (US\$4,871 million).

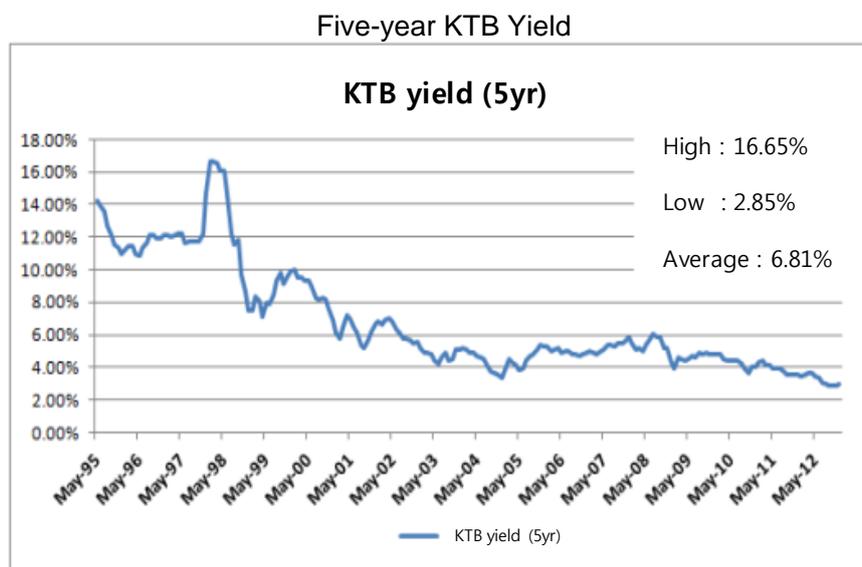
Rate of Return Earned by a Project Company

	New investment	Operation period	Operation revenue		Current IRR	Remarks
			Fiscal support	User fee revenue		
Cash flow under the existing concession agreement (incl. MRG)	KRW 1,594.8 bil (US\$1,450 mil)	37.25 years	KRW 5,458.6 bil (US\$4,962 mil) (incl. MRG)	KRW 4,953.7bil (US\$4,503 mil)	9.65% (when MRG applied)	Assuming user fees are lifted KRW 1,000 (US\$1) for every 10 years
Estimated post-restructuring cash flow	KRW 1,594.8 bil (US\$1,450 mil)	37.25 years	KRW 100.7 bil (US\$92 mil)	KRW 4,953.7bil (US\$4,503 mil)	4.72%	

Note: MRG request is included in the budget for the following year (2011 request is reflected in 2012 budget; 2012 request in 2013 budget).

If the restructuring is implemented as described above, a new investor's rate of return is lowered by 4.93% on eased risks from the project (such as demand risk and the risk of benchmark interest rate changes) and the recent decline in financing costs.

Meanwhile, yields on five-year Korean Treasury Bonds (KTB) have continued falling since 1995. The monthly average yield was above the 10% level in the 1990s but it has gradually declined since 2000. The KTB yield peaked at 16.65% (in January 1998) and hit rock bottom at 2.85% (in October 2012). While the interest rate has trended downward over the long term, the Geoga Grand Bridge project could provide a stable and attractive investment opportunity with a guaranteed return of about 4.72%, and on such merits the project could find new investors.



As such, the project restructuring toward the MCC model could be beneficial to all those concerned, and it is how the plan could be implemented.

V. ROLES OF THE MINISTRY OF STRATEGY AND FINANCE IN KOREA AND PPP UNIT (KDI PIMAC)

c. Background

KDI PIMAC reviewed the financial impact of the restructuring of the Geoga Grand Bridge project. As an independent entity with no interest in the project, KDI PIMAC presented a quantitative assessment of financial impacts from the project restructuring to ensure transparency and objectivity in decision-making of competent authorities and investors. The Amended and Restated Concession Agreement (ARCA) was entered into in December 2013 by reflecting KDI PIMAC's review. The amended agreement helped significantly reduce the MRG payment burden, which would otherwise have seriously undermined the fiscal position of local governments.

Recognizing the need of restructuring toward the new PPP model deviated from BTO, the Ministry of Strategy and Finance played its role to in narrowing differences on key issues between competent authorities and a project company. The central government's efforts helped the new project model quickly take root. Furthermore, the finance ministry revised related regulations to ensure seamless implementation of the restructuring plan and to facilitate further restructuring of the former BTO models.

d. Performance of PPP Unit

According to a Yonhap News report on July 10, 2014, Busan and Gyeongsangnam-do's combined fiscal spending was reduced by KRW 27.8 bil (US\$25 mil) year-to-date June 2014 following their entry into the ARCA for capital restructuring of the Geoga Grand Bridge project in December 2013.

VI. KEY LESSONS, EXPERIENCES AND OBSERVATIONS

The government may consider PPP as an alternative source of funding for a project with top priority or a project that would take too long and cost too much to be financed by the fiscal budget. But a PPP project may impose an excessive fiscal burden if the related demand forecast is inaccurate. As to the Geoga Grand Bridge project, the concession agreement was signed with MRG equal to 77.55% of the projected revenue and 9.65% investment rate of return. The actual revenue came in at 52% of the projected level in the first year of operation in 2011 and 48% in 2012, and resulting in fiscal burden worth KRW 46.4 billion (US\$42 million) in 2012 and KRW 60.3 billion (US\$55 million) in 2013.

As the Geoga Grand Bridge project was commenced when PPP was still in its infancy in Korea, only limited data and experience were available for demand forecast and its review. In particular, a significant optimism bias was built in during the feasibility study phase of the Geoga Grand Bridge project. As such, a PPP project is very likely to face serious challenges as seen in the case of Geoga Grand Bridge unless a rigorous economic feasibility study and value-for-money (VfM) analysis are thoroughly conducted in the planning stage by a PPP unit that has expertise and objectivity. A PPP unit is an institution that develops the process and methods of a pre-project feasibility study and then carries out the study accordingly. Establishing a PPP unit to take on such tasks with expertise as well as building capacity to carry out the project would be a precondition for a successful PPP.

The Geoga Grand Bridge project's excessive MRG payment burden called the need for PPP into question. It was when the local governments suffered fiscal woes and public criticism heightened over PPP that the project's restructuring was put to consideration. As a PPP unit, KDI PIMAC provided technical support by assessing the Geoga Grand Bridge project restructuring plan with objectivity and transparency so that the competent authorities and private investors can reach a mutual agreement on new contract terms. As seen in the case of the Geoga Grand Bridge project, a PPP unit plays a crucial role in ensuring continued improvement and sustainability of a PPP project by resolving the issues that may arise during not only the project development, but also operation phases. To that end, a more thorough study on economic feasibility and VfM analysis would be a prerequisite. Furthermore, various issues that may surface from the construction to operation phases need to be dealt with properly for successful implementation of PPP projects.

Constant advancement of the capital market is also essential for sustainable PPP drives. As seen in the case of the Geoga Grand Bridge project, attracting investors in a restructured project requires a more meticulous approach and a wider pool of investors, which means it is critical to build a stronger capital market where financial institutions and investment funds have an accumulated experience in infrastructure investment. If it were not for accumulated expertise from the past PPP projects and infrastructure investment by financial institutions and investment funds, it would have been difficult for the Geoga Grand Bridge project to find new investors with such poor profit structure. For a sustainable advancement of PPP, it is essential for the Government and the PPP unit to review diverse issues arising throughout the project implementation and as well as to promote the long-term finance market.

Busan New Port, Korea

I. PROJECT DESCRIPTION

a. Background and Rationale

Development at Busan North Port started in the 1970s, when economic growth was beginning in Korea. It was around this time that a number of docks were built and came into operation at the port. The volume of cargo passing through North Port steadily increased, and by the middle of the 1990s, it was handling 110–120% of its capacity. This led to a marked decline in the port's cargo handling ability and efficiency. Expanding the port facilities was not feasible because North Port was located in East District and Central District, Busan's old downtown area. Further complicating matters, most of the facilities at North Port had been built in the 1970s and were wearing out.



Project Name	Busan New Port Development Project: Stage 1
Location	Busan and Jinhae
Scale	<ul style="list-style-type: none"> • Port area: 1,920,000m² • Breakwater: 1,490m • Dredging: 72 million m³ • Shore: 14,051 m

b. Rationale for PPP

In order to achieve the government objective of turning Korea into a logistics hub for Northeast Asia, there was a critical need to upgrade Busan's port facilities with an advanced system for logistics operations. Unfortunately, the government was facing a severe budget crunch because of the Asian financial crisis in the mid-1990s, making it difficult to fund large infrastructure constructions projects such as Busan New Port. Consequently, the New Port development project was implemented as awareness grew about the need to make the economy more competitive by augmenting inadequate port facilities and to develop a "hub port" that could become a central base for logistics in Northeast Asia.

c. Objectives

In order for Busan to be more competitive, there is a need to expand its inadequate port facilities and turning Busan into a hub port that could serve as a logistical center for Northeast Asia

d. Project Timelines

The first stage of the New Port development project was subdivided into stage 1-1 and stage 1-2, with construction for stage 1-1 taking 78 months and stage 1-2 taking 54 months. The period of operation for the project is 50 years, lasting from January 1, 2007, to December 31, 2056. After gaining the government's approval, the operator, Pusan Newport Co. (PNC), decided to open three of the nine total berths in January 2006, which was ahead of schedule. On October 28, 2009, the management and operation rights for the three berths that began operating early were sold to the Busan Port Authority (BPA). The other six berths are currently being operated by PNC.

Proposed construction period is from November 17, 2001–May 17, 2009 (90 months), with operating period from January 19, 2006–January 18, 2056 (600 months, operations began ahead of schedule).

Date	Activities
March 2, 1996	Selected as a potential PPP project (Ministry of Finance and Economy)
September 25, 1996	Request for proposals announced for PPP project at Gadeok New Port (Ministry of Maritime Affairs)
December 24, 1996	Business plans submitted for PPP project at Gadeok New Port
June 30, 1997	Pusan Newport Co. designated as PPP business operator
September 5, 1997	Pusan Newport Co. established
June 29, 1999	Detailed implementation plan submitted and request made for approval of that plan
December 14, 2000	Revised concession agreement signed
November 17, 2001	Construction started on dock facilities in stage 1-1 of project
May 22, 2003	Revised contract for concession agreement signed, abolishing operating profit guarantee and redemption system
January 19, 2006	Ribbon-cutting ceremony for three berths opening ahead of schedule
December 28, 2006	Dedication ceremony for remaining three berths in stage 1-1
October 28, 2009	Contract signed for refinancing and transfer of management and operation rights for three berths in stage 1-1

II. PROJECT STRUCTURE

The Busan New Port project is a BTO (build-transfer-operate) project that was pursued in accordance with the laws that govern PPP projects. The basic port facilities (including the maritime facilities and the outer wall facilities) and the hinterland transportation facilities were built by the government, while the docking facilities and the port hinterland area were acquired by the government and PNC, the project operator.

a. Risk Allocation

The government shouldered some of the project risk by supporting PNC in the following areas during the construction phase:

- Contributing to the cost of construction (government subsidies)

- Building infrastructure for dock area, infrastructure for hinterland support complex, basic port facilities, and hinterland transportation facilities
- Providing support for currency exchange and remittance for interest, dividends, share, and principal of foreign investment.
- Providing timely support for licensing and other procedures that are necessary for building and operating project facilities
- Working proactively to find solutions when it becomes difficult to carry on normal operations because labor unions are making unreasonable requests regarding facility operation
- Dredging and maintaining water routes and turning basin to enable regular maintenance and operation

All of the risk arising during business operations is assumed by PNC, the business operator. However, the government and PNC share any additional profit that may be earned in supplementary projects during operations.

e. Special Features

The original concession agreement included a minimum revenue guarantee (MRG) along with the arrangement that if revenue from port fees exceeded a certain amount, this would be returned to the government. However, since New Port quickly achieved the operating performance outlined in the agreement, optimistic assessments have been made about the operating performance that the port will be able to achieve in the future. As a result, PNC and the government revised the concession agreement. The main changes in the revised agreement eliminated the MRG section and the rules about returning excess profits that were part of the original concession agreement. With the Busan Port Authority(BPA) receiving the maintenance and operation rights for the three berths that were opened ahead of schedule, PNC and the government are currently negotiating another round of revisions to the concession agreement.

III. STAKEHOLDERS

The Government Agency responsible for the project is the Ministry of Oceans and Fisheries. A substantial number of shares of PNC are owned by Samsung C&T Corporation, Samsung Life Insurance, and other affiliates of the Samsung Group. Other shareholders include DP World International B.V. and a subsidiary of the Hanjin Group.

IV. FINANCING INFORMATION

The total amount of money invested in the public-private partnership (PPP) project for Busan New Port is KRW 2.39 trillion won (US\$2.17 billion), with a yearly operating cost of KRW 1.13 billion (US\$1.03 million). It was a huge development project, with the port facility occupying around 1,920,000 m² and the total length of the docks measuring 3.2 km. PNC's original capital total of KRW 494.3 billion (US\$449 million) was increased by KRW 82.8 billion (US\$75 million) on October 28, 2009. The total capital today is KRW 577.1 billion (US\$524 million).

Total investment	KRW 1.65 trillion (nominal price KRW 2.39 trillion) [US\$1.50 billion (US\$2.17 billion)]
Yearly operating cost	KRW 1.13 billion (US\$1.03 million) (fixed cost)
Procurement of funds	Concession agreement: KRW 508.6 billion (US\$434 million) in equity (20%), KRW 1.24 trillion (US\$1.19 billion) in debt (55%), KRW 637.4 billion (US\$543 million) in government subsidies (25%)

V. CURRENT STATUS

This project is currently in its operating phase. The establishment of Busan New Port supplemented the inadequate cargo handling ability of North Port and introduced an advanced cargo handling system, reducing the cost of handling by increasing efficiency and making it possible for the harbor to process a greater volume of cargo. It is notably that the efficiency of the private sector business operator made it possible to shorten the construction period of the New Port development project. It was expected that construction would be completed on New Port on January 2007, but it was possible to open three berths from stage 1-1 of the project on January 2006, ahead of schedule. When these three berths opened for business, New Port handled around 2% of the total volume of cargo entering Busan in 2006, which was very significant at a time when New Port was at more than 110% of its ideal handling capacity. In other words, this made it possible to quickly satisfy the demand for port facilities, which had been unable to keep up with the rapid growth in the Korean economy.

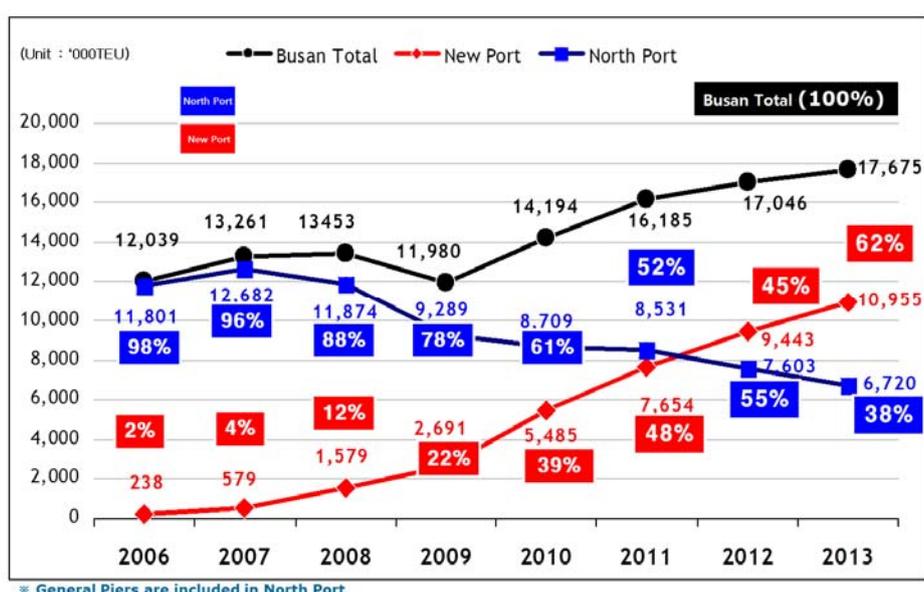
Since the three berths at New Port began operating early in 2006, the percentage of the total volume of cargo entering Busan that is handled at new Port has continued to increase. Currently, New Port handles around 65% of the total volume of containers that enter the harbor.

Analysis of Volume Trends in North Port and New Port

	2006	2007	2008	2009	2010	2011	2012	2013	2014 (Jan-May)
Busan harbor total	12,038,786	13,261,484	13,452,786	11,980,325	14,194,334	16,184,706	17,046,177	17,686,099	7,582,421
North Port	Volume	11,801,076	12,682,316	11,873,436	9,289,534	8,709,107	8,433,841	7,603,486	6,722,732
	%	98.0%	95.6%	88.3%	77.5%	61.4%	52.1%	44.6%	38.0%
New Port	Volume	237,710	579,168	1,579,350	2,690,791	5,485,227	7,750,865	9,442,691	10,963,367
	%	2.0%	4.4%	11.7%	22.5%	38.6%	47.9%	55.4%	62.0%

Note: Busan New Port opened in 2006.

Trends in Volume of Cargo at North Port and New Port



New Port's cargo handling performance substantially surpassed the projections made in the concession agreement. The table below compares the agreement's projections of the volume of cargo that New Port would handle with its actual performance. The table shows that even though only six berths have been operated at New Port (after the three berths that were opened ahead of schedule were transferred to BPA in 2009), the port is handling the volume of cargo projected for all nine berths in the concession agreement.

	Based on concession agreement (nine berths)	PNC performance	
		Number of berths	Handled cargo
2006	-	3	236
2007	410	6	576
2008	1,367	6	1,583
2009	1,417	9→6 (sold)	1,772
2010	2,267	6	2,620
2011	2,947	6	3,316
2012	3,343	6	3,353
2013	3,400	6	3,392

Note: There were a total of nine berths at North Port during the first stage. Three of these were opened ahead of schedule in 2006, and their management and operation rights were later transferred to BPA. Currently, PNC is only operating six berths.

VI. ROLE OF MINISTRY OF STRATEGY AND FINANCE AND THE PPP UNIT

a. Background

This project was initiated soon after the PPP approach was developed. At the time, Korea had no institution equivalent to the Public and Private Infrastructure Investment Management Center (PIMAC). As a result, it is possible that the project was not adequately reviewed. But regardless, the government concluded that there was a clear and critical need to rapidly complete New Port so that the new facility could take over some of the responsibilities of North Port, which was being operated as a government-funded project. However, the budget shortfall was a major obstacle for building New Port with government funds. In short, there was general agreement about the validity of building the facility, but it was less clear how to raise funds to move forward with the project.

b. Functions

It was at this juncture that the Ministry of Finance and Economy (today, the Ministry of Strategy and Finance) actively provided policy recommendations that enabled the project to be executed as a public-private partnership (PPP). The ministry's designation of the project as a potential PPP project made it possible for New Port to be built in a timely fashion. The project seems to have proceeded with relative ease, including the designation of the project operator and the signing of the concession agreement. Thus far, the project has achieved results that exceed the expectations of the concession agreement, and operations are running smoothly.

Recently, negotiations have been taking place for the second round of revisions on the concession agreement as part of the process of transferring to BPA the management and operation rights for the three berths that opened ahead of schedule. PIMAC has been providing the government with the technical support it needs for these negotiations.

c. Performance of PPP Unit

Currently, PIMAC is responsible for a number of activities. These include researching potential PPP projects, carrying out feasibility analysis, reviewing the results of that analysis, providing support for devising the basic plan for the project etc. In addition to this, it is working on various projects related to consulting, education, and publicity. In its work, PIMAC tries to minimize its intervention in successfully operated projects such as this one in order to take full advantage of the creativity and efficiency of the private sector. At the same time, it utilizes the proficiency it has acquired over long years of handling all the work for PPP projects to provide the government with technical support in negotiations that the government would find it difficult to handle on its own. This makes it possible to reduce government expenditures and implement PPP projects.

VII. KEY LESSONS

The port of Busan served as an important logistical base that led Korean economic growth. However, it did not have the capacity to deal with Korea's rapid economic growth, and its facilities were aging. Building a new port in the city was believed to be critical for augmenting its inadequate port facilities and for turning the city into a hub port that could play a central logistical role in Northeast Asia. During the Asian financial crisis, Korea needed a driver for future economic growth, but this same crisis meant that the government did not have enough financial resources to invest in various infrastructure projects. This led to the possibility that Korea might not be able to find the economic momentum that it needed. At this point, the government decided to set up the right infrastructure at the right time by building Busan New Port through a PPP. In 1996, it announced that it was seeking bids for the project.

It is fair to say that one of the most important factors behind the success of Busan New Port was the introduction of a more effective automated system. The majority of the operation systems at New Port were automated, making it possible to increase the efficiency of operations and thus to cut costs and increase the port's cargo handling capacity. As a result, New Port was able to handle a greater volume of cargo than what was projected in the concession agreement. Subsequently, a revised concession agreement was signed, eliminating the section guaranteeing minimum revenue as well as regulations requiring the operator to return profits exceeding a certain amount. This brought about the completion of a public-private partnership in the truest sense of word—a project that eliminates the government's financial burden. The main factor that allowed efficiency to be achieved in this way was the competitive competitiveness, which was raised on the operator to make a profit in order to survive, eliciting the creativity and efficiency of the private sector. This is one of the most important conditions for a PPP project to succeed, and it is also the basic reason for implementing PPP projects. Since the public sector has a monopoly on the supply of social infrastructure, the bureaucracy inherent therein will probably be less efficient than the free competition of the private sector. By designing the structure of the public sector in such a way that competition generates the creativity and efficiency of the private sector, it is possible to introduce efficiency into the construction and operation of public infrastructure.

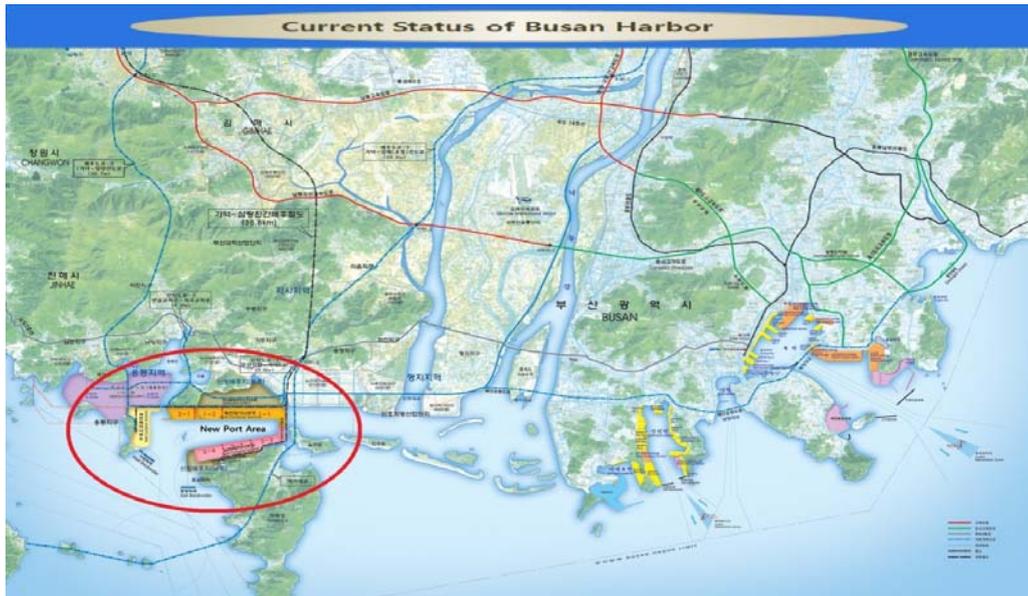
Building Busan New Port succeeded at keeping large ships—which North Port was having trouble handling—from abandoning Busan altogether. In addition, hinterland railroad tracks and roads were laid to facilitate the use of land transportation. Importantly, Busan New Port is one of the ports in Korea with a direct rail connection, meaning that it links water routes with land routes. As a result, Busan acquired international competitiveness as a port hub and became a logistical nexus for Northeast Asia.

The reverse side of this bustling development at New Port was a rapid decline in volume handled at North Port. That is to say, a substantial portion of the cargo that was once handled by North Port shifted to New Port after the development of the latter facility, making it difficult for North Port to fulfill its original role as a logistic base for container cargo. But North Port has responded by reimagining its role, with the first step being a shift of focus from a container cargo base to a cruise ship terminal. By making it possible for large cruise ships to dock at North Port, it is now easier for tourists visiting Busan to access the old downtown area. In response to these changes, and in consideration of North Port's predicament, the Korean government is planning to build large facilities that can attract crowds including an international cruise terminal as part of efforts to make the port a base for international maritime tourism. It also has plans to build an eco-friendly waterfront and park in order to provide Busan residents with space for leisure and relaxation. After the development of New Port, North Port appeared to be in decline. But now, North Port has been rebooted through changing its primary role and making an appropriate use of land, and the development projects currently underway at North Port rival those at New Port. The implication is that, by pursuing PPP projects that can create new functions for facilities whose role is being reduced, the government may be able to further establish the complementary relationship between government-financed projects and PPP projects.

In addition, the government's timely policy decision used a PPP project to provide the right infrastructure at the right time, playing an important role in clearing obstacles to a quickly growing economy and providing the impetus for the economy to grow even more.

It is also important to note that in the early stage of developing Busan New Port, there was no organization like PIMAC that could take charge of work including analyzing the appropriateness and feasibility of the project. Consequently, the grounds for moving forward with the New Port project had less to do with an objective analysis of its feasibility and more to do with the subjective judgment of the parties involved. Despite this, the necessity of building a new port at Busan was patently obvious to policymakers, which enabled them to secure adequate support and allowed the project to proceed without difficulty. Currently, negotiations are underway for a revised concession agreement, with PIMAC working with the government in these negotiations.

VIII. APPENDIX



A. Efficient System at Busan New Port

In order to improve on the outdated system at North Port and increase the efficiency of cargo handling, a partially automated system was implemented as the system of operation at New Port. The RMGC (rail-mounted gantry crane) that is used at New Port is designed to work without a human operator, making it possible to dramatically lower the cost of operations.

In recent years, the shipping industry has come to rely on large ships of 100,000 tons or above to reduce the cost of shipping and to make shipping more efficient. However, since North Port was designed to dock ships of 50,000 tons, it did not have the facilities necessary to accommodate large ships. The channels at New Port, on the other hand, are 15m deep, which is adequate for ships of this size, and the mooring facilities there were designed with large ships in mind. The channels are also being made deeper to accommodate the current tendency to build larger ships.

Starting in the construction phase of New Port, the government invested substantially in building the hinterland transportation network. A hinterland railroad was built between New Port and Samrangjin, a distance of 38.3 km. It is significant that New Port is the only terminal in Korea that operates a direct rail connection, allowing it to link its transportation system with the interior. In addition to that, hinterland roads were built from the Gadeok Interchange to the Daedong Interchange (29.0 km) and from Busan New Port to Milyang (38.7 km), which enable nonstop movement of cargo on land and sea routes. This system is optimized for container docks.

Direct Rail Connection at Busan New Port



B. Redevelopment of Aging Facilities at North Port

In the past, Busan North Port was a major engine for economic development and growth. But given its aging facilities and inadequate cargo handling capacity, a substantial portion of North Port's functions were transferred to New Port after operations began there. Currently, North Port is being used more to serve passenger ships than to handle containers shipped into Busan. In addition to this, various redevelopment projects are underway.

Drawing upon the advantages of North Port—including its extensive waterfront and its central location for sea and rail transport—redevelopment projects are focusing on developing the area as a hub for tourism on the southeast coast of Korea. More specifically, planners hope to turn the area into a center for international coastal tourism by establishing an international cruise terminal and other large facilities that can draw customers. Plans are also being drawn up to create an eco-friendly waterfront and to build parks in order to provide Busan residents with a space for leisure and relaxation.

Furthermore, there are efforts to develop North Port into a land, sea, and air transportation center through setting up a water transportation system connecting Korea with surrounding economies. This would involve using organic connections between various forms of transportation to set up a comprehensive system of transportation transfers. For example, there are plans to take advantage of the connectivity between the international ferry terminal and Korea's high-speed railroad to develop this as a forward base for creating a link to Eurasia.

Artist's Rendering of the Busan Port International Ferry Terminal, Which Will Be Built in the Busan North Port Redevelopment Project



Hospital Support Services, Malaysia

I. PROJECT DESCRIPTION

a. Background

Hospital Support Services (HSS) has been implemented as part of Government privatization policy. The Government has entered into a 15-year concession agreement, commencing from 28 October 1996 with 3 private companies, i.e. Faber Medi-Serve Sdn. Bhd. (Faber), Pantai Medivest Sdn. Bhd. (Medivest) and Radicare (M) Sdn. Bhd. to undertake hospital support services for all Government hospitals. The services cover about 148 Government hospitals and non-bedded institutions based on 3 specified zones consisting a total of 14 states in Malaysia.

b. Project rationale

The concessionaire is required to plan and maintain the hospital support services to all Government hospitals. The costs of repairs and replacement of assets could be reduced through systematic management by the concessionaires. In addition, the Ministry of Health does not have to provide adequate human resources (an estimated total of 17,000 people) to implement the services. As a result, the Government can focus on its core function to provide medical services to the public effectively and efficiently without being directly involved in the management of hospital support services.

c. Rationale for PPP

The privatisation of HSS could stimulate the private entrepreneurships and investment and also indirectly stimulate and facilitate economic growth particularly in the health sector. It is more effectively implemented through concession rather than a short-term contract which enable the private sector to plan their human resources efficiently.

d. Objectives

1. The HSS (FEMS, BEMS, CLS, LLS and CWMS) is vital to ensure patients get the best care in healthcare facilities and also in terms of safety of patients whether they are undergoing treatment or visiting the facilities.
2. The privatization of HSS would improve the management of public health facilities through comprehensive asset management, prolong life and reliability of assets, reduce down time and provide greater convenience.
3. Concessionaires are able to develop the skills, competencies and experience in support service management particularly in the healthcare industry.

e. Scope

The privatisation involves the bundling of five (5) main hospital support services, set out as below:

No	Services	Details of Services
1	Facility Engineering	<ul style="list-style-type: none"> • Maintain all engineering plants, systems, facilities, non-

No	Services	Details of Services
	Maintenance Services (FEMS)	biomedical equipment and civil engineering works; <ul style="list-style-type: none"> • Operate all engineering plants and installations; • Witness testing and commissioning of plants and equipment; • Establish and implement a reporting work requisition and feedback system; • Provide training on user maintenance, and as well as safe and correct use of facilities; • Perform fire drills annually; • Maintain engineering workshop; and • Perform ground maintenance and pest control.
2	Biomedical Engineering Maintenance Services (BEMS)	<ul style="list-style-type: none"> • Maintain and carry out a comprehensive planned preventive maintenance program for all medical and laboratory equipment; • Provide effective and responsive maintenance, on call and emergency services, on all medical equipment; • Witness testing and commissioning, as well as safety and performance characteristic test on all incoming new equipment; • Establish and implement a reporting work requisition and feedback system; • Provide training on user maintenance, and as well as safe and correct use of biomedical equipment; • Maintain biomedical engineering workshops; • Establish a computerised documentation system including asset and inventory control records; and • Establish a library of user and service manuals.
3	Cleansing Services (CLS)	<ul style="list-style-type: none"> • Build, operate and maintain covered central waste storage facilities; • Scheduled general waste and specialized cleaning according to procedures and guidelines; • Collection of general waste as scheduled through approved routes; • Continuous supply of toiletries – paper towels, toilet rolls, deodorizers, soap and dispensers; and • Adequate supply of consumables – waste bins and bags.
4	Linen and Laundry Services (LLS)	<ul style="list-style-type: none"> • Supply and delivery of clean linen to hospitals; • Provide dedicated soiled linen bags and holders/trolleys; • Collect, transport and process soiled linen; • Repair and replace damaged linen; • Build laundry plants, equipment and facilities; • Pay for utilities if tapped from hospitals; • Maintain central linen stores; and • Weigh and maintain records of clean and soiled linen.
5	Clinical Waste Management Services (CWMS)	<ul style="list-style-type: none"> • Collection, storage, transportation, treatment and disposal of clinical waste; • Supply adequate blue and yellow bags, storage containers, sharp containers and receptacles to user departments at the source of generation; • Build, operate and maintain secured clinical waste storage facilities;

No	Services	Details of Services
		<ul style="list-style-type: none"> • Supply, install, commission, operate and maintain central an on-site clinical waste incinerators; • Provide licensed dedicated transport vehicles and trolleys for collection and transportation of clinical waste; and • Perform tagging, weighing and registering of waste bags collected.

f. Key outputs

To ensure the performance of HSS services provided by concessionaires can be continuously upgraded in line with the Government's role as the main provider of health services in the economy, the Government, through the Ministry of Health has provided the technical requirements that must be met by the concessionaire as follows:

1. Technical Requirements and Performance Standards (TRPI),
2. Master Agreed Procedures (MAP);
3. Standard Operating Procedures (SOPs);
4. Any relevant rules, regulations, codes of practice and/or Malaysian or international standards (i.e. British Standards, American Society of Hospital Engineers (ASHE))

Each Key Performance Indicators (KPIs) for each service has parameter criteria with weightage for the computation of the service fee deductions in the event the concessionaire fail to comply with any of the KPIs.

g. Resources/ existing capacity

Special Purpose Vehicles were formed to manage the concession.

h. Stakeholders

1. End users – Government owned hospitals and non-bedded institutions;
2. Concessionaires – Faber, Medivest and Radicare
3. Ministry of Health – overall supervisor of the concession
4. Sistem Hospital Awasan Taraf Sdn. Bhd. (SIHAT) – Monitoring, inspection and evaluation of performance of concessionaires and technical consultants

i. Entity responsible

The entity responsible for this project is the Ministry of Health Malaysia (MOH)

j. Contingent liabilities for the Government

No contingent liabilities or guarantees were provided in this project.

k. Project Externalities

Government as primary healthcare provider will be focusing on delivering clinical services to the public whilst the private sector will manage the HSS, which are the non-clinical services. Therefore, the Government through MOH can devote its resources to manage its core business which is to provide medical services of high quality, efficient and effective service to the people.

I. Project risks

Risk is minimized as this project is based on contract management with no demand guaranteed by the Government.

No	Parties	Risks
1	Concessionaires	<ul style="list-style-type: none"> Miscalculation cost of operation thus affecting the rate of fees. Bear the costs in the event of linen loss. Quality and expertise capabilities of vendors/subcontractors especially in critical services such as BEMS and FEMS.
2	Government	<ul style="list-style-type: none"> Retains the asset risk and availability risk as the concessionaires are only responsible for the performance risk based on the contract.

II. STRUCTURE OF THE PROJECT

Contract Management (Outsourcing services)

a. Roles and responsibilities of the private and public partners

No	Private Entities	Roles and Responsibilities
1	Concessionaires	Delivery of services in accordance with TRPI, MAP, SOP, Hospital Specific Implementation Plan, statutory regulations and various other guidelines.
2	SIHAT (provide consultancy to the MOH)	Delivery of services in accordance with: <ul style="list-style-type: none"> Monitoring, inspection and evaluation of performance of concessionaires; Provide periodic audit of audit of the level of performance of the concessionaires; Provide technical consultancy services to the Government and Hospitals; Periodic reporting to the Government and Hospitals
No	Public Entities (Government)	Roles and Responsibilities
1	End users	<ul style="list-style-type: none"> Verify work done by concessionaires; Maintain records; Approve payments and deductions; Provide feedback of the services to the concessionaires
2	Ministry of Health	<ul style="list-style-type: none"> Overall supervisory of the concession through SIHAT Perform periodic technical audits on performance of concessionaires in relation to the services provided Specify the technical requirements

b. Revenue Mechanism

Government pays for the services rendered by the concessionaires. Fees were determined based on the number of assets/hospitals. Fees will be increased/decreased subject to changes in the number of assets/hospitals.

c. Managing fiscal risks

Government is paying the services fee via Operating Expenditure of MOH.

III. PROCESS ANALYSIS

(Not applicable – project has been signed for 15 years)

IV. CURRENT STATUS AND KEY IMPLEMENTATION ISSUES

a. Status of Implementation

The Government is in the process of negotiating new terms and conditions with the existing concessionaires

b. Key Issues on Implementation

The introduction of new KPIs and proposed penalty for new concession agreement resulted in resistance from the concessionaires.

c. Contract Renegotiation

Under the Concession Agreement, concessionaires may apply to the Government for fee review every 3 year. However, any revision will be subjected to the performance of the concessionaires. In this regard, only the service fee has been revised and renegotiated in 2007. In addition, the government has set new terms and conditions of the concession agreement for the new concessions period aimed for improving the service.

d. Conflict Resolution

Yes, the Dispute Resolution Committee. Any matter or dispute arising out of the PPP agreement which cannot be settled by the parties through the Dispute Resolution Committee (DRC) shall be referred to an arbitrator prior to further reference to the courts.

V. ROLE OF PPP UNIT/CENTER

The implementation framework of PPP in Malaysia is based on the following: (i) centralised planning and processing at the PPP Unit, Prime Minister's Department (UKAS); (ii) decentralised implementation and monitoring by the Ministries and State Governments; and (iii) negotiation/standardisation of terms and conditions of concession agreement by the Public-Private Partnership Committee (JKAS). As such, there is a clear structure in terms of inter-agency coordination in the implementation of PPP projects in Malaysia. Coordination is effected via the Public-Private Partnership Committee (JKAS) and High Level Public-Private Partnership Committee (JTAS). These committees facilitate coordination between UKAS and other relevant central agencies and stakeholders before project proposals are presented to the Cabinet for decision. The agencies and stakeholders include: the Ministry of Finance, the Economic Planning Unit, Prime Minister's Department, the Attorney-General's Chambers, Department of Director-General of Land and Mines (Federal Land Commissioner), Valuation and Property Services Department and the implementing agency. Collaboration with private sector on PPP projects are based on the PPP Guideline which is available on UKAS' website. The Guideline explains and sets out the conceptual framework, payment principle, project valuation criteria, project implementation structure, role of implementing agency, the legal aspect, processing and implementation procedures and guide on preparation of PPP project framework.

North- South Expressway, Malaysia

I. PROJECT DESCRIPTION

a. Background

The North–South Expressway (NSE) is the longest expressway in Malaysia with the total length of about 775 km (482 mi) running from Bukit Kayu Hitam in Kedah near the Malaysian-Thai border (connects with Phetkasem Road (Route 4) in Thailand) to Johor Bahru at the southern portion of Peninsular Malaysia and to Singapore. The expressway links many major cities and towns in western Peninsular Malaysia, acting as the 'backbone' of the west coast of the peninsula. It is also known as PLUS Expressway, named after the highway's concessionaire, Projek Lebuhraya Utara Selatan Berhad (North South Expressway Project; abbreviated as PLUS).

This expressway passes through 7 states in the peninsula: Johor, Malacca, Negeri Sembilan, Selangor, Perak, Penang and Kedah. It provides a faster alternative to the old Federal Route, thus reducing travelling time between various towns & cities.

b. Project Rationale

To improve connectivity for business, trade and social purposes, this in turn positively contributes to the economy's growth and development. The project was delivered via PPP Build-Operate-Transfer (BOT) method. It is a bankable project based on the high demand and also because it is a user pay project.

c. Rationale for PPP

High demand, user pay, limited government financial resources, the need to accelerate projects which would impact positively to the economy's economic growth.

d. Objectives

Expanded access and improved connectivity

f. Scope

Expressway, toll booths, R & R facilities – all operated by the concessionaire. Project has been in operation and fully implemented.

I. Entity responsible for procuring the PPP (the principal)

The Ministry of Works Malaysia will be the entity responsible for this project.

II. STRUCTURE OF THE PROJECT

The project will be delivered via PPP BOT method. PPP vehicle obtains revenue from user pay – highway tolls.

III. FINANCING INFORMATION

- Proposals must fulfill the overall national Highway Master Plan
- Traffic Study – should fulfill requirement of Highway Planning Unit (HPU), Ministry of Works
- Source of funding – Term loan, Bond and Equity
- Debt to equity ratio – 80:20
- Project IRR – 10%
- Equity IRR - 10%
- Concession period – 42 years

IV. ROLE OF PPP UNIT/CENTER

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V. KEY LESSONS, EXPERIENCES AND OBSERVATIONS

- The existence of alternative road for user which may affect demand, but then again, road users should be allowed alternatives as consumers
- Issue of compensation for not increasing the toll charges
- Options for incremental toll charges need to be determined

Mexico Infrastructure Projects

I. PROJECT DESCRIPTION

a. Background

Mexico's Federal Government recently presented the National Infrastructure Program (PNI) 2014-2018, which includes a comprehensive infrastructure development strategy that aims to increase the economy's economic growth and productivity, based on three guiding principles:

- i) **Sustainable urban development**, promoting a comprehensive infrastructure strategy (mass urban transport systems, sustainable housing, roads, water and sewage and waste management). The Federal Government has established the Ministry of Agrarian, Territorial and Urban Development, which will coordinate different public policies like housing, urban development and mass urban transport.
- ii) **Balanced regional development**, through regional networks that facilitate connectivity and trade (highways, railroads, transmission lines, gas ducts and aqueducts).
- iii) **Logistic platform**, Mexico's competitiveness will be greatly enhanced if a competitive logistic platform is attained by upgrading the inter-connection of highway networks, ports, airports and cities.

The PNI includes 743 infrastructure projects for a total investment (public and private) in the sector of almost 600 billion dollars for the next five years, which could contribute, along with the recently enacted Reform Agenda, to higher economic growth between 1.8 and 2 per cent of GDP.

According to the Federal Law on Budget, Federal Agencies must identify those projects that will contribute the most to achieve the objectives of the National Development Plan and solve specific population's needs in the short, medium and long term. These projects must be registered in the Ministry of Finance and Public Credit, which certifies the projects net social benefits. Additionally, the Inter-Secretariat Expenditure Commission prioritizes infrastructure projects according to the following criteria.

- Social returns.
- Contribution to poverty reduction.
- Regional development.
- Synergies with other investment projects.

II. STRUCTURE OF THE PROJECT

The Mexican Government uses mainly two kinds of PPP's for infrastructure development (or a combination of both):

- i) **Concessions**. A private firm builds and operates the project and assumes construction and demand risk, without any government guarantee. Concessions are mainly used for highways, mass urban transport systems and airports. The payment for the private developer comes from the price of the service paid by the user; therefore this scheme does not entail any financial obligation for the Federal Government.

- ii) **PPP Contracts.** The demand risk is assumed by the government, who pays a specified amount to private developers, who provides services to the government or end-users. This scheme is primarily used for hospitals, prisons and water infrastructure. The payment is considered in the Federal Government Agencies' multiannual budget.

III. PROCESS ANALYSIS

a. Inception and Project Preparation

Mexico has a specific legal and regulatory framework for PPP's, which was designed to promote investment in infrastructure. This framework provides certainty to different actors involved in PPP's development and covers all the stages of a project lifecycle.

The current regulation seeks to promote the development of well-structured projects with high social returns. Specific measures have been adopted to address the need for studies. When the cost of these studies does not exceed 4% of the project's total investment they can be contracted without a bidding process.

This framework promotes project development by the private sector through an unsolicited project proposal scheme.

b. Feasibility

The structuring process includes different studies and analysis associated with:

- Technical feasibility.
- Land acquisition, road rights, concessions and permissions required.
- Legal feasibility.
- Environmental protection and urban development.
- Investment estimation.
- Economic and financial viability.
- Cost-benefit analysis including risk management and sensitivity analysis.
- The convenience of the PPP scheme.

This regulatory framework includes **the Cost-Benefit Analysis Guidelines**¹ for assessing projects' net social benefits; and the **Convenience of the PPP Scheme Guidelines**², which evaluate the convenience in terms of economy, efficiency and effectiveness of the PPP scheme.

Cost-Benefit Analysis Guidelines

The analysis must include, at least:

- Executive Summary.
- Current situation.
 - Supply and demand analysis.
- Situation without the execution of the project.

¹ These Guidelines are available at http://www.dof.gob.mx/nota_detalle.php?codigo=5328458&fecha=30/12/2013

² These Guidelines are available at http://www.dof.gob.mx/nota_detalle.php?codigo=5328552&fecha=31/12/2013

- Supply and demand analysis with the current infrastructure.
- Alternative solutions.
- Situation considering the execution of the project.
 - Description of the project, including physical characteristics and main outputs.
 - Alignment with the NDP and sector-specific national programs.
 - Total amount of investment, and sources of financing.
 - Supply and demand analysis through the project's lifetime.
- Project Evaluation.
 - Social Cost-Benefit Assessment. Each project is evaluated in order to gage its net benefits for society. This evaluation considers direct and indirect costs, benefits and externalities, the next indicators must be calculated:
 - **Net Present Value (NPV).**
 - **Internal Social Rate of Return (ISRR).**
 - Relevance of the period in which the project will start:
 - **The Immediate Rate of Return (IRR)³.**
- Risk Analysis.
 - All risks associated with the project must be identified, quantified and concrete measures to mitigate those risks must be defined.
- Sensitivity Analysis.
 - Analyze different stress scenarios and their impact over the main project evaluation indicators.
- Conclusions, annexes, and bibliography.

ii) **Convenience of PPP Scheme Guidelines**

For evaluating the convenience of the PPP scheme, the Value for Money methodology must be used. A PPP project yields Value for Money if it results in a net positive benefit to society which is greater than that which could be achieved through a public investment procurement route.

The Federal Government Agency responsible for the project, depending on the infrastructure sector: Ministry of Communications and Transportation (SCT), National Water Commission (CONAGUA), Ministry of Health, etc., determine the feasibility of the project based in the aforementioned studies.

PPP's that require federal budgetary resources must be authorized by:

- The Inter-Secretariat Expenditure Commission, which evaluates if they will contribute to achieve the objectives of the NDP and solve specific population's needs in the short, medium and long term.
- Congress.

c. **Procurement**

The PPP framework seeks to promote transparency and competition in a comprehensive procurement processes for construction and operation, including clarification meetings and site visits.

d. **Implementation**

³ First Year Net Benefits/Cost of Investment) determine the optimal time for the project to begin.

PPP contracts define the risk allocation between the parties, but remain flexible in order to cope with unforeseen events.

- Contracts can be modified for improving the infrastructure, the level of services or to recognize unexpected situations, only if adjustments do not involve risk transfer between the parties.
- Contracts must include a methodology for determining price variations.
- The determination of financial adjustments in the event that, during the term of the contract, the developer receives better financing conditions

e. Development

The main elements considered for PPP's execution are:

- The project construction must be according to the contract. If project developers do not comply with the contracted terms and conditions, the Government could take the management of the project. In the event of legal disputes, settlement through economic and technical expert committees and arbitration is envisaged.
- The legal framework allows the private investor to acquire the land, which speeds up the construction phase.
- Project developers can transfer project's rights (step-in rights) as guarantees, resulting in better conditions for infrastructure financing.

f. Delivery

The private partner participates in the design, development, construction operation and maintenance of the projects, depending on the type of project.

g. Exit

When the concession or contract expires, the Government could assume the project operation.

IV. FINANCING INFORMATION

Long-term financing for investment, including in infrastructure, has been challenged by developments in the global economy, including continued financial sector weakness, bank deleveraging, persisting downside financial risks and the increased level of risk aversion among the private sector. Under these conditions the Federal Government has taken several measures to promote infrastructure investment through domestic sources of funding.

The recently enacted Financial Reform, which amended 34 laws, will enhance credit allocation in an already stable and well capitalized financial system; this reform upgrades to law the Basel III principles. The reform seeks for competition in order to increase the supply of credit at better terms and conditions.

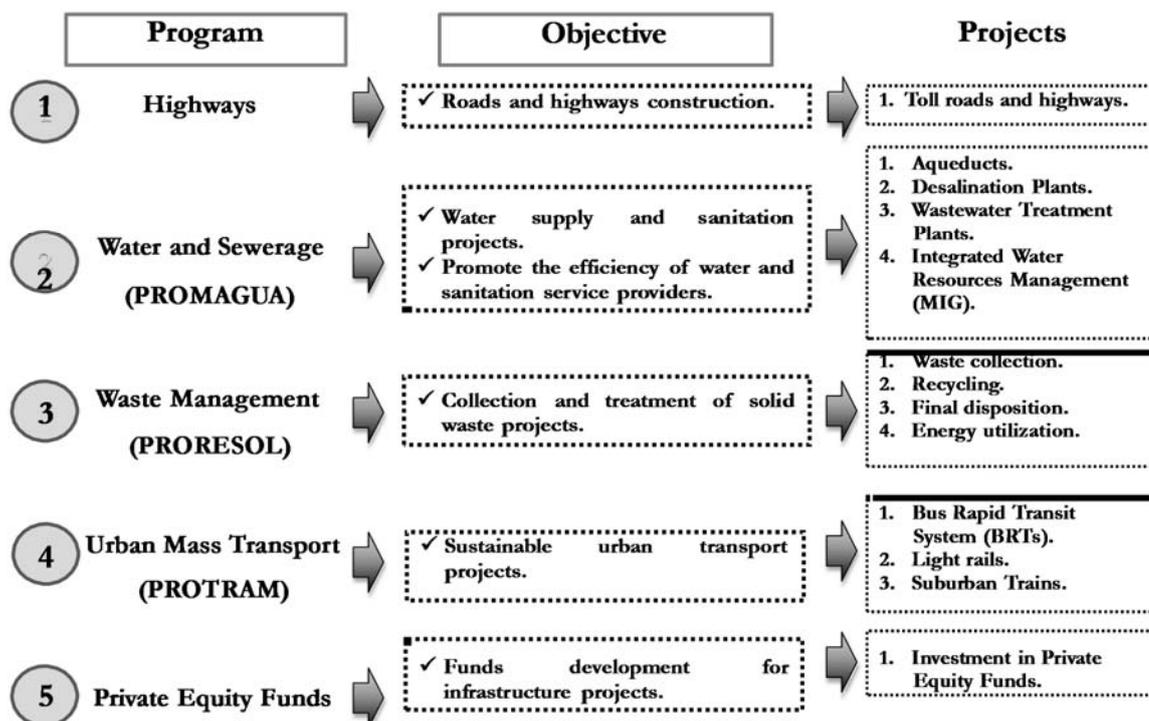
a. Development Banks

Mexico has Development Banks, in particular BANOBRAS, that provide long term financing to infrastructure projects. The recently enacted Financial Reform's objective is to reduce costs and promote efficiencies in credit origination, mainly for infrastructure and SME's, as well as to provide a new mandate for Development Banks, in order to foster financial market development and financial inclusion. In this area Federal Government's policy aims for more flexible risk taking entities.

b. National Infrastructure Fund

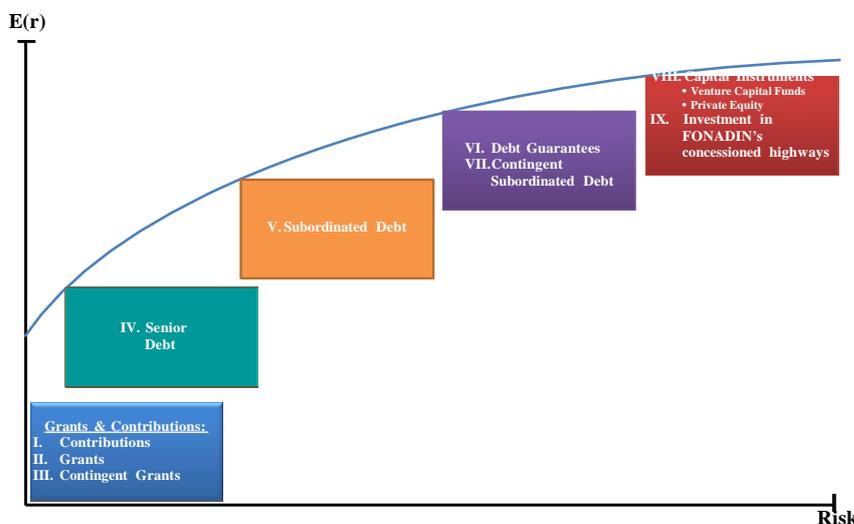
Federal Government has developed the National Infrastructure Fund (**FONADIN**) as its main tool to promote PPP project development, with the participation of all government levels (Federal, local and municipalities). FONADIN is a specialized project financing vehicle that promotes high social impact infrastructure projects with private sector participation.

FONADIN is the concessionaire of a network of 41 toll highways in operation, and 10 highways under construction. Toll income allows to finance new infrastructure projects with high social returns (using brownfield projects to finance greenfield). FONADIN supports different sectors of infrastructure through specific programs.



FONADIN is a flexible risk taking entity that can promote a wide range of infrastructure projects. The different funding modalities used by FONADIN include several financial alternatives such as guarantees, mezzanine loans and capital. This flexibility allows to provide the funding and risk sharing that a particular project requires to be developed and to complement its financing from the market.

FONADIN Financial Products



- I. Contributions.** Resources provided to public sector entities mainly for public works, land acquisition and studies. Maximum size: up to 50% of the project's total investment.
- II. Grants.** Resources provided in order to achieve the financial balance of a project, making private sector participation feasible. Maximum size: up to 50% of the project's total investment. The private sector must commit at least 20% of the total investment in equity.
- III. Contingent Grants.** Resources provided to cover the materialization of a risk component assumed by the public sector.
- IV. Senior Debt.** Traditional financing for infrastructure projects that complements private sector financing.
- V. Subordinated Debt.** Subordinated loans to complete projects financing mainly during the construction stage. Maximum size: up to 30% of the senior debt or up to 24% of the project's total investment.
- VI. Debt Guarantees.** Credit guarantees to facilitate private sector financing to the project. Maximum size: up to 50% of the senior debt.
- VII. Contingent Subordinated Debt.** Contingent credit lines subordinated to a senior debt. Maximum size: up to 30% of the senior debt or up to 24% of the project's total investment.
- VIII. Capital Instruments.** Equity contributions for infrastructure projects, up to 49% of the project's equity requirement. FONADIN also participates in private equity funds, up to 20% of the fund size.
- IX. Investment in FONADIN's concessioned highways.** FONADIN can develop additional highways for its own network.

FONADIN has developed a mechanism to prioritize infrastructure project development. This prioritization will favor projects that meet the following criteria:

- Located in regions with lower socioeconomic development (this will improve social equality, welfare and job creation in these regions).
- High social returns.
- Public resources are significantly leveraged by the private sector.
- Included in the general national strategy for infrastructure development.
- Located in entities with low budgetary resources for infrastructure development.
- Developed under the new PPP scheme.

When evaluating the risks of a particular project, FONADIN also takes into account:

- The developer's profile.
- The project's capacity to fulfill its financial obligations.
- Demand sensitivity.
- Construction and operation risks.

Box 1. Example of a FONADIN sectorial program: Federal Support Program for Mass Transit (PROTRAM).

PROTRAM was created to strengthen transport infrastructure in Mexican cities, towards a lower-carbon development path. PROTRAM supports urban transport infrastructure projects with high social returns, developed through PPP schemes with the participation of local governments.

This program supports mass transport infrastructure projects, including the following categories: Bus Rapid Transit systems (BRT), light trains, tramways, subways, suburban trains and terminals or intermodal transfer centers. The technology selected should be according to the characteristics of each city and its expected demand for transportation services.

One of the PROTRAM goals is to promote the sustainable development of the cities, which must carry out a comprehensive urban planning exercise, known as an Integral Sustainable Mobility Master Plan, to frame the overall transport policy. FONADIN, through PROTRAM, has authorized more than 690 million dollars for urban mass transport infrastructure projects.

http://www.fonadin.gob.mx/wb/fni/programa_de_transporte_urbano

PROTRAM projects involve public and private participation under different financing schemes and risk sharing.

Project Components	Stake Holders	Financing Scheme	Risks
Land	1. Local Government	Local Public Resources	Permissions and Licenses
Public Works (reserved lanes and induced urban works)	1. Local Government 2. Federal Government (FONADIN) 3. Development Bank 4. International Organizations	Local and Federal Public Resources	Increases in work execution costs
Infrastructure (Bus Stations, garages and systems)	1. Local Government 2. Private Investors 3. Commercial Bank 4. FONADIN (Credit Guarantee)	PPP Scheme	Demand risk, increases in operation and maintenance costs
Transport (Buses)	1. Local Government 2. Private Corporation 3. Development Bank 4. International Organizations	PPP Scheme	Bus drivers resistance and limited financing options for this sector

Nowadays, the World Bank is supporting Mexico's Government in analyzing several institutional arrangement alternatives to facilitate the implementation of an Urban Mobility National Policy.

c. Capital Market and Institutional Investors

Recent changes at the Pension Funds (**AFORES**) investment regime have allowed them to invest in private equity funds and productive projects through structured instruments called Development Capital Certificates (CKD's). Institutional Investors are able to diversify their resources in different financial infrastructure products in Mexico, such as Equity, Securities (CEBURES), CKD's, Real Estate Trusts (RETS - FIBRAS) and Private Equity Funds. Even though infrastructure projects match the maturity of institutional investor's portfolio, a more active involvement of local institutional investors and foreign specialized financing vehicles is needed to fully develop local capital markets and channel more resources into long-term project financing.

d. Public Investment

Mexican Government's public investment policy is oriented to increase the amount of resources channeled for long term financing with a particular emphasis in infrastructure, considering that investment in this sector brings important benefits: during the construction period, it stimulates aggregate demand and creates jobs; and when the project is finished it enhances the productivity and competitiveness of the economy.

The Federal Government investment strategy includes budgetary investment in different sectors; it includes general infrastructure and the investment carried out by state-owned enterprises, primarily oil and energy projects executed by PEMEX and the Federal Electricity Commission (CFE). In 2014 the Federal Government will invest more than 65 billion dollars in infrastructure, that represents 5% of the GDP; 1.5% higher than 10 years ago.

V. CURRENT STATUS AND KEY IMPLEMENTATION ISSUES

a. Status of implementation

The physical and financial progresses of infrastructure projects are reported to the Ministry of Finance and Congress by each responsible Federal Agency.

b. Key issues faced in implementation, including both strengths and weaknesses

One of the most common implementation issues is the land acquisition process, which sometimes delays the project development. However, the current legal framework for PPP's allows the private investor to acquire the land, which speeds up the construction phase.

c. Capacity of public and private partners to implement the project. Strengthening of capacity and the enabling environment

Mexico has a solid legal and institutional framework that promotes private sector participation in infrastructure development. In particular, it has the Public Private Partnership Act, which promotes proper distribution of risks between the public and private actors, as well as the efficient use of public resources within a framework of transparency and accountability, providing legal certainty to those involved in the projects.

VI. ROLE OF PPP UNIT/CENTER (IF APPLICABLE)

Considering that information openness and transparency are key factors for improving investment climate for infrastructure, the Federal Government has promoted a Public Investment Registry, which encourages strategic planning for investment.

Federal Agencies must identify the projects that will contribute the most to achieve the objectives of the NDP and address short, medium and long term population's needs. These projects, including Public-Private Partnerships (PPP's), that require Federal Government's resources must meet certain standards and minimum net social benefits to be registered in the Investment Unit of the Ministry of Finance. For PPP's, an additional analysis to evaluate its convenience is required.

The portfolio of projects is classified in the following sectors:

- i) **Economic Infrastructure:** water, communications, transports, energy, etc.
- ii) **Social Infrastructure:** health, education, science and technology, culture, etc.
- iii) **Government Infrastructure:** national security, public security and administrative offices.
- iv) **Others:** maintenance and acquisitions programs among others.

The projects are classified by State and by Federal Government Sponsor Agency. For each of the registered projects detailed information is included (see example below).

http://www.apartados.hacienda.gob.mx/sistema_cartera_inversion/index.html

Example: Bus Rapid Transit (BRT) Indios Verdes – Ecatepec ⁴			
Description	Bus Rapid Transit System from Indios Verdes to Ecatepec, in Mexico City Metropolitan Area, with a length of 24.4 km, two terminals, and 29 intermediate stations. The project includes 135 bi-articulated buses.	Project number	13093110007
Expected benefits of the project	To reduce operating vehicle costs; passengers' travel times; greenhouse gas emissions; and to improve users' security.	Type of Investment Project	Economic Infrastructure
Name	BRT Indios Verdes-Ecatepec.	State	State of Mexico
Total Investment	USD 180,004,871	Valuation period	30 years
Funding Sources:		Net Present Value	USD 230,593,013
Federal Budgetary Resources	0	Internal Rate of Return (real)	27.86%
State Resources	USD 50,070,769	Immediate Rate of Return (real)	31.00%
Municipality Resources	0	Discount Rate (real)	12.00%
Private Sector	USD 98,420,000	Cost-Benefit Analysis	Electronic file of the cost-benefit analysis
FONADIN	USD 31,514,365		

a. Mandate and function of PPP Unit/Center.

⁴ The information is available in Spanish and investment amounts are expressed in Mexican Pesos.

For those projects that require federal public resources, the Investment Unit of the Mexican Ministry of Finance certifies the projects' net social benefits based on the cost- benefit evaluation and the convenience in terms of economy, efficiency and effectiveness of the PPP scheme

b. Funding support for PPP Unit/Center

The Investment Unit belongs to the Mexican Ministry of Finance and Public Credit.

c. Performance of PPP Unit/Center how many projects have been approved and implemented since its establishment.

As of March 2014, The Investment Unit's portfolio contains more than 7,700 registered projects.

VII. KEY LESSONS, EXPERIENCES AND OBSERVATIONS

Major lessons and experiences as well as potential areas for improvement.

Mexico has several public and private sector vehicles to promote long term financing, as well as a recently revised legal framework that fosters private participation. Nonetheless, challenges remain regarding infrastructure development and financing:

- Institutional investor's participation in infrastructure is limited due to a lack of appropriate financing vehicles and infrastructure investment and risk management expertise. Also, current incentives among institutional investors provide for a low risk appetite for infrastructure products.
- The Government is working on designing financial vehicles that can efficiently promote the capital markets development for infrastructure financing, fostering the participation of institutional investors. This also considers the role of National Development Banks. In this regard a capital market guarantees scheme could be put in place.
- It is necessary to promote a greater participation of states and municipalities in infrastructure development and financing.
- The PPP legal framework should encourage technology transfer, entrepreneurship and financing in order to develop a bigger and better infrastructure platform. Nonetheless, it is a complex framework that will require appropriate training.

Toluca and Tlalnepantla Hospitals, Mexico

I. PROJECT DESCRIPTION

a. Background and Rationale for PPP

Outdated hospital facilities meant long lines and substandard care for the citizens of Toluca and Tlalnepantla, two densely populated areas in Mexico. Private sector best practices and investment were needed to improve health services to patients and users. To achieve this, the government hired IFC as lead advisor to the state's Social Security Institute, a health insurer, for an innovative public-private partnership for two new 120-bed hospitals.

b. Project Rationale

An expanded and modernized health care system was needed in Toluca, the capital of Mexico State and center of a rapidly growing urban area. Its geographic position and proximity to Mexico City created a major industrial zone in Toluca, but health care accommodations did not meet peoples' needs. Likewise, in Tlalnepantla, whose industrial zone is one of the largest in the economy, the lack of a modern public hospital forced residents to seek care elsewhere, or manage without critical services and facilities.

c. Key Outputs

The new hospitals will replace outdated facilities and provide patients with improved services while creating a business model for optimal health care in the state. Hospital operations are expected to be complete by June 2012 and the two hospitals combined will serve a population of about one million.

d. Government Subsidy

Public health care, fully or partially subsidized by the federal government, is provided to all Mexican citizens. But Mexico lags behind other comparable economies in health status and health care availability. Public hospitals account for the majority of hospital beds; most private hospitals accommodate fewer than 20 inpatients.

e. Multilateral Agency Support

IFC advised the Social Security Institute on the structure and implementation of a public-private partnership for the design, construction, capital financing, and management of two new public hospitals in Toluca and Tlalnepantla. IFC also introduced new "pay-for-performance" funding for hospital providers to improve the state health insurer's financial position and secure better results for patients. This model was designed to serve as an example for other states to replicate. The contracts allow for greater transparency in a context where public bidding still lacks transparency. This transaction, therefore, increased market confidence.

II. CONTRACT AND FINANCIAL INFORMATION

The contracts were signed in October and November 2010. In Toluca, the contract was awarded to the Promedex consortium, which will invest \$60 million on construction and equipment during the one-year period following completion of the final design. In Tlalnepantla, the contract was awarded to Marhnos, a privately held group. It is expected that Marhnos will invest \$60 million in construction and equipment during the one-year period following financial closure.

IFC received donor support from the Catalonia IFC Trust Fund, which funded the development of the PPP Transaction Structure Report.

III. PROJECT STRUCTURE

In phase one, IFC conducted an assessment of the existing local health care facilities and services to determine the optimal type, location, and size of the new facilities. In phase two, IFC prepared the tender and contract documents, conducted prequalification, and assisted in conducting the bidding process.

Under the contracts, the following responsibilities will be transferred to the private service provider:

1. Dialysis, imaging, gasses management and lab services.
2. Equipment installation and maintenance over 25 years.
3. Equipment consumables over 25 years.

a. Payment Scheme

Payment is based on a clear performance-based mechanism which will improve the quality of service for patients. This also improves the financial position of the state's Social Security Institute by reducing the hospital's overall costs by one-third.

By reinforcing the concept of buying services instead of assets, IFC structured a second generation of PFI contracts for social infrastructure in Mexico called "PFI+." With this model, the state will be responsible for the hospitals' doctors, nurses and medical supplies, while the winning bidder will oversee construction and provide facility and equipment management as well as delivery of most of the diagnostic services for the 25-year duration of the contracts. These PFI+ contracts will assure that the hospital remains in excellent physical condition and guarantees that diagnostic services will be available for the life of the contract.

The contract is also structured to be environmentally conscious. Silver LEED certification requirements will have to be met for the construction and operation of both hospitals. This will result in energy savings of at least 20 percent, compared to a traditional hospital in Mexico. These buildings and hospital operations are the first examples of "green" social infrastructure in Mexico, creating a model for future development. The hospitals are expected to contribute to emissions reductions to the equivalent of 10 tons of CO₂ per year.

IV. PROCESS ANALYSIS

a. Procurement

The Toluca contract was awarded following a competitive bidding process that included three consortia representing 11 companies, while the Tlalnepantla bidders included four consortia representing 15 companies.

The contract for the new General Hospital of Toluca was awarded to a consortium led by Prodemex. The Prodemex consortium is made up of Promotora y Desarrolladora Mexicana, SA de CV; Promotora y Desarrolladora Mexicana de Infraestructura, SA de CV; and Desarrollo de Hospitales PROAN, SA de CV.

The contract for the new General Hospital of Tlalnepantla was awarded to a consortium led by Marhnos. The Marhnos Group consortium is made up of Marhnos Construcciones, SA de CV; Marhnos Turismo, SA de CV; Inmar del Noreste, SA de CV; Proyectos Inmobiliarios, S de R.L.

V. EXPECTED POST-TENDER RESULTS

At each hospital, the partnership will deliver enhanced medical services to over 10,000 inpatients annually. The two hospitals combined will serve a population of about one million people in a formerly underserved area.

Estimated additional services to be provided to outpatients include over 180,000 consultations, 3000 surgeries, and 7,000 dialysis treatments per year per hospital.

The overall costs of the hospitals' operations were cut by one-third and attracted private investment of \$120 million.

The hospitals are expected to contribute to emissions reductions by about 10 tons of CO₂ equivalent per year.

Ciudad Victoria Hospital, Victoria, Mexico

I. PROCESS ANALYSIS

When the High Specialism Regional Hospital reached financial close in February 2008, it set new standards for PPP project structure in Mexico. The second project in the government's first-generation PPP hospital program, it called for the concessionaire to take on clinical risk by supplying medical equipment and maintaining it for five years, the "main point of contention" according to the lead sponsor, Mexican contractor Marhnos.

This was unprecedented in the economy and came soon after a scandal over faulty equipment at France's privately run Toulouse-Rangueil University Hospital. Eventually one of the sponsors, France's Dalkia, agreed to provide a corporate guarantee if liabilities exceeded insurance cover. Impressively, the legal tenor of the finance provided by Dexia is just two years short of the 25-year concession. Payment of the concessionaire is on an availability basis, with payments increased for the five-year equipment maintenance period.

II. CURRENT STATUS

Inaugurated ahead of schedule in March 2009, the 100-bed hospital serves about 980,000 residents—580,000 in Tamaulipas State and 400,000 in neighboring Veracruz and Hidalgo—referred from primary care centers and general hospitals, by providing the most specialized health care including neurosurgery, transplants, maxillofacial surgery and haemato-oncology. As a result, according to Mexican president Felipe Calderón, 30 million patients in Tamaulipas who have previously needed to travel to other states will have specialized health care in their region for the first time. Meanwhile, the federal government has pressed on with other hospital PPPs, and has continued to successfully procure and close projects.

III. KEY LESSONS

The choice of procurement approach for a technically challenging project is as important as that for a financially challenging one.

Atotonilco Wastewater Treatment Plant, Mexico

I. PROJECT DESCRIPTION

The Atotonilco Wastewater Treatment Plant is the largest infrastructure project in Mexico yet and has been cited as the biggest wastewater treatment project anywhere in the world, with an impact to match.

The Valley of Mexico is the most populous metropolitan area in the Americas, with over 20 million inhabitants in 2010, yet only about 6 percent of wastewater generated is treated. According to national water authority Conagua, this has caused the spread of toxic organisms and pollution of aquifers and surface water bodies as the septic water is dumped and reused.

II. PROCESS ANALYSIS

In 2009 Conagua launched a tender for a plant to treat 60 percent of the Valley of Mexico's wastewater. Federico Patiño, director of the state-owned national public works bank Banobras' investment bank notes: "It is more complex [than previous PPPs] because of its size. Also, there were only two proposals in the bidding process because it was more convenient for the companies to participate in association. Nonetheless, it was well-structured financially. This allowed the tender to take place successfully."

III. FINANCIAL INFORMATION

Despite its considerable cost, the 25-year concession project was closed without the support of a multilateral financial institution. From the outset Conagua relied on Banobras, a national development bank, to support the deal through its investment bank and through its national infrastructure fund, Fonadin. Normally Fonadin subsidizes up to 40 percent of the costs of PPPs; in this case, the threshold was raised to 49 percent on account of the project size and the relatively low tariffs charged to water users. The majority of capital remained in the form of debt and equity—Banobras leading the debt financing and attracting commercial banks in syndication—so that most funding is still dependent on the sponsors successfully completing the project. With the subsidy fixed at 49 percent during the tender process, the winning bid was chosen on the basis of the lowest tariff requested. The concessionaire is repaid, however, from Conagua budgets.

IV. CURRENT STATUS

Construction has been underway since 2011 on a 159-hectare site and the first phase is expected to become operational in May 2014. When it does, the plant will handle 23 cubic meters of wastewater per second, rising to 35 cubic meters during heavy rainfall. Mexico's overall water treatment rate is expected to rise from 36 percent to 60 percent, and 300,000 people living in areas irrigated by the wastewater will be protected from pollution. Other wastewater PPPs have since been closed in Mexico; three are currently in preparation or procurement.

Auckland South Prison, New Zealand

I. PROJECT DESCRIPTION

a. Background

In 2010, the New Zealand Government approved the Department of Corrections procuring a new, 960 bed, men's prison in Auckland as a Public Private Partnership (the Project). Under the PPP model, the private sector is responsible for the design, construction, finance, maintenance and custodial operation of the prison for an operating period of 25 years. The Project reached financial close in late 2012 with the SecureFuture Consortium.

The Department of Correction's target is to reduce national reoffending rates by 25 percent by 2017. Therefore a key driver for the Project was to leverage innovation from the private sector about how to operate a prison in a way that delivers improved custodial and rehabilitation outcomes.

b. Key Outputs

The key outputs and deliverables required from the private sector under the PPP contract are:

- Design and construction of a new 960 bed prison facility to accommodate prisoners with a mix of security classification, from low to high security.
- Provision of custodial and rehabilitation services.
- Provision of asset management and facilities maintenance services
- All financing required to deliver the Project over a 25 year operational period.

As part of the tendering process, SecureFuture proposed its monthly fixed fee for delivering the services listed above to the required standards. Consistent with New Zealand PPP policy, the present value of the stream of monthly payments could not exceed the present value of the Department's own forecasted costs for delivering the project using its traditional delivery models (the Public Sector Comparator).

Payments to the consortium are subject to a performance regime that penalizes poor performance and rewards the delivery of additional reductions in rates of reoffending.

c. Project Timelines

Key dates for the project are summarized in the following table:

Milestone	Date
<i>Project development and procurement process</i>	
Indicative business case approved	April 2010
Business case approved	November 2010
Invitation for Expressions of Interest (EOI) publicly released ¹	November 2010
Request for Proposals (RFP) to released to three shortlisted EOI respondents	March 2011

¹ On the Government Electronic Tender Service (www.gets.govt.nz)

Proposals received	August 2011
Preferred bidder appointed	February 2012
Contractual and financial close	September 2012
Project Implementation	
Construction completion	February 2015
Service commencement	May 2015
Contract expiry	May 2040

II. PROJECT STRUCTURE

a. Type of PPP

The Project used a Design, Build, Maintain, Finance and Operate (DBFMO) PPP structure. The partners involved in the Project include:

- Department of Corrections as contract principal
- SecureFuture special purpose vehicle (with initial equity contributions from Accident Compensation Corporation, InfraRed Infrastructure, John Laing Investments and Serco Group Pty)
- Serco as the prison operator, and custodial and rehabilitation services contractor
- Fletcher Construction Company as the design and construction contractor
- Spotless as the facilities maintenance contractor
- Senior debt funding provided by BNZ and ANZ

b. Control Mechanism

Legal ownership of the building and land is retained by the government with the consortium granted an exclusive license to use the prison to deliver the services that have been contracted for. Financial reporting of the Project by the Department of Corrections will be in accordance with generally accepted accounting practice in New Zealand. In particular, under the PBE IPSAS 32 accounting standard, the Department will report the asset and liability created by the PPP on its balance sheet.

c. Risk Allocation

A summary of the allocation of risks between the Department of Corrections and the consortium is summarized below

Risk	Department retains risk	Consortium retains risk
General Risks		
Specific law changes	✓	✓
General change in law	✓	✓
Force majeure events	✓	✓
Uninsurable risks	✓	
Construction insurance costs		Yes

Risk	Department retains risk	Consortium retains risk
Operational phase insurance costs	✓	
Financial Risks		
Underlying (base) interest rate movements	Yes	No
Interest rate credit and risk margins	No	Yes
Exchange rate movements	No	Yes
Refinancing margin benefit	50%	50%
Site Risks		
Unforeseeable contamination	Shared	
Ground conditions	No	Yes
Archaeological artefacts	Yes	No
Planning Approvals – delay of Contractual Close	Yes	No
Planning Approvals – impact of designation conditions on design (prior to Contractual Close)	No	Yes
Cost and responsibility of obtaining designation and outline planning consents	Yes	No
Treaty of Waitangi risks (risk that the land becomes the subject of a claim under the Treaty)	Yes	No
Commissioning (Operational Readiness)	No	Yes
Design Risks		
Inappropriate initial Design Specification	Yes	No
Design Delayed	No	Yes
Fitness for purpose	No	Yes
Construction Risks		
Project management cost estimates	No	Yes
Operational Interruption	No	Yes
Incorrect construction program estimates	No	Yes
Prime contractor faces financial distress	No	Yes
Industrial action	No	Yes
Operational Risks		
Input and labour costs exceed indexation	No	Yes
Prisoner related cost risk	No	Yes

Risk	Department retains risk	Consortium retains risk
Insufficient staff available	No	Yes
Change in Department-specific operating standards, legislation, regulations or Specification	Yes	No
Prison Management	No	Yes
Failure of electricity, water or other utility service provided by a third party	No	Yes
Utilities costs	Yes	No
Lifecycle Risks		
Availability	No	Yes
Industrial relations - FM staff	No	Yes
FM provider insolvency	No	Yes
Significant and deliberate prisoner damage to facility	No	Yes

d. Payment for Performance

The consortium will be paid on an availability basis subject to certain performance standards and outcomes being achieved. The consortium will not be exposed to demand risk for prisoner places.

e. Special Features

The contract for the Project included a unique payment-linked performance regime to incentivize the consortium to deliver the outcomes sought by the Department for the Project. In particular, the addition of charge events and an incentive payment was seen as an important means of incentivizing the consortium to reduce the incidence of harmful events within the prison and rates of reoffending by prisoners once they were released from the prison.

The performance regime for the Project has the following key features to incentivize delivery of the required service outcomes:

- Proportional payment deductions if any of the 960 required prisoner places are unavailable
- Payment deductions if certain performance standards or service outcomes (e.g. prisoner health or employment services) are not delivered
- Charges² if certain custodial events occur (e.g. prisoner escape)
- An additional incentive payment of up to \$1 million per annum for exceeding relevant

² Charges are financial penalties, like deductions, except that they are to be paid directly by the consortium to the Department and are, therefore, not capped at the total monthly payment that is due.

recidivism benchmarks drawn from across the Department's wider prison network.

Under the contract for the Project, the Department makes fixed monthly payments to the Securefuture consortium. The payments cover the cost of delivering all services as well as the risk adjusted return of capital to the Project's financiers. The monthly payments can be deducted up to 100 percent if the consortium does not meet its contracted performance obligations

In addition to financial deductions, performance failures attract service failure points which accumulate over a rolling nine month period. Certain contractual rights are granted to the Department if the consortium reaches predefined levels of accumulated service failure points. At the highest level, the Department has the right to terminate the contract for contractor default, subject to a specified remedy period. This regime ensures that the consortium is incentivised to address persistently poor performance.

III. PROCESS ANALYSIS

a. Inception and feasibility

The Department of Corrections assembled a dedicated project team that was directed by an experienced PPP practitioner. External specialist legal and financial advisors were procured.

In 2010 the New Zealand Government mandated that all core Crown agencies must consider alternative procurement (such as PPP) for infrastructure projects with a whole of life cost of \$25 million or more. All PPP projects must be approved by Cabinet following a two stage business case process. An important feature of this process is that the case for investing in the infrastructure must be established before determining whether or not to procure it as a PPP.

b. Procurement

The procurement of a new men's prison at Wiri was identified as having the attributes needed to qualify for consideration as a PPP. In summary, the new men's prison at Wiri had the following attributes which made it viable as a candidate for PPP:

- project size of more than \$100m;
- long-term service requirement (at least 25 to 30 years);
- ability to transfer risk to parties who are best placed to manage it;
- ability to bundle operations and design and specify requirements in terms of outcomes and performance;
- the potential to generate innovation in terms of both asset and service provision and provide a catalyst for public sector change; and
- likely market interest.

As part of the business case for the Project, a Public Sector Comparator (PSC) was developed which estimated the whole of life risk adjusted cost of the Department building and operating the prison using traditional procurement and public service delivery models. The net present cost of the PSC became the upper limit on the net present cost of the PPP contract and informed the affordability threshold that was published in the RFP document.

Several market sounding exercises were conducted as part of the business case development phase for the Project. The aim of the market soundings was to confirm market appetite for the Project and seek market feedback on the indicative project structure and key risk allocation. Market soundings were held with financiers, custodial operators, and construction and facilities maintenance contractors.

The procurement process involved an Expressions of Interest phase and a Request for Proposal stage. A maximum of three consortia with the capability and capacity were shortlisted to receive the RFP. At the conclusion of the RFP phase, consortia were required to submit fully funded proposals with conditions precedent to Financial Close.

Few constraints were placed on the formation of consortia. To be eligible to be shortlisted to receive the RFP, consortia were required to demonstrate to the Department's satisfaction that they could provide all of the services required to deliver the Project, including financing.

The preferred bidder was selected on the basis of a robust qualitative evaluation that was heavily weighted towards assessing the quality of the custodial and rehabilitation service models and outcomes. To be eligible for evaluation, respondents' proposals had to deliver the outcomes required for a whole of life cost that was the same or less than the published affordability threshold.

The key features of the procurement process were:

- Use of an Expression of Interest phase to shortlist up to three respondents to receive the RFP
- Use of an Interactive Proposal Process whereby the Department was able to provide feedback (within the bounds of probity) on each respondent's solution as it was developed
- No 'best and final offer' phase but resolution of critical issues prior to appointing preferred bidder
- Appointment of a reserve bidder as a contingency if contractual close could not be reached with the preferred bidder
- Reviewable design process to gain the Department's endorsement of final design documents post Financial Close

IV. Financing Information

The total cost of the contract is \$840 million in present value terms (compared with a Public Sector Comparator of \$1,010 million). Of this, approximately \$300 million relates to the upfront design and construction costs which were required to be financed by the private sector.

The Project was financed used a mix of debt and equity, appropriately geared to reflect the project's cash flows and risk profile. As at June 2014, the following companies had shareholdings in SecureFuture:

- Accident Compensation Corporation (30%)
- InfraRed Infrastructure (NZ) B.V. (30%)
- John Laing Investments NZ Holdings Limited (30%)

- Serco Group Pty Limited (10%)

Under the contract, step in rights are provided to senior lenders and the Department of Corrections if certain contractual conditions and performance obligations are not met and breaches are not remedied within the specified time frames.

V. CURRENT STATUS AND KEY IMPLEMENTATION ISSUES

The Project is currently under construction with Operational Commissioning of the Prison expected in 2015. Project governance involves both Department representatives and representatives from the Securefuture consortium.

VI. ROLE OF PPP UNIT/CENTER (IF APPLICABLE)

New Zealand has a PPP centre of expertise located within the Treasury. Its role is to support agencies to develop and execute PPP projects, with a particular focus on ensuring robust economic and financial assessment of PPPs and consistency on commercial terms and conditions. Treasury maintains a Standard Form PPP Project Agreement which forms the basis of Project Agreements for all individual projects.

A representative from Treasury's PPP unit led the commercial and financial work-stream for the Project from approval of the business case until financial close.

Since its inception in 2009 the Treasury's PPP unit has:

- Worked with agencies to develop and begin procurements for five major infrastructure projects
- Supported agencies to reach financial close on two project (three currently still in procurement)
- Updated and published the Standard Form PPP Project Agreement twice (current version three)
- Worked with the Inland Revenue Department to release public rulings on the tax treatment under the PPP contractual structure

VII. KEY LESSONS, EXPERIENCES AND OBSERVATIONS

The Department of Corrections completed a 'lessons learned' report for the Project. The key themes were:

- A PPP Project should ensure that it has a Project Team with the necessary skills and experience, supported by organisational commitment to good project and risk management practice;
- A PPP Project needs clear governance arrangements which ensure ongoing management of delivery and of risks – ministerial and senior management ownership and leadership is critical;
- PPP Projects come with additional probity risks. Careful management of these risks is required, but not so that this overshadows the procurement and evaluation processes; and
- It is important to ensure that the market is educated, and understands the expectations of the procurement and negotiation phases. Private sector parties may

come to the procurement and negotiation with experience of other markets outside New Zealand. They need to fully understand the New Zealand context, and must be able to transition appropriately from bid team to ProjectCo.

VIII. USEFUL LINKS

The following list of links provides useful information on the Project.

- Department of Corrections Project Page:
http://www.corrections.govt.nz/news/wiri_project.html
- Treasury draft Standard Form PPP Project Agreement
<http://www.infrastructure.govt.nz/publications/draftpppstandardcontract>
- Inland Revenue Department public rulings on Standard Form PPP Project Agreement
<https://www.ird.govt.nz/resources/d/6/d652ba00418d958d9b46fbacbc72692e/pu13005-13006.pdf>

Peruvian Amazon Waterway, Peru

I. PROJECT DESCRIPTION

a. Background

The Amazon River System provides the main transportation route in the Amazon region of Peru, due to its natural characteristics and to the lack of technical and financial opportunities to implement other means of transportation.

Comprising more than 2.5 kilometers of waterways, the fluvial system will make it possible to provide transportation to more than 90% of the passengers and cargo in the region. The fluvial system will be one of the principal means to development trade and generate income.

The River System, mainly formed by the rivers Marañón, Huallaga, Ucayali and Amazon, will become a capital Waterways System for the intercommunication among communities in the vast Amazon region, the development of which is actually limited due to restrictions to navigate on different points of its course such as low water depth, morphologic changes, palisades and other elements. Besides restricting the development, factors such as increasing cost of fluvial transportation, disorganized transit brought about by the lack of a control and monitoring system that would ensure the safety of passengers and goods in transit 24 hours a day, 365 days a year makes it all the more difficult.

b. Objective of the Project

The development project of the Waterway River System of the Peruvian Amazon basically consist of establishing a system capable to develop and keep the navigation in secure conditions 24 hours and 365 days of the year, in the scope of rivers that compose this system, as the Huallaga, Marañón, Ucayali and Amazonas Rivers.

To reach this goal, the concessionaire shall render the “Standard Service” that includes the following activities:

- Provision of a navigation channel according to the conditions established in the concession contract, through dredging missteps.
- Provision of information for navigation, through digital information loadable in a GPS.
- Provision of a navigation channel free of logs.
- Provision of information of water levels, through a capture and recording system of water levels in a network of limnometric automatic stations installed in the rivers of the Amazon Waterway.

The interested party should credit that it has a minimum net equity of US\$ 50,000,000.00 (Fifty millions and 00/100 American Dollars), that should correspond to the last exercise, and to the average of net equities of exercises of the last three years.

c. Entity responsible for procuring the PPP

Ministry of Transport and Communications

d. Status

In the first semester of 2014, the Bidding Terms and the final version of the Contract have been published. The contract awarding is scheduled on October 2014.

e. Qualification Requirements

Interested parties (specially the strategic partner) should have experience in dredged and should comply with the following requirements:

1. Seniority in the experience in dredging works (maritime and/or fluvial): ten (10) or more years since the first dredging contract, to the date of submission of the qualification.
2. Works in fluvial waterways and/or fluvial navigation channels: three (3) works of 1.000.000 m3 each one (without seniority limit).
3. Volume of dredging works performed (maritime and/or fluvial): 1.000.000 m3 annually in average, in the last five (5) years to the date of submission of the qualification.

According to the terms and conditions established in the concession contract, the strategic partner should have and keep a minimum participation of at least 35%, and may not transfer it or assign it so as to have a lower participation than that established.

f. Stakeholders

1. Ship owners
2. Native communities of Amazonia
3. Chamber of Commerce of main cities of Amazonia
4. The Navy
5. The Fluvial Navigation Office of Loreto Regional Government
6. Aquatic Transportation Office of Ministry of Transport and Communications

g. Subsidies

Fluvial transport toll includes subsidies.

h. Environmental aspects of the Project

The project takes place in the middle of the rain forest located in the Peruvian Amazon. The Amazonia is a special place with hundreds of species (woodlands, wildlife, etc.), most of which are protected by the government including rivers. Also the Amazonia harbors natives communities like Boras, Machigüengas, Camicuros, Yaneshas, etc.

The project will not have an impact in the river's equilibrium, since the dredging activities reallocate the sandbar where rivers are less deeply from places where rivers are more deeply.

i. Main Project Risks

The main risk of the project is the river sedimentation which will be carried out by the Operator.

II. STRUCTURE OF THE PROJECT

The type of PPP project entails a DBMFO type of PPP. Parties involved in the transaction would be the Ministry of Transport and Communications (Public Partner) and the Dredging Specialized Operator (Private Partner). As a Greenfield project, the demand risk will be carried out by the Government. The construction and operational risks will be carried out by the Operator.

The participation of the Transport Regulator will also be significant since they will be in charge of supervising the application of Concession Contract Terms by the Operator.

According to the Peruvian PPP specification, this project is categorized as a co-financed– the Peruvian Government represented by the Ministry of Transport and Communications shall pay the Operator fees for its Standard Service and the Government shall apply a social tariff.

III. PROCESS ANALYSIS

a. Starting with the feasibility studies

The feasibility studies examined the scope of the hydraulic engineering of the project, along with it the environment and social impact assessment. As part of the feasibility studies Public hearings with natives communities were also carried out, this is necessary when obtaining the environment clearances.

Equipment required consists in two dredges, one to the open dredging and the second for the maintenance dredging. The project will also require liminimetrics stations.

The Project was assigned by the Ministry of Transportation and Communications (MTC), as part of a strategy for the connection with Brazil, it begin in the Paita Port, then continue to railroad “IIRSA Norte” and then continue with de Waterway.

At MTC’s request, the Project was incorporated by PROINVERSION and assigned to the PRO INTEGRACION Committee, a PROINVERSION subordinate body responsible for the conduction of the process.

Due to its co-financed nature, the feasibility of Project requires the approval of the National Public Investment System (SNIP), a Peruvian Government mechanism applied to obtain a certain level of social benefits for the population in project influence areas.

b. Tender bid support

PROINVERSIÓN hired an international consultant to promote the project. So the project got the interest of Asian, European and South American Investors.

c. Concession Contract Approval

Finally, we must add that several Government organizations have participated in the process, having been required to issue favorable opinions on the final version of the Concession Contract:

- Ministry of Economy and Finances
- Ministry of Transportation and Communications
- Supervisory Agency of Investments in Public Transportation - OSITRAN
- Comptroller General of the Republic, in charge of preparing a Preliminary Report

d. Concession Schedule

Concept	Date
Final version of the contract approved by the Committee	First half of September 2014
Delivery of the final version of the contract approved by PROINVERSION's Steering Council	Second half of September 2014
Proposal Submissions	First half of October 2014
Award	Second half of October 2014
Bid Closure	December 2014

IV. FINANCING INFORMATION

a. Estimated Investment

The total estimated investment is US\$ 69 million

b. Government payment

The concession term is for twenty (20) years. The Ministry of Transport and Communications in behalf of Government will pay The Operator, for the CAPEX, a fixed amount named PAO, and for the OPEX, a fixed amount named PAMO. The pre-investment period will take three (3) years, during this time– The Ministry of Transport and Communications will not pay anything to the Concessionary. Starting year four, the Ministry of Transport and Communications will pay PAO for the next five (5) years, and PAMO for the next seventeen (17) years.

V. KEY LESSONS

The delayed to deliver the project was caused by the Regulator, who needed more than five month to define a tariff system regulation, also the MTC's decided to issue a law in order to charge a toll tariff because is a new public service.

Line 2 – Basic Network of the Metro Lima and Callao, Peru

I. PROJECT DESCRIPTION

a. Background

After Brazil and Argentina, Peru is the third largest South American economy, featuring a surface area of 1.28 million square kilometers, 27 million inhabitants, and a population density close to 21 people per square kilometer.

Peru's extensive and mega-diverse territory is strategically located in the center of South America, along the largest ocean on the planet. Its geographic location determines its potential as a productive and commercial hub in the region, a bridge linking South American markets with the United States and Asia.

Peru's capital is the largest city in the region: Lima, with 9 million inhabitants. The Lima Metropolitan Area, also known as Lima-Callao, is a coastal metropolis that extends from North to South, along the Pacific Ocean shoreline.

Lima is located at the confluence of the main highways of the economy. It is connected to all the coastal cities by the Pan-American Highway, which runs parallel to the sea from Tumbes in the North (border with Ecuador) to Tacna in the South (border with Chile). Cities in the Highlands are reached via the Central Highway.

Over the last few years, the urban area of Metropolitan Lima has sprawled in a swift and disorderly way, without urban planning and control, a phenomenon that is reflected in the fact that recent road construction policies have tended to prioritize infrastructure in favor of private transportation, rather than mass public transportation projects. The result is an increase of private cars, buses, traffic jams, traffic accidents, longer commuting times, more bus transfers, deviations to local roads, collective stress and other consequences.

b. Rationale

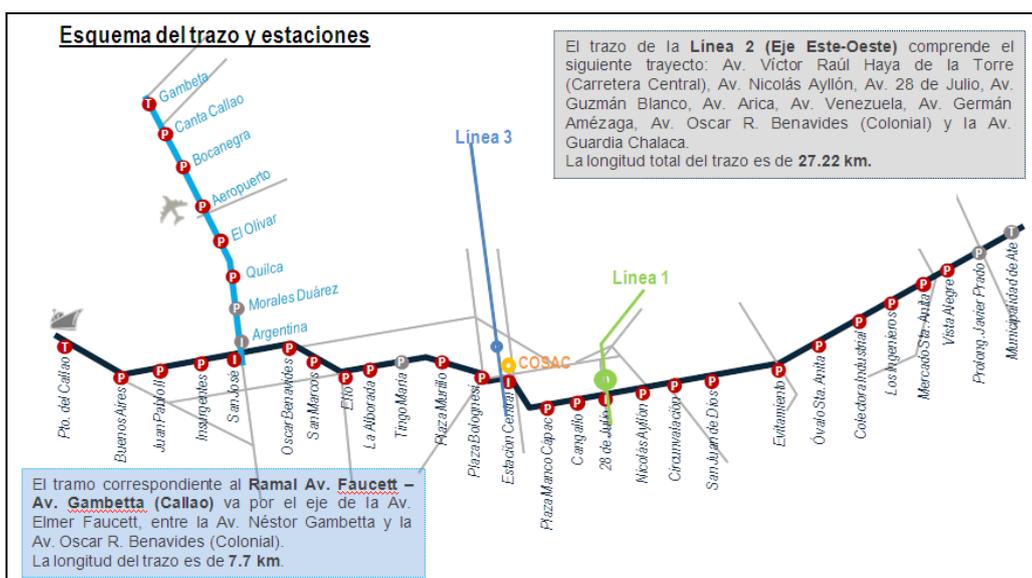
The quality of urban public transportation services is closely related to travel times, service costs, conditions under which the services are provided (speed, reliability, safety, etc.) and external factors (accidents, health damages from pollution, etc.).

To address the deficiencies of the mass transit system, the Government of Peru, by Supreme Decree No. 059-2010-MTC of December 24, 2010, approved the Basic Network of the Metro of Lima - Electric Mass Transport System of Lima and Callao, amended by the Supreme Decree No. 009-2013-MTC. The system comprises six (06) referential Lines, including the Line 2 and Av. Faucett - Av. Gambetta Section of the Basic Network of the Metro of Lima and Callao Project, which will connect the East (Ate) and the West (Callao) of Metropolitan Lima.

Based on these measures, the Ministry of Transportation and Communications has appointed the Private Investment Promotion Agency (PROINVERSION) to conduct any studies relating to the project's feasibility, promote and grant the project in concession, through PROINVERSION's National Public Investment System.

The Project consists of the development of a modern, mass public, underground Metro transportation system spanning 35 Km on the East-West Axis (Ate-Lima-Callao) and in the Av. Faucett section connecting the Jorge Chávez International Airport, and is intended to:

1. Improve urban dynamics in Lima and Callao
2. Prevent over expenditure derived from the obsolescence of vehicles, lower fuel costs, environmental pollution and its harmful effects.
3. Significantly reduce travel times and unnecessary waste of man-hours for its users, caused by widespread traffic congestion.
4. Be interconnected with other transportation systems, such as COSAC (*Metropolitano*) and Lines 1 and 3 of the Metro of Lima and Callao.



Line Layout and Stations

Line 2 (East-West Axis) runs along the following avenues: Av. Víctor Raúl Haya de la Torre (Central Highway), Av. Nicolás Ayllón, Av. 28 de Julio, Av. Guzmán Blanco, Av. Arica, Av. Venezuela, Av. Germán Amézaga, Av. Oscar R. Benavides (Colonial) and Av. Guardia Chalaca. The total length of the section is **27.22 Km**.

The **Av. Faucett - Av. Gambetta (Callao) Section** runs along Av. Elmer Faucett, between Av. Néstor Gambetta and Av. Oscar R. Benavides (Colonial). The length of this section is **7.7 km**.

The Project has been promoted through a PPP under a Concession, as provided for in Legislative Decree No. 1012, its regulations, and supplementary and amending provisions. The Ministry of Transportation and Communications will act as Project Grantor. The contract type established in the Concession scheme is a DFBOT Contract (design, finance, build, operate, and transfer), considering that the Project financing will be partial in respect of the total investment.

The Concession will be co-funded by the Peruvian Government and comprises the design, financing and construction of the concession works, the provision of equipment and rolling stock, and the operation and maintenance of the Project.

c. Rationale for PPP

The decision of conducting the Project under a PPP is based on the following criteria:

1. Minimized risks for Bidders.
2. An appropriate integration between the construction and operation of the Concession, providing more attractive incentives to maintain high quality levels in the works and services, since quality is what will determine future maintenance requirements.
3. A reduced risk of completion of the works, since the Concessionaire is also responsible for operating the concession, and, as such, must comply with the deadlines established for the completion of the works.
4. Less delays in the beginning of the Concession, since the promotion process is much faster than for other types of procurement (public works).
5. The construction risk is fully transferred to the Concessionaire, since construction quality is critical to meeting the required high levels of service during operation.

In addition to the aforementioned criteria, it is important to note that the Project has been declared viable by the National Public Investment System, a Government mechanism that enables projects to use investment resources with consideration to social sustainability. These aspects have also determined the conduction of a Value-for-Money analysis, in order to demonstrate that the Project offers more benefits being conducted under a PPP, compared to its execution through public works.

The Bid Stages to grant the Project in concession were:



In an advertisement published on January 11 and 12, 2013, PROINVERSION's PRO INTEGRACION Committee convened interested parties to participate in the Public Bid for Comprehensive Projects for the concession of the Project which, on March 28, 2014, was awarded to **Consorcio Nuevo Metro de Lima**, a consortium formed by Cosapi S.A., Salini Impregilo S.p.A, Iridium Concesiones de Infraestructura S.A., Vialia Sociedad Gestora de Concesiones de Infraestructura S.L, Ansaldo Breda S.p.A. and Ansaldo STS S.p.A. Finally, the Project's concession contract was signed on April 28, 2014.

II. INVESTMENTS

The investments for the Project, including VAT, amounts to US\$ 6.62 billion. However, this amount is comprised of three stages.

The first two stages, amounting to US\$ 5.827 billion from the total, are mandatory investments considered ongoing during the Public Bid, while the third stage involves a total investment of US\$ 793 million, mainly intended to purchase additional rolling stock, to be disbursed when the maximum load capacity per hour per direction on Line 2 reaches 28,800 passengers, with frequencies of 150 seconds.

The operation of Line 2 and the Av. Faucett section will initially involve 42 six-car trains (35 trains on Line 2 and 7 trains on Line 4) to meet a demand of 660,000 passengers per day. Rolling stock will progressively increase to serve up to 86 six-car trains (77 trains on Line 2 and 9 trains on Line 4).

III. SOCIAL BENEFITS OF THE PROJECT

- Less travel hours, increasing the productivity of Line 2 users.
- Integration of population in remote areas to urban interest centers, increasing the productivity of the urban labor market.
- Reduction of health threats and medical care expenses, due to lowered pollution from combustion fumes and noise pollution.
- Reduced stress in passengers and drivers, compared to stress levels in the current traffic conditions.
- Less traffic accidents after the construction of the Project.
- Likely reduction of crime rates due to a more organized traffic and the presence of citizen safety officers in stations.
- Likely increase of economic activity (businesses) in the areas surrounding stations and the influence area, caused by their greater accessibility.
- Better urban landscape vision.
- Higher road education to reinforce the concepts of order, respect, cleanliness and organization, and to learn the appropriate use of the new transportation system.
- Generation of jobs during the execution and subsequent operation of the project, for skilled, semi-skilled and professional labor.
- Savings for pedestrians, who will use public and not particular services.
- Positive impact on land along the Project line; improvement of environmental quality, accessibility, more green areas, etc.

IV. FINANCIAL INFORMATION

a. Investments

The Concessionaire agrees to execute the First and Second Stages of the Project (US\$ 5.827 billion). Due to the scope of the investments, the Peruvian Government has decided to participate and co-finance the concession with a contribution of up to US\$ 3,864.17 million, to be paid over the progress of the works. I.e. the Concessionaire will reach a progress milestone that will be paid for after its completion has been verified by the Grantor, with the favorable opinion of the regulating institution (OSITRAN).

Additionally, a part of the investment in the two first stages must be financed by the Concessionaire (US\$ 1,473.32 million), an investment to be recovered by the Concessionaire from the fees collected from the public service users starting from the date of commissioning of the Concession.

The difference between investment amounts is determined by expropriation expenses and interferences and expenses made by the Grantor (US\$ 551.83 million). It is important to note that the co-financed amount is a component of the competition factor, where the Concessionaire proposed an amount of US\$ 3.695 million).

b. Operating and Maintenance Costs

According to the projected demand computed in the feasibility technical study, the income earned over an approximate period of 15 years will cover only the investment amount financed by the Concessionaire. For this reason, any operation and maintenance costs will be refunded by the Grantor to the Concessionaire by a transaction called RPMO (Spanish initials for Retribution for Maintenance and Operation).

The amount will be paid every two months; accordingly, the maximum amount to be refunded every year will be US\$ 134 million, a value that has also been considered as a component of the competition factor. For this reason, the actual amount to be refunded is US\$ 108.9 million, as established in the Concessionaire's economic proposal.

Additionally, the RPMO can be described as a value formed by several components which are also proposed by Bidders. They are:

1. Fixed operating and maintenance costs
2. Variable electricity supply costs
3. Variable rolling stock maintenance costs
4. Variable rolling stock general review costs
5. General, unforeseen and other costs

V. PROCESS ANALYSIS

The Project was assigned by the Ministry of Transportation and Communications (MTC), as part of a strategy for the improvement of urban transportation in Lima and Callao.

At MTC's request, the Project was incorporated by PROINVERSION and assigned to the PRO INTEGRACION Committee, a PROINVERSION subordinate body responsible for the conduction of the process.

Due to its co-financed nature, the feasibility of Project requires the approval of the National Public Investment System (SNIP), a Peruvian Government mechanism applied to obtain a certain level of social benefits for the population in project influence areas.

The declaration of viability by SNIP required the preparation of feasibility studies; for this reason, the services of an international-level consultant, with sufficient experience to conduct these studies, were engaged.

Additionally, the Consultant will be responsible for the promotion and financial structuring stages of the Project, for which proven experience in this type of project was also a requirement.

The consultant was hired in an international bid where its experience in study preparation and structuring and promotion of projects similar to this Project was assessed.

It is worth noting that the Project is also supported by an environmental impact study, which allows both the Grantor and the Concessionaire to identify and develop environmental liabilities, and determine the locations to be used for the execution of the project.

Finally, we must add that several Government organizations have participated in the process, having been required to issue favorable opinions on the final version of the Concession Contract:

- Ministry of Economy and Finances
- Ministry of Transportation and Communications
- Supervisory Agency of Investments in Public Transportation - OSITRAN

- Comptroller General of the Republic, in charge of preparing a Preliminary Report

VI. KEY LESSONS

- The design of rolling stock and stations must ensure good service according to demand growth.
- More geological studies in order to reduce construction risks.
- The proposed execution of works should minimize negative externalities to parties, for it should be required in the technical proposal to the execution of works was made in 100% with TBMs.
- The pre-investment studies were performed in parallel with the development of the Concession Agreement.
- Would it be important, because of the magnitude of the project, to provide sufficient publicity to the public opinion about the benefits of the project from the start of the bidding process.

General San Martin Port Terminal, Peru

I. PROJECT DESCRIPTION

a. Background

The “General San Martin” port terminal is located in the department of Ica, province of Pisco, Paracas district and in a town called Punta Pejerrey, 280 km south of the port of Callao. The port features a 700-meter long marginal pier with four mooring docks. It was built in 1969, is naturally protected from breakers and enjoys a balmy climate nearly all year-round. Currently, mooring docks 1 and 2, located in the north of the terminal, are being repaired by the National Port Company (ENAPU). After a successful track record in port concessions, the Peruvian government decided to build this port as a PPP.

The project will facilitate commerce in the south coast of Peru. The port is located in the department of Ica, a region with a significant agribusiness activity that requires port services. Its influence area is formed by 3 regions: Ica, Ayacucho and Huancavelica; with a total extension of 87,274 km and is home to 1.7 million of inhabitants.

b. Objective

The key objectives of the project are: to expand access and to guarantee the operation and maintenance of the “General San Martin” port terminal.

The concessionaire is responsible to deploy an investment plan in four (4) stages, with the objective to increase the capacity of the port. The stages are the following:

STAGE 1: Initial Works

Phase 1: Implementation of port equipment and infrastructure

Estimated investment: US\$ 48.5 million (VAT not included)

Equipment: it must include, at least, the following:

- Equipment for general loading: 1 port tractor, 1 20-ton forklift, 40-ton forklift and 3 60-ton trolleys.
- 2 mobile cranes on 50-ton capacity wheels, at 25 m
- 1 mobile absorber for clean bulk grains
- 1 40-ton lattice crane or equivalent

Infrastructure:

- Multi-purpose mooring: entails construction and modernization of moorings N° 3 and N° 4.
- Storage yard: including storage yard space for bulk and other cargo, construction of ancillary infrastructure in the storage yard, demolition of deposit N°3 and rehabilitation of deposit N°2.
- Outer port: including the construction of the outer port area to allow for the entry and exit of cargo vehicles.
- Dredging: It includes the execution of activities to reach and maintain a depth of less than 12 meters in the multi-purpose mooring, maneuvering areas and entry channel.
- Ancillary facilities: It includes reshaping the administrative building, the Customs facilities and other facilities as applicable.

- Electrical interconnection: It includes the execution of works and the implementation of equipment required to connect the GSMPT (General San Martín Port Terminal) with the Mantaro Interconnected Power System.
- Water Supply: It includes the execution of works and the implementation of equipment required to connect GSMPT with the public water supply system or any other alternative to secure a continuous water supply to the GSMPT.

STAGE 2: Demand-based Works

Phase 2: To be executed when the GSMPT (General San Martín Port Terminal) reaches a total demand of 2,500,000 ton/year.

Estimated investment: US\$ 8.4 million (VAT not included)

Phase 2 is required whenever the demand level (2,500,000 ton/year) is reached within one calendar year over the twenty first years of concession. Investments include:

Infrastructure:

- Modernization of piers N°1 and N°2, the mooring dock for containers will be 350m long and 36m wide, with capacity for the installation of gantry cranes, prepared for 14 m.
- Dredging extension: the minimum dredging level will be reaching a depth of 12 m in the maneuvering area.

Port equipment:

- 1 mobile crane on 50-ton capacity wheels, at 25 m
- 3 45-foot container frames
- 3 yard tractor with capacity of 27-ton at the drawbar.

Phase 3: To be executed when the GSMPT reaches a demand of 60,000 twenty-foot equivalent unit (TEU) per year.

Estimated investment: US\$ 7.1 million (VAT not included)

Phase 3 will be applicable provided that the execution of Phase 2 has been completed and the demand level (60,000 TEU per year) is reached within one calendar year over the twenty first years of concession. Investments include:

Infrastructure:

- Enlargement of the container yard, with an initial area of 4.0 ha.
- Filling of the container yard reinforced with piles, gravel or a similar material.
- Dredging extension: the minimum dredging level will be reaching a depth of no less than 14 m in the mooring side of the containers' dock, maneuvering areas and entry channel to the terminal.
- Transfer the pier mobile crane and the equipment that are in the multi-purpose mooring to the containers' mooring.

Equipment: It must include, at least, the following:

- 1 gantry crane
- 2 RTG cranes
- 2 Reach – Stacker with capacity to lift 45-ton containers in piles of 5 in the first row.
- 3 45-foot container frames
- 1 Side Pack, container lift for empty spaces to stack at least 5 levels of height.

Phase 4: To be executed when the GSMPT reaches a demand of 225,000 ton of clean grains per year (edible grains).

Estimated investment: US\$ 39.3 million (VAT not included)

Phase 4 will be applicable provided that the demand level (225,000 ton of clean grains per year) is reached within one calendar year over the 20 first years of concession. Investments include:

Infrastructure:

- Enlargement of the storage year to bulk and other cargo until reaching a surface of 5.25 ha.

Equipment:

- Automated unloading system for clean bulk grains (absorber, conveyor belt and silo) or any other alternative investment allowing for the fulfillment of the service levels required for this stage.

c. Entity responsible for procuring the PPP

Ministry of Transport and Communications

d. Status

The project was awarded on April 30, 2014. The bidding process closure (contract signing) is programmed for the second half of 2014.

e. Qualification Requirements

To be considered a bidder, the financial, technical, legal and property requirements to be fulfilled were indicated in the document of Terms and Conditions. These requirements were the following:

Financial requirements: the Bidder must demonstrate that it has a minimum Net Equity of seventy million dollars (US\$70,000,000), which should correspond to one fiscal year closed in the last three (3) years.

Technical requirements: the Bidder must demonstrate that it has, in one or more port terminals, a total annual movement equal to or greater than four million six hundred thousand (4,600,000) tons of cargo. In at least two (2) of the port terminals submitted by the Bidder, experience must be demonstrated in handling three or more types of cargo. For this, it will be considered the movement of break bulk cargo, cargo in containers, solid and liquid bulk and RO-RO.

Movements due to transshipment will also be considered. The experience demonstrated must correspond to activities performed in a period of twelve continuous months in the last three (3) years. The proof of meeting the technical requirements referred to above can be obtained in any of the following situations:

1. As a Port Administrator
2. As a Port Operator
3. As a Logistical Operator in a Consortium with a Port Administrator and/or Port Operator
4. Consortium of a Port Administrator and a Port Operator

In all cases mentioned, accreditation may be obtained directly in case the Bidder is a single legal entity.

In the case where the Bidder is a consortium, accreditation can be obtained through the accumulation of experiences of up to two members of the consortium, as long as at least 60% of the accredited experience corresponds to one single member, to be considered as the "Strategic Partner".

In order to demonstrate the technical and operational experience demanded, the experience of the companies linked to the Bidder may be considered, assuming this is a single legal entity, or of the members of the consortium if applicable. However, in no case can the same experience be accredited more than once.

In all the situations indicated (i, ii, iii and iv), the experience demonstrated by the "Strategic Partner" should correspond to companies in which the experience holder has or has had Effective Control.

f. Stakeholders

1. Civil Society
2. Ship owners
3. Creditors
4. The National Government
5. Companies benefited from the infrastructure
6. The Regional Governments benefited from the infrastructure
7. Constructor
8. Operator

g. Subsidies

The project does not include subsidies. Public funds are not used in co-financing the concession.

h. Environmental aspects of the Project

The project is located in the zone of the "Paracas National Reserve"; the project has been qualified in a Preliminary Environmental Study. This preliminary study concludes that the project requires a detailed environmental study which will be completed after the award. The project has the favorable opinion of the "National Protected Areas Service", which is the national authority.

i. Project Risks

The main project risk is the construction risk which will be carried out by the Concessionaire. Investment is in relation to demand.

II. STRUCTURE OF THE PROJECT

The project will be delivered through a DFBOT or a "design-finance-build-operate-transfer" PPP contract. The parts of the contract are, the Ministry of Transport and Communications on behalf

of the State (grantor), and the private Operator (concessionaire). As a brownfield project, the demand risk is carried by the.

It is important to explain the participation of the Transportation Regulator (OSITRAN) which is responsible for overseeing compliance with the terms of the Concession Contract by the Operator

The Project obtains its revenue through direct user charging, there is a regulated fees system described in the concession contract.

According to the Peruvian PPP legal framework, this project is categorized as a self – sustainable concession, so the concession generates its own revenues and does not need any additional public support.

III. PROCESS ANALYSIS

a. Starting with the Technical Studies

The final report to identify the infrastructure needs and port equipment.

The bidding process was commanded by PROINVERSIÓN (Private Investment Promotion Agency). PROINVERSIÓN assigned the promotion process to an internal special committee named PROINTEGRACIÓN which works with the head of project in port affairs. Internal (PROINVERSION's staff) and external advisors took part in structuring the concession process.

During the structuring of the project, PROINVERSIÓN interacted with all stakeholders, especially with institutions of the Peruvian government.

b. Concession Schedule

Concept	Date
Final version of the contract approved by the Committee	February 5, 2014
Delivery of the final version of the contract approved by PROINVERSION's Steering Council	April 7, 2014
Proposal Submissions (technical and economic proposals)	April 24, 2014
Award	April 30, 2014
Bid Closure	Second half of 2014

IV. FINANCING INFORMATION

a. Estimated Investment

The project has a total estimated investment of US\$ 103.3 million.

b. Financial Structure

The project does not require public payments to make it sustainable as the project is financed by user fees. The concessionaire can select the most appropriate capital structure for the project, but respecting the low capital limit established in the contract.

V. KEY LESSONS

The port was almost totally destroyed in an earthquake in 2007, it was important for the National Port Authority and other government institutions to keep the port operative at 50% because this made it possible to get more than 7 competitors interested in the project.

IIRSA Amazonas Norte Highway, Peru

I. PROJECT DESCRIPTION

a. Background and Rationale

This 955 kilometer highway crossing northern Peru passes through settlements housing 1.3 million people, among the economy's poorest. Not only does it link the Pacific coast to the relatively isolated hinterland, it is also part of a multimodal transport corridor that extends across Brazil via the Amazon River. The road crosses the Andes and rainforest terrain, landslides were a constant threat and its unpaved sections easily reduced to mud. Traffic was heavily constrained and journey times unpredictable.

b. Rationale for PPP

In the early 2000s, Proinversión, Peru's private investment promotion agency, structured a project to improve and operate the road as the economy's first PPP, despite having had enabling legislation since the 1990s. Part of the problem was the economy's subinvestment grade credit rating. To increase bankability, the government created the works annual payment recognition certificate, or CRPAO. These certificates form irrevocable, unconditional promises to pay and are issued on completion of construction milestones. Their monthly frequency represents a regular cash flow and provides comfort to investors.

c. Multilateral Agency Support

Ronny Loor, general manager of the IIRSA Norte concessionaire, says: "People in the financial market understood it quickly and liked it. It was the first time it was [used] in the market." The government also obtained a \$60 million guarantee from the Inter- American Development Bank, which partially covers CRPAO payments in the event of government default.

II. FINANCING INFORMATION

Under the deal, the concessionaire would have to build, rehabilitate or renew about 750 kilometers of road in collapse or disrepair, installing bridges, drainage and emergency communications. Financing was closed in August 2006. The CRPAOs were securitized to issue a \$213 million bond acquired and then issued offshore by Morgan Stanley.

III. PROCESS ANALYSIS

Works were challenging, demanding stabilization of landslide-prone mountainsides and the fitting of concrete walls. After weather-related delays, construction was completed in 2010. The highway is now passable all year round. Whereas previously it took over 36 hours to cross in perfect conditions, "today it takes 15 [hours] from the coast to the jungle," Loor says. One-week waits to clear the road are a thing of the past. The interior has been opened up providing greater access to health care and education; goods can be transported reliably at last, promoting business in the Pacific port of Paita and trade between Peru and Brazil.

The concessionaire is paid for operation and maintenance by the government, which retains tolls. The project's model was quickly replicated. In 2007, the much bigger IIRSA Sur highway concession reached financial close with the same payment mechanism.

School Infrastructure Project Phase I, Philippines

I. PROJECT DESCRIPTION

a. Background

The Philippines' Department of Education (DepED) has long recognized the problem of classroom shortages. However, budgetary constraints and low institutional capacity hinder the DepED from effectively addressing the problem. The pressures from the growing number of enrollees, the need to replace damaged classrooms due to natural calamities (*i.e.*, typhoons, earthquakes), DepED's K to 12 and Education for All Programs add to this backlog.

According to DepED estimates, as of school year (SY) 2010-2011 there were about (a) 66,800 actual classroom shortages in the Public School System, and (b) 30,000 additional classrooms are needed to accommodate the estimated enrollment for the following school year. Thereafter, about 10,000 new classrooms per year will be required from 2013 to 2015. By 2016, additional 30,000 classrooms will also be needed to provide for Senior High School education for SY 2016-2017. Therefore, there was a need to build about 150,000 new classrooms (or 30,000 classrooms a year) for the years 2012 to 2016 in order to close the demand-supply gap. However, this would require a hefty funding of about PhP120 billion over from 2012 to 2016 (or around PhP24 billion a year).

Moreover, on the average, the classroom construction rate in the economy is only 10,000 units per year. Thus, despite the joint efforts of the government and other sectors, the problem of shortage was expected to persist.

b. Rationale for PPP

Using Republic Act No. 7718 or the Amended Build-Operate-and-Transfer (BOT) Law as its legal basis, the DepED launched the PPP for School Infrastructure Project (PSIP) Phase I in 2012, which aimed to supplement DepED's current initiatives and programs on classroom construction nationwide. The PPP framework was tapped to harness private sector resources and technical expertise in order to (a) fast-track the construction and delivery of classrooms, (b) reduce cost for government, and (c) introduce innovation in design, construction methods, and new materials.

As a result, the PSIP provides more social benefits to students in terms of better health environment and improved academic performance.

Through the PPP framework, a social need has been transformed into a business opportunity of sufficient economic scale that encouraged value engineering which lowered cost and fast-tracked the expansion of classroom supply. Further, in contrast to conventional implementation, the private sector proponent of the PPP will take full responsibility for design, financing, project management, and construction, and periodic maintenance.

II. PROJECT STRUCTURE

The PSIP Phase I adopted the Finance-Design-Build-and-Maintain (FDBM) scheme using the Build-Lease-Transfer (BLT) contractual arrangement as defined under the BOT Law. Under this scheme, the private proponent was responsible for the financing, design, construction and periodic maintenance of classrooms.

Moreover, the contract includes the provision of:

Classroom furniture - to ensure the immediate usability of the Project output, and to avoid delays, synchronization delivery problems with construction, and possible administrative issues in procurement of classroom infrastructure. In particular, each classroom was required to have 45 armchairs (i.e., 43 for right-handed and 2 for left-handed), teacher's table and chair, chalkboard, as well as fixtures for electricity, ventilation and illumination.

Comfort rooms - to give proper sanitation facilities to the students. Specifically, all school buildings shall have comfort room for teachers, male and female students as well as persons with disability.

However, daily operation of the classrooms will continue to be the responsibility of DepED.

Upon completion of the classrooms, DepED will pay the Proponents quarterly lease payments during the 10-year lease period. The private sector proponent will also be required to conduct periodic maintenance during the finance lease period. Maintenance activities cover the inspection of structural members, repainting and termite control, once every 4.5 years.

It was pilot-tested in three (3) regions, namely: I, III and IV-A. To provide sufficient scale that will (a) attract project investors and (b) ensure project bankability, the pilot project involved the construction of 9,303 classrooms in about 2,300 elementary and secondary schools in the pre-identified sites in the three regions, divided into three contract packages as follows.

Region/Contract Package	Number of Classrooms
Region I/ Contract Package A	2,157
Region III/ Contract Package B	2,885
Region IV-A/ Contract Package C	4,261
Total	9,303

The bidding for Project started on 11 January 2012 with the publication of the Invitation to Prospective Bidder (ITPB). Pre-qualified bidders were provided with the Project's Minimum Performance Standards and Specifications (MPSS), which specified the technical requirements for the design, construction and maintenance phases of the project. Each bidder has been allowed to submit its own design-construct technology for the Project provided it meets the MPSS. The basis of contract award was the lowest present value of the schedule of payments.

III. CURRENT STATUS

The DepED awarded the project to the following on 4 September 2012 after conducting a successful bidding:

- Contract Package A to Bright Future Educational Facilities, Inc. (BFEFI) with contract price amounting to PhP 3,445,903,120.
- Contract Package B and C to Citicore-Megawide Consortium Inc. (CMCI) with contract price amounting to PhP 5,229,899,136 and PhP 3,604,904,384, respectively.

The project's BLT contracts were signed on 8 October 2012.

An Independent Consultant (IC) was hired to supervise the implementation of the Project, especially during the pre-construction and construction phases. Its remuneration has been shouldered equally by DepED and each winning bidder. In particular, the IC obligation included assistance to DepED in: a) the review and certification of designs (compliant with MPSS), and b) project monitoring and construction management, including recommendation for the issuance of a certificate of completion, and acceptance of turnover for and in behalf of DepED.

As of 31 August 2014, 66.4% or 6,180 classrooms have been delivered by the Proponents. The remaining 33.6% or 3,123 classrooms, of which 2,577 were under construction, will be delivered on or before the end of the year.

Inspired to mirror the success of this Project, DepED launched the second phase of the Project (*i.e.*, PSIP Phase II) under the Build-and-Transfer scheme.

Output-Based Aid: Improved Access to Water Services for Poor Households in Metro Manila, Philippines

I. PROJECT DESCRIPTION

a. Background

The delivery of water supply and sewerage services in the Metro Manila region is the responsibility of the government-owned Metropolitan Waterworks and Sewerage System (MWSS). Since 1997, MWSS has contracted out provision of services via two 25-year concessions based on a geographic division of the urban area: the east zone was contracted to the Manila Water Company (MWC), and the west zone to Maynilad Water Services (MWSI).

The required service performance of both concessionaires is defined in the 1997 concession agreement, as amended over time. Since 1997 MWC has enjoyed great success in improving services; it has reduced nonrevenue water from 63 percent to 19.6 percent from 1997 to 2008 and has met and exceeded its major service obligations. Most notably, both access to and reliability of services, particularly to low-income households, has increased substantially, and reliability in terms of 24-hour availability increased from 26 percent to 99 percent of customers from 1997 to 2008. MWC now supplies 5.1 million residents with water and sewage services.

b. Objective

This project aims to provide access to water services through individual household connections to several low-income communities in Rizal province (Antipolo City, Baras, Rodriguez, and San Mateo) and Taguig City in the Manila Metropolitan Region through collaboration with the concessionaire for Manila's east zone, the Manila Water Company (MWC). The GPOBA intervention supports Manila Water's flagship program, launched in 1998, the "Water for the Community" or Tubig Para sa Barangay (TPSB) program, which provides a regular supply of clean, safe, and affordable drinking water to the urban poor. The scheme builds on the successful track record of the TPSB program and seeks to speed up rollout of individual connections to poor households through one-time subsidies to cover the cost of the connection fee.

Connection for the poor: one of the remaining challenges

MWC has instituted a number of programs in pursuit of its stated vision to "become the leader in the development and provision of water and wastewater services in ways that help build sustainable communities..."¹ Community programs include water and sanitation for service institutions such as hospitals, prisons, and schools, and the cooperative development program, which helps develop backyard cooperatives that provide products and services for its works programs. MWC's flagship program, launched in 1998, is the "Water for the Community," or Tubig Para sa Barangay (TPSB) program. Since its launch, more than 1.5 million urban poor have been given a regular supply of clean, safe, and affordable drinking water. The GPOBA project builds on the successful track record of the TPSB program, as well as concerns identified in various independent evaluations conducted by the Asian Development Bank, the World Bank, and other organizations.

The TPSB program sought to speed up rollout of connections to poor households by tapping the community culture in the Philippines, and by working through local community leaders to achieve communal solutions for water supply. Initially, MWC offered communal meter or shared meter options (among five to seven households) to reduce the connection fees for individual households, while placing more responsibility on those individual households/communities for connecting households downstream of the meter and maintaining that “private” infrastructure. Subsequently, MWC switched to provide bulk supply or shared bills, placing the pressure and costs of bill collection partly on the beneficiary communities. At first, communities were also charged higher “bulk” tariffs, a practice MWC later modified by using social tariffs, with the consent of the Regulatory Office (MWSS-RO).

Several evaluations, while clearly crediting this approach with much faster improvements for poor households, have pointed out equity concerns. Moreover, MWC’s experience operating such schemes has demonstrated a number of the drawbacks of the shared billing approach for individual poor households. Some individual households have not paid their share of the billings, and significant customer management and credit issues have arisen with this approach; however, MWC has been reluctant to disconnect the whole community. Therefore, in this output-based aid (OBA) scheme, MWC is proposing to connect all beneficiary households with individual connections. This project would then provide the basis for a meaningful side-by-side comparison of the two approaches.

Targeting the Poor

The GPOBA project targets small pockets of households/communities that are located within larger service areas of MWC that are already being served or will be served shortly. Moreover, subsidies are targeted to reach households predominantly below the poverty line for the Metro Manila area (National Capital Region, NCR). MWC has adopted two approaches to assess/confirm low-income community eligibility. Manila Water, with its community-based partners, surveys potential communities, leveraging the expertise accumulated through the TPSB program. In addition, target communities must be officially certified (in accordance with national government directives for poverty surveys) as “indigent” by the respective Barangay leader, indicating that a majority of households fall under the national poverty line.

c. Government Subsidy

OBA subsidies will be paid directly to MWC on a per new connection installed and operating basis. Without the GPOBA subsidy, the total connection charge payable by a household to MWC for a service connection would be relatively high: PHP 7,531.73 (US\$167). This charge, set for 2007, consists of three parts:

Cost	PHP	US\$
Meter deposit	1,020.00	23
Guarantee deposit	600.00	13
Connection fee	5,911.73	131
Total	PHP 7,531.73	US\$167

From the household survey data and MWC's experience working with indigent communities, it was clear that poor households could not afford such connection charges. However, community feedback indicated that low-income households could afford to pay the meter deposit and guarantee deposit of PHP 1,620 (US\$36) if this could be paid in installments. MWC proposed and is currently offering an installment scheme over 36 months. The OBA subsidy, at 2007 prices, was therefore set at PHP 5,911.73 (US\$131). The GPOBA subsidy will be paid directly to MWC as a single payment, conditional on the independent verification of three months' satisfactory service delivery.

Under the terms of the concession agreement, the connection fee is indexed on an annual basis in line with Consumer Price Index (CPI) data produced by the MWSS-RO. To mitigate the risk of cost inflation, it was agreed that the unit subsidy would be similarly indexed. The unit subsidy (or other aspects of the scheme design) may also be adjusted to reflect modifications to the connection fee resulting from tariff and charge reviews undertaken by the MWSS-RO.

Subsidies will not be substituting for MWC investment obligations that form part of its five-year plan approved by the MWSS-RO. The MWSS-RO has been fully informed of the terms of the grant agreement that governs the OBA subsidy and has provided a letter of endorsement for the OBA scheme.

Defining Outputs and Ensuring performance

The output for this OBA scheme is sustainable access to modern water services, as evidenced by working connections to the MWC network and three months of satisfactory service provision. To ensure that MWC has delivered these outputs, the Independent Verification Agent (IVA), appointed by Manila Water, must confirm the following four outputs on a representative sample of beneficiary households:

1. installed water meter
2. 24-hour water supply (beneficiary confirmation)
3. water pressure of at least 5 psi (pounds per square inch) (from MWC operational records)
4. water bill delivered, demonstrating consumption/ service delivery (confirmed by beneficiary and MWC billing records)

II. PROJECT STRUCTURE

Contractual and Institutional Arrangements

Figure 1 summarizes the contractual and institutional aspects of the scheme design. Although the Independent Verification Agent is appointed by Manila Water, the terms of the appointment and actual procurement require GPOBA approval. GPOBA also explicitly funds the IVA through the grant agreement.

ABOUT OBAPPROACHES

OBApproaches is a forum for discussing and disseminating recent experiences and innovations in supporting the delivery of basic services to the poor. The series focuses on the provision of water, energy, telecommunications, transport, health, and education in developing economies, in particular through output-, or performance-, based approaches.

The case studies have been chosen and presented by the authors in agreement with the GPOBA management team and are not to be attributed to GPOBA's donors, the World Bank, or any other affiliated organizations. Nor do any of the conclusions represent official policy of GPOBA, the World Bank, or the economies they represent.

NAIA Expressway, Philippines

I. PROJECT DESCRIPTION

a. Background and Project Rationale

Decades of underinvestment in infrastructure in the Philippines has created a huge backlog of projects that need to be studied, developed, and tendered, demanding resources and expertise beyond the capacity of the government. Transportation infrastructure is a significant component of the government's focus, and to address this, IFC was hired to advise the government on the NAIA Expressway Project—a key part of Metro Manila's urban expressway system. The NAIA Expressway aims to provide a high-quality direct link to the economy's international airport and augment heavily-congested major thoroughfares. When the fully elevated NAIA expressway is completed, average travel time for the routes identified is expected to be cut by a least 50 percent.

Optimal Infrastructure Development, Inc. (ODI), a subsidiary of one of the top Philippine conglomerates, San Miguel Corporation, won the international competitive tender for the 30-year concession to design, finance, construct, and operate NAIA Expressway. The agreement was signed in July 2013.

b. Rationale for PPP

The new government that came into office in June 2010 was confronted with a massive infrastructure deficit, particularly in urban areas where the population has grown. Soon after it was elected, the government prioritized infrastructure development, launching an aggressive PPP program in November 2010. Ten priority projects were identified, targeting about \$4 billion in private capital (about 2 percent of GDP). Of this, just over 60 percent was labeled for transport infrastructure construction. The government brought in specialist advisory services from external partners to develop the priority projects, prepare and structure them into bankable PPP transactions while optimizing their development objectives, and select private partners through a transparent, open competitive tender process.

c. Multilateral Agency Support

IFC was hired to advise the government on the NAIA Expressway in January 2011 with the Development Bank of the Philippines (DBP), a government financial institution that had been tasked to advise on the government's PPP Program. IFC took the lead work while DBP managed the local market and client liaison.

DPWH, the sponsor implementing agency, also tapped outside assistance for technical studies to supplement pre-investment studies. These studies showed that the project would require public subsidy to be a bankable PPP. When the project stalled, IFC continued to work closely with DPWH to find an alternative solution. The new solution involved financing contributions from investors in a new major leisure and entertainment area (Entertainment City) being developed near the airport. IFC took on the additional task of supporting the government in its negotiations with the Entertainment City investors to formalize the latter's financing contribution. The resulting Infrastructure Support Facility (ISF) offered staple financing to all bidders. This was packaged as a long-term, highly concessional, subordinated loan from the Entertainment City investors, covering about 50 percent of total project cost.

IFC also supported DPWH in securing the final government approval to proceed to tender, working with key stakeholders from the public sector and consulting with potential project sponsors and lenders.

II. PROJECT STRUCTURE

IFC proposed a 30-year concession for the design, financing, construction, and operation of the toll road facility. In turn, the private concessionaire will be authorized to collect tolls based on levels and an adjustment formula prescribed in the concession agreement. Government prescribed the toll road alignment and committed to deliver all the required rights-of-way (ROW) within this alignment. Nonetheless, bidders were given some flexibility to deviate from the prescribed alignment provided that they assume the responsibility for and cost of any additional ROW procurement beyond those the government committed to. In connection with the ISF financing, the concessionaire was also obligated to finance and construct access roads leading to Entertainment City, which upon completion will be turned over to Entertainment City management and operated as free roads.

Apart from ROW delivery, the DPWH guaranteed the timely issuance of the toll operations certificate that would allow the winning bidder to levy and collect tolls, and the implementation of the toll adjustment formula over the life of the concession. The guarantee is intended to shield the private concessionaire from political and regulatory risks related to toll increases.

The technical bid was set on a pass/fail basis, with minimum performance specifications and standards prescribed relating to the design, construction, operations, and management of the toll road. The financial bid allowed bidders to either offer a positive bid (upfront concession payment) or a negative bid (concessional financing through the ISF loan). The winning bid could therefore either be:

1. The lowest required financing from the ISF, if all bidders required a financing support; or,
2. The highest up-front concession payment to government, if one or more bidders submitted a positive bid.

III. PROCESS ANALYSIS

Government adopted a two-stage (pre-qualification, then bid), two-envelope (technical and financial) bid approach. Seven international and local consortia and corporations responded to the invitation to pre-qualify, and four passed. Of the four, two corporations, Optimal Infrastructure Development, Inc. (OIDI) and Manila North Tollways Corporation (MNTC), eventually submitted bids and passed the technical criteria. Both bidders submitted positive financial bids. OIDI won the contract with a concession offer of about \$250 million.

IV. EXPECTED POST-TENDER RESULTS

In addition to the toll road to be built and subsequently transferred, the project facilitated a \$250 million income for the government in the form of an upfront concession payment. The project is expected to mobilize \$250 million in private investment to build the toll road that is estimated to cater to about 100,000 passengers daily. The ISF loan component (though ultimately not mobilized) showcased an innovative financing model for future toll road projects. Although the project was only the third to result from the economy's new PPP program, it is the biggest in terms of investment, providing government a document template that sets key policies on crucial issues.

NKTI Hemodialysis Project, Quezon City, Philippines

I. PROJECT

a. Background and Rational for PPP

Although relatively small in scale compared to some of the other projects considered, the National Kidney Transplant Institute (NKTI) Hemodialysis Project in the Philippines proved popular among the judges due to its more personable impact and its innovative procurement of equipment. NKTI initially invested in a new hemodialysis center, however due to an annual budget deficit, the institute found it difficult to furnish the center with new machines and equipment. As the budget only allowed the purchase of five new machines per year compared to the pressing needs of doubling its treatment capacity, a PPP solution was sought.

II. PROCESS ANALYSIS

The procurement process was successfully concluded in 2003 through a PPP lease arrangement between NKTI and Fresenius Medical Care AG. Foreseen as Asia's model in renal care, the new hemodialysis center now provides the highest level of hemodialysis service in the Philippines, as well as in Asia.

III. PROJECT RESULTS

The center started servicing patients in August 2003, with the first five-year contract concluded and renewed once again in 2009. The new center alone is now serving more than 120 outpatients a day. There are also now 47 machines in operation at the new hemodialysis center.

Aside from offering this improved service and top quality hemodialysis, NKTI has been relieved of its responsibility to maintain the new set of equipment. Most importantly, there has been no price increase to patients, with cost per treatment considered affordable and minimal. No hard impact evaluation study has been done to quantify how the project has enhanced access to services and information, especially for poor households. However, interviews with hospital administrators indicate the following: NKTI was able to acquire the latest available technology in dialysis treatment and expand its services to more patients at the same cost of treatment and at less risk to the government. And because of more machines and higher reliability of these machines, hemodialysis treatment was extended to more Filipinos.

Integrated Development of Lower Priangarye Project, Russia

I. PROJECT DESCRIPTION

a. Background

The Project's geography extends to Krasnoyarsk Territory and, in particular, Kezhemsky, Boguchany, Motyginino, Aban, Rybinsky, Kansk and other districts, and also, with respect to preparation of the floor of the Boguchany Hydropower Plant reservoir, to Irkutsk Province. Project type – integrated investment project of national importance.

b. Project rationale

Main prerequisites for Project's implementation:

- Great forest resources (about 30 mil. hectares) are concentrated in the Lower Priangarye;
- The Angara's hydropower resources have not been fully developed.

The project's special significance is determined by the fact that its implementation will help accelerate the economic growth rate of the eastern Russian Federation. Anticipated results from the Project's implementation:

- creation of a substantial number of new jobs, increase in personal incomes (at present the Lower Priangarye is marked by high unemployment and poverty), improvement of the population's quality of life;
- removal of infrastructure limitations on the region's economic growth, including development of the electric power and transportation infrastructure;
- enhancement of Krasnoyarsk Territory's attractiveness for investment, increase in the diversification of the region's economy.
- achieving high a high rate of economic development over the long term.

Implementation of the Project is based on the principles of public-private partnership, since the Project includes construction of transportation and energy infrastructure facilities that, under current law, must be publicly owned.

Public support for the Project is being carried out using the resources of the Russian Federation Investment Fund.

The form in which Investment Fund's budgetary appropriations are being provided is cofinancing of capital-construction projects under Russian Federation constituent members' state ownership via interbudgetary relations in the form of subsidies to the budgets of Russian Federation constituent members pursuant to Russian Federation budget law.

Transferring obligations with respect to the financing of infrastructure construction to investors is impossible, since that would make the implementation of industrial projects economically unattractive.

c. Rational for Public Sector Involvement

The main problem for development of the Lower Priangarye lies in existing infrastructure limitations caused by the acute shortage of electric power and the insufficient development of a transportation infrastructure that would support the development of natural resources, establishment of new production facilities, and the development of a local network connecting communities with the core transportation network.

The implementation of costly large infrastructure projects is impossible without the participation of the public sector.

d. Objectives

The project aims on enhancing the production potential of the Lower Priangarye region in Krasnoyarsk Territory through the establishment and development of the transportation and energy infrastructure, the development of natural resources, and the construction of industrial facilities based on the principles of public-private partnership.

Implementation of the Project will make it possible to:

- eliminate the dependence of Lower Priangarye on Federal subsidies;
- diversify the territory's economy in the raw materials sector;
- achieve an increase in the gross regional product through the creation of new industrial capacity.

Efficient operation of the Boguchany Hydropower Plant will make it possible to eliminate the potential deficit of electric power and capacity in the Unified Power System of Siberia and will contribute to the comprehensive development of Lower Priangarye.

e. Scope

List of facilities proposed for construction, reconstruction or technical reoutfitting in the course of the Project's implementation:

No.	Name of facility	Technical characteristics	Financing source	Title
1	Boguchany Hydropower Plant	Installed capacity 3000 MW (9 generating units), average multiyear power generation – 17.6 billion. kV/hr [sic; “kWh” would appear to be meant – <i>Trans.</i>].	RusGidro OJSC, RUSAL OJSC, bank loans	Investor
2	Boguchany Aluminum Plant	Capacity – 600,000 tons per year of primary aluminum	RusGidro OJSC, RUSAL OJSC, bank loans	Investor
3	Boguchany Timber Industry Complex	Pulp and paper plant – capacity of 823,000 tons/yr. of softwood pulp, sawn timber plant with capacity of 437,000 cu. m./yr., and MDF panel board plant	Vneshekonombank State Corporation	Investor
4	Boguchany Hydropower Plant's power distribution scheme	500-kV high voltage lines – 928 km.; 3 500-kV substations	Russian Federation Investment Fund	Russian Federation
5	Karabula-Yarki	Category IV rail line from	Russian Federation	Russian

	railroad line in Boguchany District, 1 startup complex	Karabula Station to Boguchany Station	Investment Fund	Federation
6.	Kansk-Aban-Boguchany-Kodinsk highway, bridge over Angara River on Boguchany-Yurubchen-Baikit highway	Sections of category III and IV road; bridge overpass of 1,606 meters	Russian Federation Investment Fund	Krasnoyarsk Territory

Source: Krasnoyarsk Territory Ministry of Economics and Regional Development

Among other things, work has been done in the Project framework to prepare for flooding of the Boguchany Hydropower Plant reservoir floor.

f. Stakeholders

The following are the project stakeholders:

- Krasnoyarsk Territory Development Corporation Open Joint-Stock Company;
- Russky Alyuminii Open Joint-Stock Company -- investor;
- Federal Hydropower Company Open Joint-Stock Company (RusGidro OJSC) – investor;
- Vneshekonombank.

The Entities Responsible for Implementation – (RF Federal Rail Transport Agency, Federal Road Agency, Ministry of Energy) – are the chief administrators of federal budget resources for the investment project and are responsible for its implementation with respect to obligations for investment in infrastructure facilities in matters that fall within their areas of concern. The State Contracting Authority for construction projects and facilities is the Krasnoyarsk Territory Government. Coinvestors are business entities that have been enlisted for the construction of industrial facilities and that acquire the relevant rights and duties in the framework of the Investment Project (RUSAL, RusGidro, Vneshekonombank). Oversight and monitoring of the course of implementation of the investment projects are carried out by the Russian Federation Ministry of Economic Development and Trade.

II. FINANCING INFORMATION

a. Project Cost

Total estimated cost of the Project is RUB 273,726.48 million including Russian Federation Investment Fund resources of RUB 41,191.67 million. The table below gives information about Project financing by year.

b. Financial Indicators¹

Indicator	Value
Integrated project's IRR	20.5%
Project recoupment period	11.1 years
Integrated project's NPV	RUB 123.87 billion.
IRR for the state	49%

¹ Source: Information of the Krasnoyarsk Territory Ministry of Economics and Regional Development, Web site: <http://www.econ.krskstate.ru/pringarye/arh>.

10-year revenues for budgets at all levels	RUB 113 billion.
Contributions to consolidated budget (2015)	RUB 22.305 billion.
of above contributions, federal budget	
of above contributions, regional budget	10.368 billion.
Integral indicator of project economic effectiveness	0.436%
Indicator of macroeconomic effectiveness of investments	5.193

Parameters of Project Implementation Progress (mil. rubles, in projected years' prices, including VAT)

Period	Total (plan/actual)		Russian Federation Investment Fund budgetary appropriations					Resources of investor/concession holder (plan/actual)		
	plan	actual	plan	actual	Cash expenditures	disbursed	Completion	plan	disbursed	disbursed
prior to 2006	10 786,15	9 111,00	-	-	-	-	-	10 786,15	9 111,00	84%
2006	5 789,34	3 784,50	-	-	-	-	-	5 789,34	3 784,50	65%
2007	13 030,53	7 192,82	1 323,00	1 323,00	-	-	100%	11 707,53	5 869,82	50%
2008	29 976,77	2 441,90	14 632,00	14 632,00	4 960,93	2 886,73	100%	15 344,77	10 109,90	66%
2009	31 429,61	25 18,42	13 967,12	13 967,12	14 619,05	13 997,71	100%	17 462,49	11 051,30	63%
2010	35 242,48	16 126,60	4 263,00	4 263,00	6 897,79	9 367,67	100%	30 979,48	11 863,60	38%
2011	52 105,63	22 616,17	4 869,87	4 869,87	5 539,35	3 448,10	100%	47 235,76	17 746,30	38%
2012	57 528,59	21 166,38	2 136,68	2 136,68	5 034,40	7 739,54	100%	55 391,91	19 029,70	34%
2013	9 763,48	20 113,80	-	-	1 941,22	1 497,00	-	9 763,48	20 113,80	206%
2014	11 724,85	-	-	-	-	-	-	11 724,85	-	-
2015	16 349,05	-	-	-	-	-	-	16 349,05	-	-
Total	148	149,871,59	41 191,67	41 191,67	38 992,75	38 936,76	100%	232 534,81	108 679,92	47%

Source: Ministry of Regional Development, as of 4/1/2014

III. PROJECT IMPLEMENTATION

Project implementation period: 2006-2015

Project participants:

Measures implemented in the Project framework (based on information of the Krasnoyarsk Territory Ministry of Economics and Regional Development:

Preparations for flooding of the floor of the Boguchany Hydropower Plant reservoir.

Preparation of the Boguchany Hydropower Plant flood zone in Krasnoyarsk Territory was carried out from 2007 to October 15, 2012. Over those five years, serious measures were carried out in the flood zone: the large-scale resettlement of citizens from communities that fell under the flooding, the construction of housing for them, sanitation measures, the moving of graves, and the clearing of timber on special sectors, including communities' protective sanitation zones.

The party responsible for issuing contracts for the aforementioned work in Krasnoyarsk Territory is the Directorate for the Preparation for Flooding of the Boguchany Hydropower Plant Reservoir Floor State Entity (DPV BoGES GU). The Krasnoyarsk Territory Government was appointed as state coordinator of the project.

Construction of facilities included in the Boguchany Hydropower Plant's power distribution scheme.

Construction of facilities included in the Boguchany Hydropower Plant's power distribution scheme has entered the final stage.

IV. STRUCTURE OF THE PROJECT

Implementation of the project is being carried out pursuant to the Investment Agreement on Joint Financing of the Integrated Development of the Lower Priangarye Investment Project using resources of the Russian Federation Investment Fund and those of commercial entities (hereinafter, "Investment Agreement").

Parties to agreement:

The Entities Responsible for Implementation – (RF Federal Rail Transport Agency, Federal Road Agency, Ministry of Energy) – are the chief administrators of federal budget resources for the investment project and are responsible for its implementation with respect to obligations for investment in infrastructure facilities in matters that fall within their areas of concern.

The State Contracting Authority for construction projects and facilities is the Krasnoyarsk Territory Government.

Coinvestors are business entities that have been enlisted for the construction of industrial facilities and that acquire the relevant rights and duties in the framework of the Investment Project (RUSAL, RusGidro, Vneshekonombank).

Oversight and monitoring of the course of implementation of the investment projects are carried out by the Russian Federation Ministry of Economic Development and Trade.

In the context of performing the Investment Agreement, an investor is required to notify the Entities Responsible for Implementation and the State Contracting Authority about the procedures for and form of the performance of planned measures.

In the event of an Investor's failure to meet the Financing Schedule or alteration of it that results in failure to meet the final deadline for the execution of planned measures, the Entities Responsible for Implementation have the right to suspend financing of the Investment Project and/ or the performance of measures.

V. PROCESS ANALYSIS

a. Current Status

As of 9/1/2014, construction of the project's road infrastructure facilities has been completed (15 sections of the Kansk-Aban-Boguchany-Kodinsk highway totaling 141.12 km in length have been built and overhauled, and a bridge overpass across the Angara River on the Boguchany-Yurubchen-Baikit highway has been opened for traffic).

Construction has been completed of the facilities included in the Boguchany Hydropower Plant's power distribution scheme (500 kV), and they have been brought on line, and facilities are being prepared for startup.

With respect to the investment project's industrial facilities:

Six of nine generating units of the Boguchany Hydropower Plant have been started up.

Startup of the Boguchany Aluminum Plant and the Boguchany Timber Industry Complex is planned for 2015.

As of 9/1/2014, RUB 159,644.28 million has been disbursed, including: RUB 39,358.78 million in Russian Federation Investment Fund resources, and RUB 120,285.5 mil in the resources of private project investors.

b. Issues with implementation

1. Late receipt of Russian Federation Investment Fund resources by the territory budget;
2. Legislative restrictions: A ban on clear-cutting in protected forests that is in effect pending the entry into force of amendments to the Russian Federation Forest Code.

In this connection, pending amendments to the Russian Federation Forest Code, only preparatory work could be carried out.

VI. KEY LESSONS, , EXPERIENCES AND OBSERVATIONS

In designing facilities included in the power distribution scheme (hereinafter, "PDS"), the synchronized startup of the Boguchany Hydropower Plant, its PDS facilities, and the Boguchany Aluminum Plant was taken into account.

BoAz OJSC announced a change in the deadline for startup of the Boguchany Aluminum Plant and schedule for bringing it up to speed, which requires revisions in the project for carrying out startup work in the construction of PDS facilities.

There has been an acutely felt shortage of specialists with the requisite skills, a high level of knowledge, and sufficient practical experience to enable them to do high-quality work on the design and construction of facilities with a voltage of 220 kV and higher.

Consequently, the contractual time periods for the performance of work on the design and construction of facilities have substantially exceeded the standard times.

Pursuant to the Investment Agreement, the Krasnoyarsk Territory Government, under which there is no specialized entity with experience designing and building facilities with a voltage of 500-kV and higher, was designated as the state contracting authority.

The state contracting authority lacks the right to impose requirements on a contractor not specified by law, which limits the ability to choose a qualified contractor.

Moreover, in the event that a contractor fails to satisfactorily fulfill the terms of a contract, the state contracting authority has the right to cancel the contract only through judicial procedures. So the possibility of imposing requirements with regard to the performance of warranty service on equipment delivered to a facility is lost.

Such a procedure for canceling a state contract, as well as the need to place a new state order, substantially increases the time required to construct a facility and results in additional expenditures of budget resources.

Integrated Development of South Yakutia Project, Russia

I. PROJECT DESCRIPTION

a. Background

The name of the investment project – Integrated Development of South Yakutia (hereinafter, the “Project”)

b. Objectives

The project aims to create, based on public-private partnership, a large new industrial region with enterprises for the extraction and thorough processing of minerals (iron, uranium and apatite ores, natural gas, coal) and hydropower facilities.

c. Scope

The project includes the design and construction of the following projects:

- Kankun Hydropower Plant;
- Elkonka Mining and Smelting Complex;
- South Yakutia Mining and Smelting Association;
- Inaglinsky Coal Complex;
- Yakut Gas Extraction Center;
- Roads;
- Railroads;
- Electric power grid.

d. Project schedule:

2008-2012	Completion of designing of industrial facilities and power grid
2012-2025	Construction of Stage I facilities
2019	Beginning of construction of Stage II industrial and infrastructure facilities

Implementation of the project is being carried out in accordance with the Project Concept approved by the Government Commission for Investment Projects of National Importance, and also in accordance with the Russian Federation Government’s Order “On Approving the Certificate for the Integrated Development Project, ‘Preparation of the Design Documents for Implementing the Integrated Development of South Yakutia Project.’”

Project feasibility. The Project’s special importance is due to the fact that its implementation will help accelerate the pace of economic growth of the eastern Russian Federation. At present the economy’s East, on the whole, clearly lags behind the European part in terms of economic development rates and large-scale investment projects that are being implemented, and is experiencing a population migration outflow.

e. Objectives

The main objectives to be accomplished in the Project:

- removing infrastructure limitations on the region’s socioeconomic development;

- maintaining high economic growth rates in the economy;
- increasing the economically active population in Yakutia – one of the most sparsely populated regions of the Russian Federation;
- increasing personal incomes and improving the living standard;
- increasing the revenue base of budgets at all levels;
- developing the production of strategically important goods;
- developing new production facilities for the thorough processing of extracted raw materials;
- diversifying Russian exports (both expanding their geographical area and increasing the list of goods produced);
- enhancing Russia's geopolitical positions in Southeast Asia, including by increasing export deliveries of Russian products;
- achieving high economic development rates over the long term.

The project is based on the principles of public-private partnership with the support of the Russian Federation Investment Fund.

f. Rationale for Public Sector Involvement

The main problem for development of Yakutia's economic potential lies in existing infrastructure limitations caused by the acute shortage of electric power and the inadequate development of the transportation infrastructure that is required for developing natural resources and establishing new production facilities, and the need to develop a local network linking communities with the core transportation network.

The implementation of costly large infrastructure projects is impossible without the participation of the public sector because of the considerable capital intensiveness and long recoupment period of facilities.

Moreover, the project includes the establishment of transportation and power-grid infrastructure facilities, which under current law must be under public ownership.

It is impossible to transfer obligations related to the financing of infrastructure construction to investors since that would make the implementation of industrial projects economically unattractive.

The Russian Federation Investment Fund's resources are being used to finance the preparation of design documents for the transportation and power-grid infrastructure, as well as the Kankun Hydropower Plant and the Elkonka Mining and Smelting Complex. At the same time the design and construction of hydropower and industrial facilities are being financed with investors' resources. Moreover, in view of the facilities' national importance, their considerably great capital intensiveness and lengthy construction periods, Russian Federation Investment Fund allocations are also being contributed to the authorized capital of open joint-stock companies.

g. Stakeholders

The following are the project's stakeholders:

- Entities responsible for implementation – Russian Federation Ministry of Energy, Federal Road Agency, Federal Rail Transport Agency, Rosatom State Atomic Energy Corporation.

- State coordinator – Government of Republic of Sakha (Yakutia).
- Coinvestors – South Yakutia Hydropower Complex OJSC, Atomredmetzoloto OJSC, Gazprom OJSC, IG OJSC, ALROSA OJSC, Timir Mining and Smelting Company OJSC, Yakutskiye Ugli-Novye Tekhnologii CJSC, Elkonka Mining and Smelting Complex CJSC, and Federal Hydropower Company OJSC

II. FINANCIAL INFORMATION

The **total cost** of the preparation of design documents for the project is RUB 10,064.478 million including RUB 7,428.278 million in Russian Federation Investment Fund resources. Table below presents information about the financing of the preparation of Project design documents by year.

In 2011 construction began on the Inaglinsky Coal Complex (investor, Yakutskiye Ugli-Novye Tekhnologii [Yakut Coals-New Technologies] CJSC). Total investments in the project (counting investors' expenditures in the predesign stage) as of April 1, 2013 totaled more than RUB 24.8 billion, including more than RUB 7.4 billion. from the Russian Federation Investment Fund.

The current situation with respect to the designing of Project facilities as of September 1, 2013, is given in Table below.

Parameters of Project Implementation Progress (mil. rubles, in projected years' prices, including VAT)

Period	Total (plan/actual)		Russian Federation Investment Fund budgetary appropriations					Resources of investor/concession holder (plan/actual)		
	plan	actual	plan	actual	cash expenditures	disbursed	% completion	plan	disbursed	% disbursed
2008	73,50	128,10	-	-	-	-	-	73,50	128,10	174%
2009	5 412,40	5 412,40	5 372,40	5 372,40	771,62	457,68	100%	40,00	40,00	100%
2010	2 246,19	5 296,33	1 880,69	1 880,69	3 093,77	2 327,05	100%	365,50	3 415,64	935%
2011	1 372,89	581,33	175,19	104,15	910,87	1 692,42	59%	1 197,70	477,18	40%
2012	957,50	223,67	-	-	412,57	573,39	-	957,50	223,67	23%
2013	2,00	56,36	-	-	93,50	141,42	-	2,00	56,36	-
2014*	-	0,55	-	-	3,48	3,88	-	-	0,55	-
total	10 064,478	11 698,19	7 428,278	7 357,243	5 285,814	5 195,831	99%	2 636,20	4 341,50	165%

Source: Ministry of Regional Development, as of April 1, 2013

III. CURRENT STATUS AND KEY IMPLEMENTATION ISSUES

Status of Design of Project Facilities as of September 1, 2013

Industrial and infrastructure facilities	Investor, entity responsible for project	Designing schedule as per Project Certificate, as revised	Status as of 9/1/2013
1. Inaglinsky coal complex	Kolmar Coal Company LLC	2008	Completed, mine construction begun
110-kV Substation at Inaglinsky Ore-Dressing Plant, 110-kV high-voltage line at Inaglinsky Ore Dressing Plant, reconstruction of 100-kV Chulbass State District Power Plant, Maly Nimnyr	RF Ministry of Energy	2009-2013	Completed. Favorable government expert review finding rendered.
Railroad from Chulbass to Inaglinsky Ore-Dressing Plant	RF Federal Rail Transport Agency	2009-2011	Completed. Favorable government expert review finding rendered.
2. Kankun Hydropower Plant	RusGidro OJSC, South Yakutia Hydropower Complex OJSC, RF Ministry of Energy	2009-2013	Completed and sent for government expert review.
500-kV high-voltage line, 500/220/110-kV substation at Kankun Hydropower Plant, Neryungri	RF Ministry of Energy	2019-2020	Pre-stage work, "Kankun Hydropower Plant power distribution scheme and scheme for external power supply to industrial facilities" completed.
500-kV high-voltage line, 500/220/110/10-kV substation at Kankun Hydropower Plant, Aldan	RF Ministry of Energy	2019-2020	Pre-stage work, "Kankun Hydropower Plant power distribution scheme and scheme for external power supply to industrial facilities" completed.
Road from Nimnyr to Kankun	RF Federal Road Agency	2009-2011	Completed. Favorable government expert

Industrial and infrastructure facilities	Investor, entity responsible for project	Designing schedule as per Project Certificate, as revised	Status as of 9/1/2013
Hydropower Plant road			review finding rendered.
3. Elkonka Mining and Smelting Complex	Atomredmetzoloto OJSC, Elkonka Mining and Smelting Complex OJSC, Rosatom State Corporation	2009-2019	Preparation of design documents suspended; optimization of basic design solutions in progress.
220-kV substation at Elkonka Mining and Smelting Complex and 220-kV high-voltage line from Aldan to Elkonka Mining and Smelting Complex	RF Ministry of Energy	2009-2013	In development stage.
Road from Tommot to Elkonka Mining and Smelting Complex	RF Federal Road Agency	2009-2011	Completed. Favorable government expert review finding rendered.
Railroad from Tommot to Elkonka Mining and Smelting Complex	RF Federal Rail Transport Agency	2009-2014	Completed. Favorable government expert review finding rendered for technical part.
4. Tayezhnaya Mining and Ore Dressing Complex	Timir Mining and Smelting Company OJSC, ALROSA OJSC, YevrazKholding LLC	2008-2014	In preparation stage.
220-kV substation at Tayezhnaya Mining and Ore Dressing Complex and 220 high-voltage line to Tayezhnaya complex	RF Ministry of Energy	2009-2013	Completed. Favorable government expert review finding rendered for technical part.
Railroad from Tayezhnaya to Tayezhny Mining and Ore Dressing Complex	RF Federal Rail Transport Agency	2009-2014	Completed. Favorable government expert review finding rendered for technical part.
5. Yakut Gas Extraction Center	Gazprom OJSC	2010-2013	Suspensive condition. Gazprom adoption of investment decision required.

Industrial and infrastructure facilities	Investor, entity responsible for project	Designing schedule as per Project Certificate, as revised	Status as of 9/1/2013
6.Seligdar Mining and Chemical Complex	Not determined	2013-2015	Suspensive condition in effect (subsurface resource user not determined).
220-kV substation at Seligdar Mining and Chemical Complex and 220-kV high-voltage line to complex	RF Ministry of Energy	2015-2016	Suspensive condition in effect, designing not in progress.
Railroad from Kosarevsky to Seligdar Mining and Chemical Complex	RF Federal Rail Transport Agency	2014	Suspensive condition in effect (subsurface resource user not determined).
7.Tarynnakh Mining and Ore Dressing Complex	Timir Mining and Smelting Company OJSC, ALROSA OJSC, Yevraz LLC	2008-2020	Suspended. Completion of designing expected in 2020.
220-kV substation at Tarynnakh Mining and Ore Dressing Complex, 220-kV high-voltage line from Khan to Tarynnakh complex, Expansion of outdoor switch gear at Tynda 220-kV substation, Installation of second circuit on Baikal-Amur Mainline	RF Ministry of Energy	2019-2020	
Railroad from Ikabyekan to Tarynnakh Mining and Ore Dressing Complex	RF Federal Rail Transport Agency	2009-2014	Completed. Being prepared for resending to state expert review committee.

*Taking into account revisions in project certificate [appears to refer to Table 1 – *Trans.*]

IV. STRUCTURE OF THE PROJECT

The project is an integrated one, since it includes interconnected investment projects that provide for the coordinated design and construction of major industrial and power-grid and transportation infrastructure facilities.

Parties to agreement:

1. Entities responsible for implementation – Russian Federation Ministry of Energy, Federal Road Agency, Federal Rail Transport Agency, Rosatom State Atomic Energy Corporation.
2. State coordinator – Government of Republic of Sakha (Yakutia).
3. Coinvestors – South Yakutia Hydropower Complex OJSC, Atomredmetzoloto OJSC, Gazprom OJSC, IG OJSC, ALROSA OJSC, Timir Mining and Smelting Company OJSC, Yakutskiye Ugli-Novye Tekhnologii CJSC, Elkonka Mining and Smelting Complex CJSC, and Federal Hydropower Company OJSC¹:
 - for public support of construction of the Kankun Hydropower Plant (at 40% of the cost of design and construction of the Kankun Hydropower Plant, which is equivalent to the cost of preparing design documents for the hydropower plant and construction of the dam) – investment in the authorized capital of the RusGidro OJSC Group joint-stock company;
 - for state support of the Elkonka Mining and Smelting Complex (in an amount equivalent to the cost of preparing design documents – technical and economic feasibility studies and working design) – investment in the authorized capital of the Atomredmetzoloto OJSC group joint-stock company.

The total cost of preparing design documents for the Project's implementation is RUB 10,064.478 mil., including RUB 7,428.278 mil. in Russian Federation Investment Fund resources.

V. PROCESS ANALYSIS

a. Structure of the Project's construction stage

The Project Concept specifies that financing of the construction of infrastructure facilities will be carried out using budgetary appropriations of the Russian Federation Investment Fund.

According to preliminary estimates, the cost of the Project construction stage will be RUB 834.1 billion. (excluding the cost of constructing the Yakut Gas Extraction Center, the Seligdar Mining and Chemical Complex and related infrastructure). In this connection, construction of infrastructure facilities will require RUB 172.9 billion. in state resources, and cofinancing of the construction of the Kankun Hydropower Plant (the concept specifies 40%) will total RUB 106.2 billion.

Considering that the Russian Federation Investment Fund has not built up the required amount of budgetary resources for funding the construction of Project infrastructure facilities, and that other federal and republic programs do not provide for the financing of such facilities, a decision was made to divide the Project into stages I and II.

b. Construction of Stage I facilities as of 8/01/2014:

Stage I projects include the Inaglinsky Coal Complex (2012-2017) and the Tayezhny Mining and Ore Dressing Complex (2015-2017), with related infrastructure.

¹ As per Project Concept.

The cost of construction of Stage I facilities will total RUB 32.1 billion, including the necessary state support for the infrastructure – RUB 4.2 billion. Thereby, for one ruble of public investments, about RUB 6.5 in private investments is planned.

c. Construction of Stage II facilities:

Stage II projects include construction of the following facilities: the Tarynnakh Mining and Ore Dressing Complex, the Elkonka Mining and Smelting Complex, and the Kankun Hydropower Plant.

According to the most recent estimates, based on the design estimate documents that have been prepared for the Kankun Hydropower Plant and part of the infrastructure, the cost of construction of Stage II facilities will total RUB 809.8 billion. (not counting the cost of the Yakut Gas Extraction Center and the Seligdar Mining and Chemical Complex), including RUB 168.6 billion. (not counting the cost of infrastructure for the Seligdar Mining and Chemical Complex).

Total investments in the construction of Project facilities, according to preliminary estimates, will come to RUB 845.90 billion,² including:
public investments of RUB 171.77 billion. (infrastructure projects: power grid infrastructure, railroads, roads);
private investments of RUB 674.13 billion. (construction of industrial facilities: the Kankun Hydropower Plant, the Elkonka Mining and Smelting Complex, the Tayezhnaya Mining and Ore Dressing Complex, the Tarynnakh Mining and Ore Dressing Complex, and the Inaglinsky Coal Complex).

d. Performance of obligations under Investment Agreement on the part of the state

In 2009-2011 all Project entities responsible for implementation received 100% of the resources earmarked for designing infrastructure facilities and for the Kankun Hydropower Plant and the Elkonka Mining and Smelting Complex, totaling RUB 7.4 billion.

Financing on the part of investors

Total financing from the resources of private investors since the beginning of the Project's implementation, counting expenditures in the pre-design stage, came to around RUB 20 billion, while commitments according to the Certificate totaled RUB 2.6 billion.

At present, the resources of the Russian Federation Investment Fund have been used to prepare designs for construction of the transportation infrastructure for the Elkonka Mining and Smelting Complex, the Tayezhnaya and Tarynnakh Mining and Ore Dressing complexes, the Kankun Hydropower Plant, and the Inaglinsky Coal Complex. The preparation of design documents for the power grid infrastructure is at the completion stage.

In 2013 designing of the Kankun Hydropower Plant funded by the Russian Federation Investment Fund was completed.

e. Project Facilities

Kankun Hydropower Plant

² Not counting the cost of the Yakut Gas Extraction Center, the Seligdar Mining and Chemical Complex and related infrastructure (according to the information of the South Yakutia Development Corporation OJSC).

The hydropower plant site is in a sparsely populated area to which access is difficult. Because of the lack of a settled population and of communications, the set of measures to build the reservoir do not include any measures for resettlement, development of transportation in connection with the reservoir, the reconstruction of power-line installations, etc.

The current growth rate of power consumption in South Yakutia and the prospective power consumption levels of new industrial enterprises (which will be built in the framework of Project implementation) make it possible to speak of the advisability of building one hydropower plant, namely a “pilot” Kankun Hydropower Plant, in the first stage.

It is estimated that it will take 8-10 years to build the Kankun Hydropower Plant. In addition, a preparatory period will be required for preparing the design documents, constructing the production and staging area and a settlement for the power workers’ families, an approach road to the power plant dam site, and a production base and a tour-of-duty settlement at the dam site.

Construction of the Kankun Hydropower Plant will make it possible to accomplish the following objectives:

- eliminate a potential electric power deficit in the South Yakutia power district;
- create a stable energy balance in the Far East Unified Power System.
- ensure a reliable source of energy for the extraction and comprehensive processing of minerals;
- build a production, social and transportation infrastructure, and also provide for the training of skilled personnel for the construction of subsequent hydropower plants in the South Yakutia hydropower complex;
- provide for growth in the Russian Federation GDP through the construction of new industrial capacity whose energy consumption will be linked to the Kankun Hydropower Plant;
- increase contributions to the local budget from taxes on new enterprises;
- create a substantial number of jobs both for building the power project and at the new industrial district’s projected enterprises and transportation infrastructure facilities;
- make it possible to save fossil fuel (up to 1.5 mil. tons per year);
- contribute to preserving a clean atmosphere by reducing emissions of greenhouse gases in power production;
- create the prerequisites for and a stimulus to the sale of electric power for export.

The Elkonka Mining and Smelting Complex

The program for the development of Russia’s nuclear power envisages a 50% increase in electric power generation at nuclear power plants by 2016, which, counting export deliveries, will raise Russia’s annual uranium requirements to 36,000 tons by 2020, while its current domestic production is 3,300 tons a year.

In that sense South Yakutia, on whose territory the Elkonka uranium ore district is found, is Russia’s only region that has prospects for the development of large-scale uranium raw material production, and in the future will make it possible to reduce the vulnerability of Russia’s nuclear power to any increase in world prices for uranium fuel by increasing domestic production of uranium ore.

The Elkonka Mining and Smelting Complex CJSC

Designing and construction of the enterprise will be carried out in three stages, from 2008 through 2024.

South Yakutia Mining and Smelting Association

The project of establishing the South Yakutia Mining and Smelting Association includes the construction of two mining and smelting complexes relying on the most promising iron ore deposits, the Tayezhnaya and the Tarynnakh.

Total reserves of those iron ore deposits in South Yakutia will enable a mining complex to carry out the opencut mining of coal [sic; “iron” would appear to be the relevant word here – *Trans.*] for more than 40 years, and to carry out the underground mining of the deposits for another 60-70 years. That will help create a new long-term source of raw materials for Russia’s iron and steel enterprises.

The Inaglinsky Coal Complex

The project for construction of the Inaglinsky Coal Complex is at the active development stage; in particular, in late 2011 construction of the Inaglinsky Mine was begun.

Expected results:

Reaching full production capacity by the beginning of 2015 – 2-2.5 mil. tons per year;
Concentrate yield – about 68% following coal preparation, i.e., about 56%-58% of mined coal.

Recoupment period of around five years.

The Inaglinsky Coal Complex project includes the building of a coal enrichment plant. At that facility it is planned to enrich, besides 3 mil. tons per year of coal from the Inaglinsky underground mine, “fat” grade coals from the Inaglinsky strip mine and the deep seam mining complex (DSMC).

The Inaglinsky Coal Complex will create additional jobs for more than 1,000 persons and provide for an increase in the region’s employment level and substantial budget revenues from tax payments.

Yakut Gas Extraction Center

One area of the accomplishment of strategic state objectives in the Republic of Sakha (Yakutia) is the formation and development of a large new center of the natural gas, gas refining and helium industry. In addition, after domestic requirements are met, it will be possible to export substantial volumes of natural gas and the products of its refining from Russia’s eastern regions and the Republic of Sakha (Yakutia) in particular.

In order to provide for the comprehensive use of natural gas, it is necessary to create a gas refining and gas chemical industry. The development of the gas refining and gas chemical industry will increase the share [sentence is incomplete in the original text – *Trans.*] The Republic of Sakha’s large deposits hold substantial reserves of natural gas and gas condensate.

The Seligdar Mining and Chemical Complex

The Seligdar apatite deposit, which is located in Aldan District of the Republic of Sakha, is one of the largest deposits of phosphorus raw material in Russia’s Far East. It is one of few sources of the replenishment of sources of raw materials for the economy’s phosphorus industry and of supplies of mineral fertilizers for agriculture in Russia’s Far East.

The Seligdar deposit's reserves are sufficient for the construction of a mining and enriching complex with a capacity of 3.57 mil. tons of apatite concentrate per year. The design for construction of the Seligdar Mining and Chemical Complex includes the construction, to utilize that deposit, of a mining and enriching complex and chemical plant for the production of complex phosphorous and magnesium fertilizers. The production capacity of the latter will be more than 567,000 tons per year.

State of the art technology for producing fertilizers using the electrothermal method is envisaged.

The comprehensive use of the ore extracted in the opencut mine will mean the construction, as part of the mining and chemical complex, of a stone-crushing plant that, in processing the deposit's opencut-mined stone, will produce commercial crushed stone (up to 12.5 mil. tons per year) and sand (around 1.2 mil. tons per year).

For Siberia and the Far East, the main objective in developing the transportation infrastructure is the formation of a core transportation network, the establishment of communications (primarily, railroad lines) that will support the development of natural resources, and the development of a local network that will provide the local communities with connections to the core transportation network. Implementation of the Project will make it possible to build transportation communications required for the development of natural resources and the establishment of new production facilities, and to provide reliable transportation communications for a number of communities, thereby reducing South Yakutia's lag behind other regions in terms of transportation infrastructure.

In the course of implementing the Integrated Development of South Yakutia investment project, railroads with a total length of around 257 km. will also be built.

One of the key infrastructure projects will be the Kankun Hydropower Plant's power distribution scheme and a related scheme for external power supply to future industrial enterprises. Thus, in the context of the Project, about 1,200 km of high-voltage power lines and six 500/220/110-kV substations are supposed to be built.

f. Project effectiveness indicators³

Indicator	Value
Index of budgetary effectiveness, excluding post-forecast of the budgetary cash flow	1,25
Index of budgetary effectiveness, counting post-forecast budgetary cash flow	8,96
IRR for state	17,4%
WACC	12,1%
Integral indicator of Project economic effectiveness	0,37%
Indicator of macroeconomic effectiveness of investments	4,1

Indicators		Kankun Hydropower Plant	Elkonka Mining and Smelting Complex	Overall project
Counting state support	NPV, mil. rubles	7 240	10 497	84 689
	IRR, %	11,4%	11,1%	17,0%, along with WACC 12,2%
	PBP (nondiscounted), years	16,7	13,2	14
	PBP (discounted), years	34,4	31,6	20
Not counting	NPV, mil. rubles	-33 366	- 4 883	-7 258
	IRR, %	7,2%	9,0%	12,8%

³ All Project effectiveness indicators are cited in accordance with the Project Concept.

state support	PBP (nondiscounted), years	25,6	14,4	16
	PBP (discounted), years	not recouped	not recouped	not recouped

Pulkovo Airport Expansion Project, Russia

I. PROJECT DESCRIPTION/ASSESSMENT

a. Background

Pulkovo airport, located in St. Petersburg, Russia's second largest market was founded on June 24, 1932; the current Terminal 1 was built in 1973 and Terminal 2 was built in 1986. In 1990 traffic peaked at 10 million passengers per year. Demand fell significantly after the end of the Soviet Union. However, economic growth in St Petersburg had been strong and a growing middle class with disposable income and desire to travel stimulated demand, particularly in the charter market. An important part of economic growth in the City of St Petersburg is tourism as recognized in the City's 5-5-5 development plan. Pulkovo Airport handled 6.8 million passengers in 2009, with two runways and two passenger terminals - one for international and one for domestic flights. To support growing demand and economic generation, the City launched a campaign to expand and upgrade Pulkovo airport.

b. Rationale

St. Petersburg is the second largest gateway into the Russian Federation, with growing traffic and commercial potential. Traffic and industry justified the need for a modern and efficient airport with top passenger services.

- 5 railways, 15 highways, 3 ports, 1 airport
- 50% of Russian imports, 60% of Russian container turnover
- 5.5 mln daily commuters
- Cultural center—182 museums, 5830 monuments, 49 theatres; and 4.8 mln tourists in 2008

CAGR from 2000-2009 of traffic was 11.5%. Project part of a series of pilot transport projects prepared by the City of St Petersburg with strong support from the then Governor

c. Objective and Scope

The project aimed to increase capacity from 6.8 million to a predicted 30 million by 2040. The winning consortium was to build a new passenger terminal of 100.000–140.000 sqm catering to domestic and international passengers. Furthermore, it was to: integrate the existing Terminal 1 into the new terminal and close the existing Terminal 2 once the new terminal has been inaugurated; expand apron areas; develop real estate adjacent to the terminal; and modernize existing infrastructure. The project became the first international Public-Private Partnership (PPP) project to reach financial close in the post-crisis period in Russia without extensive Government guarantees.

d. Stakeholders

The project had many stakeholders on the government side. The project was tendered by the City of St. Petersburg, but it was unclear whether the municipal or Federal law was supreme. Military functions carried out at the airport meant additional stakeholders.

II. STRUCTURE OF THE PROJECT

a. Key Risks

The project had several risk factors. There were a large number of stakeholders and it was difficult to envisage a purely private model. Nevertheless, the project had a strong rationale. In designing the project structure, the team, advised by the World Bank Group identified the following potential risks:

Risk Type	Key Risk
Land and Site	<ul style="list-style-type: none"> • Airfield to remain Federal State Property (Airport of Federal Importance) • Airport used for civilian and military purposes
Revenue Risk	<ul style="list-style-type: none"> • Tariffs required to increase, but set by Federal authorities • Application of tax rules not clear • Financial accounts were not fully reliable
Operating Conditions	<ul style="list-style-type: none"> • Staff reduction was required to make the airport more profitable
Default by Granting Authority	<ul style="list-style-type: none"> • The granting authority had limited experience with PPPs

b. Private and Public Roles

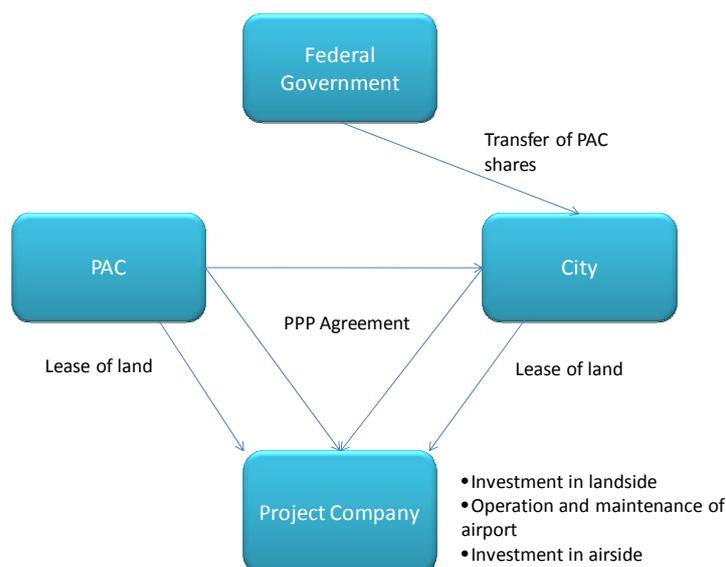
An options analysis for PSP recommended a 'hybrid' model, to mitigate some of the risks in the project. The landside of the airport would be bid as a 30-year PPP, but the airside would remain purely public. The private concessionaire was responsible for investment and maintenance of the land side of the airport. The airside would be built (and financed) by the private concessionaire but owned and managed by the City of St. Petersburg (through a public company). This was chosen because the airstrip was considered of federal importance.

c. Project Revenue

No capital grants, availability payments or subsidies were given to the concessionaire. No guarantees (traffic or otherwise) were provided by the Federal Government or the City of Saint Petersburg. The project revenue was purely based on user fees and commercial revenues.

- Federal Government - Transfer PAC shares to the City of St. Petersburg
- Pulkovo Airport Company (PAC)- is owned by City and manages the airside
- City and PAC- lease the land to the Project Company
- Project Company invests in the airside portion of the airport, but it is operated and maintained by the City
- Project Company invests, operates and maintains the landside portion of the airport.

d. PPP Structure (30 Year Concession)



III. PROCESS ANALYSIS

a. Inception and Project Preparation

The diagram below shows the main transaction phases. Prior to launching the tender, the city designed an Airport Masterplan with cost estimates for the project. The design for the new airport was based on the results of an architectural design competition. Initial resources allocated to the project included a project development cost of Euro 600 million and an airside investment of Euro 300 million.

b. Tender Summary

The project was competitively bid, with technical and legal qualifying phases. Technical bids with that involved a larger, more robust facility were weighted higher. The technical and economic bids both counted toward final award. The economic component was a variable fee calculated as a percentage of the operator annual gross revenues. The winning consortium offered 11.1% of annual revenues to the City of St. Petersburg.

Activity	Dates
Pre-Qualification Tender Launched	April 2008
Short listing of Consortia (7 shortlisted)	August 12, 2008
Final Tender Launched (3 bids submitted)	February 5, 2009
Tech and Legal Winner Announced	June 17, 2009
Financial Tender Winner Announced	June 25, 2009
Concession Contract Signed	October 30, 2009
Financial Close	April 29, 2010
Airport Transferred to Private	April 29, 2010

Consortium	
New Terminal Test Operations	2013

c. Procurement

The city government of St. Petersburg awarded the concession through a competitive tender, launched in April 2008. The World Bank acted as the strategic adviser to the city government on the concession. The City was also advised by a transaction team including Citibank, Mott Macdonald and Dewey Leboeuf. Seven parties were shortlisted on Aug. 12, 2008.

The final tender was issued on Feb. 5, 2009. Three consortia submitted final bids: Fraport/VTB/Copelouzos (Northern Capital Gateway), Vienna Airport/ZAO Lider and Changi Airport/Basic Element. The award was based on a combination of legal, technical and financial criteria. The main financial criterion was the highest annual percentage of project revenues transferred to the city government. On June 17, 2009, it was announced that Northern Capital Gateway was the winner of the legal and technical phase of the tender. On June 25, 2009, it was announced that Northern Capital had also won the financial part of the tender, bidding a royalty payment to the city government of 11.5% of revenues.

IV. FINANCING INFORMATION

The Euro 1.1 billion financing package consisted of Euro 733 million of senior debt provided through a syndication led by IFC and the EBRD. VEB is not really a development bank, but is definitely public.] As the project was launched shortly after the global financial crisis, this package helped to reassure investors. In July 2010, seven commercial banks and one development bank (KfW) participated in the B-loan component of a facility jointly arranged by the IFC and EBRD totaling Euro 200 million.

Equity financing included shareholder loans, subscribed capital and project cash flows from 2010 to 2013. The project had a projected debt: equity ratio of 60:40, but ended as 67:33 when it closed financing. All financing was committed upfront and drawn down in accordance with the construction program milestones.

Financials	Amount and Partners
Total project cost (Phase I)	<ul style="list-style-type: none"> • €1.1 billion
Debt: Equity Ratio	<ul style="list-style-type: none"> • 67:33
Total Equity	<ul style="list-style-type: none"> • €467 million
Equity providers	<ul style="list-style-type: none"> • VTB Bank (Russia: 57.5%), • Fraport AG (Germany: 35.5%) • Copelouzos Group (Greece: 7%)
Total senior debt	<ul style="list-style-type: none"> • €733 million
Senior debt breakdown	<ul style="list-style-type: none"> • Black Sea Trade and Development Bank - €15 • EBRD - €100 • Eurasian Development Bank - €68 • IFC - €70 • Nordic Investment Bank - €50 • VEB (Russian Dev. Bank) - €230 • EBRD & IFC - €200

V. CURRENT STATUS AND KEY IMPLEMENTATION ISSUES

a. Current Status

In 2012, Pulkovo Airport (LED) welcomed 11.2 million passengers. The new terminal 1, which started test operations by the end of 2013, was able to accommodate 17 million passengers. The project demonstrated the following impacts:

- Improved access through air traffic for a key economic and commercial center for Russia
- Use of a transparent bidding process to select world-class investors to deliver a show-case regional and federally significant project

b. Implementation Issues

As the project was bid during the global financial crisis and investors were less willing to take risks, the project made various adjustments including:

- Adjusting bid criteria to allow for uncertainties in financing plans due to the global financial crisis
- Allowing more time to develop bids
- Allowing for deferred capital expenditure, at a penalty on evaluation scoring

VI. KEY LESSONS, EXPERIENCES AND OBSERVATIONS.

1. The project had a clear champion in the then Governor of the City and one of the Deputy Governor, who were intent on using global best practices to achieve their goals
2. Success relied on the city hiring experienced international advisers, putting together a strong project team and involving senior officials
3. Having a strategic adviser for the City (in this case the WB) complemented the transaction advisers
4. Successful promotion contributed to showing professionalism despite limited PPP experience
5. The process was designed so as to select the best option for the major stakeholders, City of St. Petersburg and the Private Partner
6. The process was well-structured, interactive and transparent
7. The bidders' opinions and suggestions to improve the process were considered and respected

Singapore's Waste-to-Energy Infrastructure Development Project

I. PROJECT DESCRIPTION

a. Background

In the 1960s and 1970s, solid waste was disposed of in Singapore by landfilling. In the late 1970s, an alternative method of solid waste treatment and disposal was needed because of the difficulty in finding new landfill space in land scarce Singapore. An alternative method had to be found to manage the increase in amount of waste disposed of caused by a rapid increase in population and economic growth. Waste-to-energy (WTE) incineration was adopted as incineration reduced the waste volume by 90% resulting in less land space required to landfill the incineration ashes. Singapore started its first WTE plant in 1979 and subsequently developed three other WTE plants by year 2000 to manage the growth in waste disposal volume.

Today, the solid waste disposal infrastructure consists of four WTE plants located at Tuas and Senoko, as well as an offshore sanitary landfill, Semakau Landfill. All wastes that are not recycled are collected and disposed of at the four WTE incineration plants, or at the offshore landfill in the case of non-incinerable waste and incineration ash.

b. Project Rationale, Objectives and Scope

With rapidly increasing refuse quantities and fast-diminishing landfill space, the then Ministry of The Environment decided to build Singapore's first modern WTE IP at Ulu Pandan after careful evaluation of available technologies at that time (e.g. high-density compaction, composting and incineration). Mass burn incineration was identified as the most ideal technology for land-scarce Singapore, and it was well-proven in many economies such as Japan, Denmark and Germany. The heat released from the incineration process could be converted into electricity, and ferrous metals in the ash residue could be recovered for recycling.

The Government, through the Ministry of The Environment and Water Resources (MEWR) has developed, built, owned and operated a total of four WTE plants:

- Ulu Pandan Incineration Plant (UPIP) since 1979,
- Tuas Incineration Plant (TIP) since 1986,
- Senoko Incineration Plant (SIP) since 1992, and
- Tuas South Incineration Plant (TSIP) since 2000

These plants were managed and operated by the National Environment Agency (NEA) on behalf of the Government. The successful development of these solid waste disposal facilities over 30 years have laid a strong foundation of WTE incineration technology know-how and developed a pool of experienced staff in the commissioning, operation and maintenance of the incineration equipment in the public sector.

The Government had traditionally undertaken all financial, design and operational risks primarily in the development of the WTE plants due to the following:

- Need to provide a reliable essential service
- High capital costs required to build the plants
- Necessary experience in operating and maintaining the WTE Incineration Plants (IPs)

Public Private Partnership (PPP) refers to long-term partnering relationships between the public and private sector to deliver services. It is an approach that the Government adopted to increase private sector involvement in the delivery of public services.

Following the successful privatization of refuse collection services in 1999, the Singapore Government decided to liberalize the WTE IP industry by allowing the private sector to develop and operate the next WTE plant. The objectives were to: (i) increase efficiency in the WTE sector further by injecting competition, and (ii) develop the environmental engineering industry by transferring expertise residing within the government to the private sector.

The plan was to liberalise the WTE sector in phases, starting with the development of a 5th WTE plant on a design-build-own-operate (DBOO) basis using the Public-Private-Partnership (PPP) model. Future new WTE plants could similarly be developed by the PPP approach. With the adoption of PPP procurement, the Singapore Government will shift its role from one of developing, owning and operating WTE plants to purchasing incineration services directly from the private sector.

c. DBOO Tender

There have been many case studies of PPP projects successfully introduced in utilities and infrastructure based industries traditionally owned and operated by the public sector around the world, with the most mature PPP markets in UK and Australia¹¹. For the WTE industry, a pure model of competition within the market would involve open market entry with WTE IP owners competing with each other on the basis of refuse disposal fee and service. A tender for a pure competition model for the development of a WTE plant was called in 2001. This tender was not successful as the private sector could not bear the demand risk and the quality of waste.

~~In view of the market conditions,~~ In view of the market conditions, the government decided to adopt a PPP approach for the provision of waste to energy services. This DBOO (Design-Build-Own-Operate) WTE scheme, with full take-or-pay approach would ensure a bankable project which would allow the developer to seek funding. The Government would buy the full incineration capacity at a price determined through an open public tender which is of value for money to the Government. The certainty afforded by the take-or-pay arrangement would ensure the most efficient WTE incineration prices and could lead to lower waste disposal fees.

In 2004, NEA invited the private sector participants to apply for pre-qualification to design, finance, construct, commission, own, operate and maintain a WTE IP with a capacity of 800 tonnes per day. The successful developer would form a Special Purpose Company (SPC) to provide waste incineration services to NEA for 25 years after the construction of the plant.

The tender was awarded in 2005, and NEA signed the Incineration Services Agreement (ISA) with the SPC, the Keppel Seghers Tuas Waste-to-Energy Plant Pte Ltd to provide incineration services exclusively to NEA for a period of 25 years. The plant was also required to recover ferrous scrap metal and to use the heat energy to generate electricity for its consumption and sale to the National Electricity Market.

II. PROJECT STRUCTURE

a. DBOO Model

¹ G20 Investment and Infrastructure Working Group, February 2014.

https://www.g20.org/sites/default/files/g20_resources/library/WBG%20IIWG%20Success%20Stories%20Overcoming%20Constraints%20to%20the%20Financing%20of%20Infrastructure.pdf

The Government carried out an in-depth study of the WTE industry structure, which indicated that it would be difficult to achieve a freely competitive IP industry. The desired efficiency gains of private sector participation could however, still be reaped through competition in terms of design and allocation of capital. Learning from this, the DBOO approach was modified. The Government would bear the demand risks associated with a non-guaranteed waste stream and uncertain waste growth.

This approach allowed the private sector to tender more competitively. The Government's interest in ensuring reliable incineration services is safeguarded through the Incineration Services Agreement (ISA), which states the commercial terms and conditions governing the WTE services to be rendered by the SPC.

b. Allocation of Key Risks

The allocation of risks followed the principle of putting risks with the party best able to take it. The table below showed the allocation of the key risks.

Risks borne by NEA	Risks borne by SPC
<ul style="list-style-type: none"> • Amount of refuse/incineration ash going to landfill 	<ul style="list-style-type: none"> • Planning and approvals
<ul style="list-style-type: none"> • Refuse quality 	<ul style="list-style-type: none"> • Design and construction
<ul style="list-style-type: none"> • Power generation 	<ul style="list-style-type: none"> • Installation and commissioning
<ul style="list-style-type: none"> • Electricity sale price 	<ul style="list-style-type: none"> • Financing for the project
	<ul style="list-style-type: none"> • Operations and maintenance
	<ul style="list-style-type: none"> • Service Quality

c. Payment Structure

Under the ISA, the SPC will receive payments for availability of incineration capacity (Capacity Payment), the actual amount of refuse incinerated (Service Payment) and for the generation of electricity (Electricity Generation Payment).

The Capacity Payment allows the recovery of the fixed cost, mainly consisting of capital cost (debt service, repayment of equity and return on equity) and fixed operation and maintenance cost of the SPC independent from the quantity of waste processed in the Plant. The capacity payment to the SPC will depend on the availability of the capacity of the plant to incinerate waste.

The Service Payment (SP) is paid to the SPC for the variable cost of processing waste and is an output-based payment dependent on the actual amount of waste incinerated.

The Electricity Generation Payment (EGP) represents payment for the availability of the electricity generation equipment to generate electricity. In this project, the SPC is required to generate electricity for purposes of self-consumption of the WTE IP as well as for sale to the National Electricity Market of Singapore. The SPC will receive payments for investing in, operating and maintaining the electricity generation equipment. The SPC will collect the revenues from the sale of electricity to the National Electricity Market of Singapore on behalf of the NEA. Revenues from the sale of electricity will be used by NEA to offset the payments to the SPC. Payment deductions will be applied should the SPC fail to deliver the contractual amount of electricity.

The formula for calculation of the payment to the SPC is shown in the equation below:

$$\text{Payment} = A + B + C - D$$

where

- A = Incineration Capacity Payment (ICP)
- B = Variable Service Payment which includes chemicals, consumables, tools and spare parts
- C = Electricity Generation Payment (ECP)
- D = Revenue from sale of electricity.

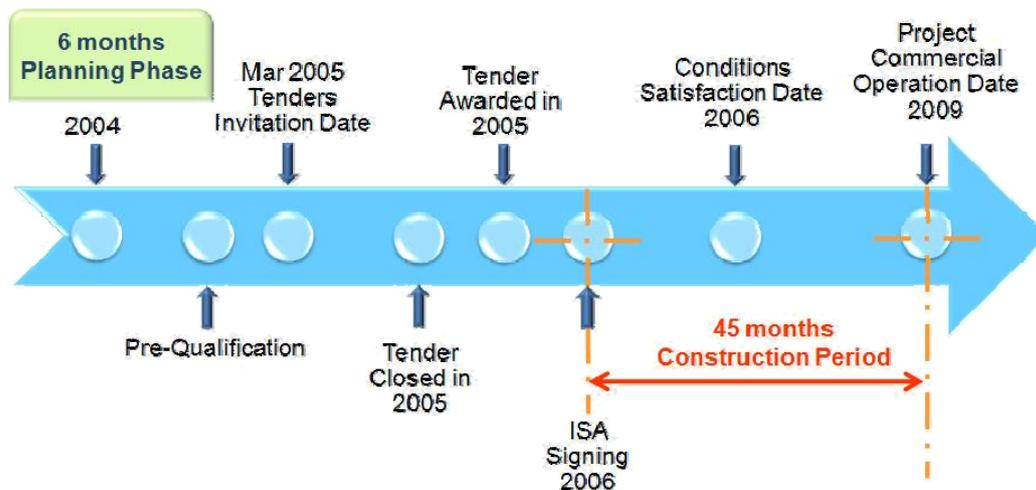
III. PROCESS ANALYSIS

a. Planning for waste disposal demand

NEA assumes overall responsibility for ensuring sufficient waste incineration capacity. NEA monitors and projects the waste disposal demand, and would plan for new disposal facilities when required. The Government would assess and decide whether the new facility would be developed as a Government or privately owned facility.

b. Timeline for 5th WTE IP

The typical time required to plan, design and construct a WTE IP is about 5 years. The actual timeline for the 5th WTE IP awarded in 2005 is shown below:



IV. FINANCING INFORMATION

The SPC financed the 5th WTE plant through a combination of equity and bank loans. The project cost was estimated at \$200 million and the debt / equity ratio was above 50%. A tripartite agreement was signed by NEA, the SPC and the lending banks to protect the interests of the lenders. This Tripartite Agreement set out the circumstances in which NEA would be entitled to step-in and operate the plant. It also sets out the rights of the lenders to step-in before termination of contract. The 5th WTE plant was successfully completed in 2009. In 2010, the plant ownership was transferred to a business trust, with the same majority shareholder and operator. The trust was subsequently listed on the Singapore Stock Exchange.

V. CURRENT STATUS AND KEY IMPLEMENTATION ISSUES

The 5th WTE plant has operated successfully since completion in 2009. There have been no changes in the terms of the contract. The project was awarded to Keppel in 2005 and the EPC and O&M contracts were undertaken by Keppel Seghers Engineering Singapore Pte Ltd. Keppel was able to tap on its global contacts for technical expertise and equipment supply.

VI. KEY LESSONS, EXPERIENCES AND OBSERVATIONS

Developing a successful PPP program is a complex undertaking that involves a number of challenges. From our experience, we learnt that the proper allocation of risks is vital in encouraging private sector interest in the project. Although developing a good contract between parties is important, a supportive regulatory environment establishing clear guidelines on key performance indicators is also crucial. The model was successful as the SPC can count on reliable service payments from the Government. The PPP model allowed the public sector to get value for money in the delivery of waste incineration services through the following:

- Use of private sector capital to drive greater financial discipline;
- Tap on private sector innovation for cost-effective solutions;
- Pay for services only on performance;
- Allow for optimal life-cycle costing of services;
- Certainty of price and budget for the public sector;

The successful development of the 5th WTE plant in 2009 and the experience gained would allow for the next plant to be developed under a similar PPP model. NEA has started to plan for the development of the 6th WTE plant under a similar PPP approach to reap the benefits outlined above.

Sembcorp NEWater Plant at Changi, Singapore

I. PROJECT DESCRIPTION

a. Background

PUB's best sourcing strategy for procurement has evolved through the years to help Singapore secure adequate water supply at the best value for money. Starting with in-house design and supervision combined with outsourcing of construction, PUB has progressed to outsourcing of design and construction to the private sector. In Nov 2001, PUB initiated a greater liberalization of its best sourcing strategy when it called its first PPP tender for a 30MIGD desalination plant in Tuas (later known as Singspring Desalination Plant) under the design-build-own-operate (DBOO) arrangement. In fact, PUB is the first public agency in Singapore to adopt such a PPP approach. To date PUB has implemented five DBOO projects, namely, the afore-mentioned Singspring Desalination Plant, the 32MIGD Keppel Seghers NEWater Plant, the 50MIGD Sembcorp NEWater Plant, the 70MIGD Tuaspring Desalination Plant and the 50MIGD Second Changi NEWater Plant.

This case study on Sembcorp NEWater Plant outlines key features of the DBOO project, which includes the technical, financial, commercial and legal frameworks, benefits of PPP and challenges faced during conceptualization and implementation.

b. Project Timelines

The timeline for the Sembcorp NEWater Project is listed below:

Date	Activities
Aug 2007	Request for Proposal (RFP) issued
Nov 2007	Bids received
Jan 2008	Preferred Bidder selected
Feb 2008	NEWater Agreement signed
May 2008	Financial close
May 2010	Commercial operation

II. PROCESS ANALYSIS

The Sembcorp NEWater Plant at Changi is developed using the Public Private Partnership (PPP) approach. Under this PPP arrangement, the concession company, Sembcorp NEWater Pte Ltd (Sembcorp), was contracted by PUB to design, build, own and operate the 50MIGD NEWater Plant. The water produced, which must meet all of PUB's stringent water quality requirements, is supplied to PUB for a period of 25 years from 2010 to 2035. The Sembcorp NEWater Plant has been in operation since May 2010 and has consistently produced NEWater that meets PUB's requirement.

a. Procurement

For the Sembcorp NEWater Plant, the PPP DBOO procurement approach has resulted in a lower than expected bid price for NEWater due partly to economy of scale, design innovation and improvements in membrane technology. Some of the other benefits of this approach include improved economic optimization, increased innovation and greater opportunities for the private sector.

Improved Economic Optimization - Under the PPP DBOO approach, the design, financing, construction, operations and maintenance are undertaken by the same company or consortium. There is therefore strong incentive for the private concession company that design and build the NEWater Plant to also optimize the operation and maintenance costs of the facility. For the Sembcorp NEWater Plant, the concession company used the “optimal lifecycle costing” approach instead of the “lowest capital cost” approach. The plant design incorporated a number of energy saving features to lower the operating costs. All pumps have variable speed drives to maximize energy efficiency. Inter-stage energy recovery turbines (turbo boosters) were installed in the RO membrane trains to reduce their energy consumption and thus the operating costs for the plant.

Increased Innovation - Since the design and operation of the plant is the responsibility of the concession company, there are opportunities and incentives for the private sector operator to introduce innovative ideas and add value to the project. The technical requirements for the DBOO project were mostly performance-based, with the quality and quantity of NEWater as the key performance criteria. This approach allowed the concession company more flexibility to innovate and optimize the plant design while implementing the established treatment processes necessary for meeting the high quality standards of NEWater. Some examples of innovation and optimization in their design include the following:

Stacking RO pressure vessels higher than normal to reduce building footprint

Using variable speed pumps to optimize process performance and reduce energy demand

Using inter-stage energy recovery devices between the two stages of the RO train to reduce energy consumption and balance permeate flux across the membrane stages

Greater Opportunities for the Private Sector - The PPP DBOO procurement approach also offers greater business opportunities for the private sector in Singapore’s water industry. Under the traditional procurement methods, PUB would have contracted private firms to design and construct a NEWater facility, and then PUB would operate the plant with its own staff. With the DBOO approach, PUB utilizes the expertise and experience of the private sector partner to not only design and build the facility, but also to finance, operate and maintain the plant. This procurement approach creates new business opportunities for the private sector in Singapore to be involved in service delivery to the public sector.

b. Challenges

In addition to the benefits of the PPP DBOO procurement method, there are challenges which need to be addressed. Managing these challenges requires expertise in the technical, commercial, financial and legal aspects of the project. Some of these challenges include:

- Preparing comprehensive DBOO bid documents which cover legal, financial, commercial and technical aspects of the project
- Conducting a fair and thorough evaluation of all DBOO bids
- Managing the performance of the private sector service provider
- Managing the relationship with the private sector service provider

Preparing comprehensive DBOO bid documents – Comprehensive and well thought out DBOO bid documents, and agreements, which cover legal, financial, commercial and technical aspects of the project, are needed to have a successful project. These documents and agreements must clearly state PUB's requirements, what the concession company must do, the criteria used to measure performance, etc.. The DBOO bid documents must achieve the right balance between having enough prescription to ensure that the proven NEWater multiple barrier treatment processes are included in the design, while also containing performance-based specifications which allow the concession company to implement cost saving innovations. The risk allocation matrix should aim to allocate risk to the party most able to manage it and cover technical, market, resource, and financing categories, as well as the traditional building and operating risks.

Evaluating DBOO proposals – A fair and thorough evaluation must be made of all DBOO bids. This evaluation must consider the legal, financial, commercial and technical content of each bid. In addition, the levelized NEWater tariff (product water price) must also be evaluated. For example, a financial analysis must be made of a Bidder's financial plan/model to ensure economic soundness and robustness of their proposal. In addition, the technical review must check that a Bidder has complied with the mandatory requirements, considered the suggested good utility practices, and met the Technical & Performance specifications. Similarly, the legal and commercial reviews must assess a bidder's adherence to the legal and commercial requirements, as well as the financial strength of the bidding consortium.

Managing the Performance – Performance monitoring and measurements are critical to PPP DBOO projects since they form the basis for payment to the private sector service provider. Successful PPP DBOO projects are the result of the public agency understanding and defining the performance standards that it requires and establishing service outputs which can be easily monitored and measured. For the Sembcorp NEWater Plant project, a comprehensive monitoring and audit system has been established to allow PUB to routinely check on water quality, operation and maintenance of the plant. This system includes linking the NEWater plant's key on-line water quality monitoring system to PUB's monitoring room, which allows PUB to have continuous, real-time information on the NEWater quality before it is delivered to the consumers. The water is also sampled and analyzed regularly by an independent accredited laboratory to provide a double check on its quality. In addition, audits are conducted regularly by PUB's auditors to ensure the operation and maintenance meets the specified standards.

Managing the Relationship - Managing the relationship with the private sector partner is vital to ensuring that the PPP DBOO deal is value for money for the public agency. This relationship must last the full 25-year concession period. A strong project management team is needed to address the concerns of the multiple stakeholders involved. This specialized team must have expertise in the financial, commercial, legal and technical aspects of PPP DBOO contracting. During the implementation of the Sembcorp NEWater Plant project, PUB played an active role beyond the contractual obligations by participating in the various phases of the project implementation, including plant commissioning. PUB staff attended their weekly project meetings to share our experience and help resolve problems. This close working relationship has contributed to the smooth delivery of the project.

c. Contracts

The legal framework for the Sembcorp NEWater Plant is formalized into two major agreements, namely:

- NEWater Agreement
- Direct or Step-In Agreement

NEWater Agreement

The NEWater Agreement is a water purchase agreement which prescribes the legal rights of the “Owner” of the NEWater Plant (Sembcorp) and the “Purchaser” of the NEWater produced (PUB). Sembcorp’s main obligation is to treat feedwater (meeting a quality standard) provided by PUB to produce NEWater meeting the quality standards and at the warranted capacity. PUB’s obligation is to provide an adequate quantity of secondary treated effluent from the nearby Water Reclamation Plant as feedwater which meets the quality specifications. Under the agreement, there is no minimum quantity of NEWater that PUB must take.

Being a 25 year agreement, it is inevitable that there will be changes over the term of the contract. The NEWater Agreement allows a certain degree of flexibility to cope with future changes. For example, there are provisions in the Agreement that address:

Changes in laws

Step changes in technology

Force majeure

Dispute resolutions

Direct or Step-In Agreement

As this is a 25-year contract, there is need for step-in provisions under the NEWater Agreement to address events that may threaten the continued supply of NEWater. A step-in agreement was included in the NEWater Agreement to prescribe the step-in rights of the parties involved; which are PUB, Sembcorp and their Financier.

d. Financial

The concession company will usually raise project finance through equity and debt finance. The equity investors are typically the construction and operation companies who are involved in the actual service delivery. Fund managers and other financial institutions may also take an equity stake in the concession company. Debt finance, in the form of bank loans or bonds, may also be raised to pay for the construction and operation of the facilities.

e. Commercial

The commercial principle behind the Sembcorp NEWater Plant DBOO project is based on a “tolling” model. In this model, Sembcorp will design, construct, own and operate a NEWater Plant for the sole purpose of further treating the secondary effluent from the nearby Water Reclamation Plant (owned and operated by PUB) to produce NEWater. In return PUB will pay Sembcorp a tariff or “toll” for the treatment services provided and the NEWater supplied to PUB. PUB will transfer and distribute the NEWater that Sembcorp produces to PUB’s customers.

f. Tariff Structure

The tariff for the Sembcorp NEWater Plant DBOO project is structured according to performance based payment mechanisms. The tariff structure comprises two parts, namely:

Fixed Availability Payment

Variable Output Payment

The Fixed Availability Payment is the fixed charge which PUB is required to pay Sembcorp regardless of the amount of NEWater it purchases. This charge includes the following:

- Capital Cost Recovery Payment
- Fixed O&M Payment
- Fixed Power Payment
-

The Variable Output Payment is dependent on the quantity of NEWater supplied to PUB. This payment includes:

- Variable O&M Payment
- Variable Power Payment
-

To allow for inflation and fluctuations in fuel prices over the 25-year Term, there are provisions in the business model for annual adjustment of the tariff based on consumer price and fuel indices. These provisions for adjustment in the tariff due to unpredictable changes in costs reduce the risks and therefore allow the private sector service provider to offer a very competitive NEWater price to PUB.

g. Process Flow Diagram and Plant Photographs

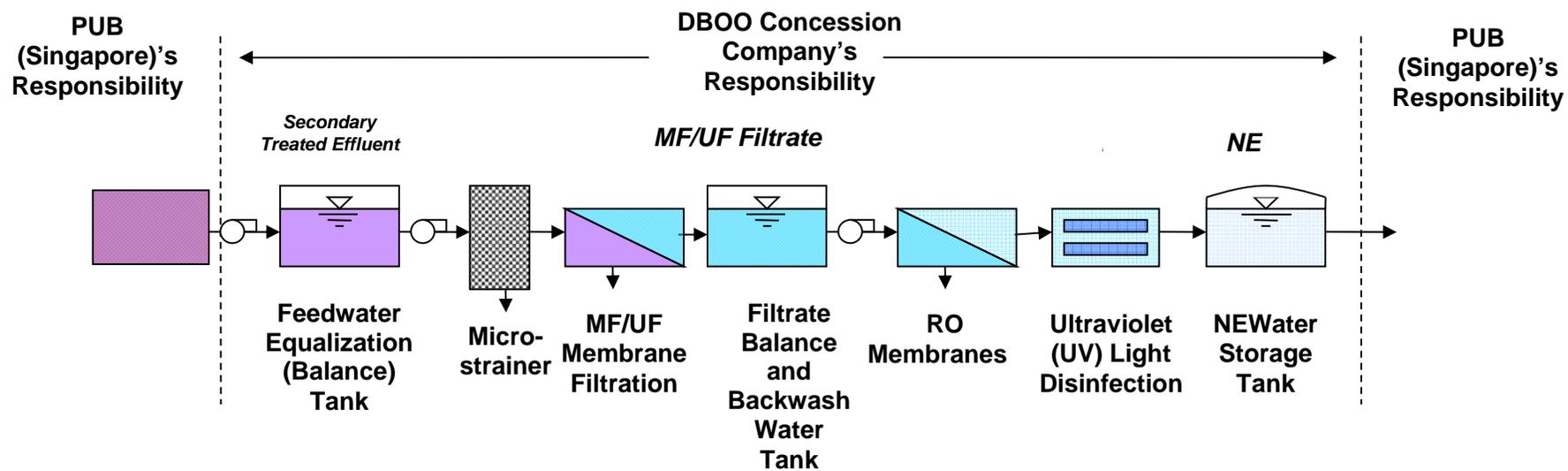
As discussed above, the Sembcorp NEWater Plant uses the same treatment steps of MF/UF membrane filtration, RO membrane demineralization, and UV disinfection that have reliably produced high quality NEWater at the other PUB's NEWater Plants since 2003. A simplified process flow diagram for the Sembcorp NEWater Plant is shown in **Figure 1**. Photographs of the Sembcorp NEWater Plant are presented in the following figures:

- **Figure 2** – Plant overview
- **Figure 3** – MF Membrane Module Rack
- **Figure 4** – RO Membrane Train

III. CONCLUSION

The Sembcorp NEWater Plant is the largest NEWater facility in the region to be implemented using a design-build-own-operate (DBOO) arrangement. This procurement approach has proven to be successful, as measured by the competitive water price, high quality NEWater produced, reliable operation, and the state-of-the art facility being brought on-line within the required time schedule.

**Figure 1: Sembcorp NEWater Plant
Process Schematic**



1.



**Figure 2 – Plant Overview
(located at roof-top of a
building)**



**Figure 3 – MF Membrane
Module Rack**



**Figure 4 – RO
Membrane Train**

Taiwan High Speed Rail Project, Chinese Taipei

I. PROJECT DESCRIPTION

a. Background/Objectives

In view of the steadily deteriorating state of transportation service quality in Chinese Taipei's western corridor and gradual saturation of capacity, the Institute of transportation, MOTC and Provincial Authority was designated to perform the "Taiwan Western Corridor High Speed Rail Feasibility Study" in 1987, and finally approved the Taiwan High Speed Rail Project (hereafter referred to as HSR project) in 1992.

b. Rationale for selecting PPP

The HSR project adopted the "build-operate-transfer" (BOT) model because it was significant in two important ways: easing the authority's fiscal burden, and also boosting business efficiency. In Chinese Taipei, the dramatic increase in social welfare spending and routine expenditures since 1990 has affected the authority's ability to fund transportation infrastructure projects. As a consequence, in the face of a shortage of funds, the authority is found in necessary to shift from the past model wherein all transportation development funding is provided from the authority budget toward the BOT model of self-financing project development, which has already been in use overseas for many years.

c. Scope

The planned HSR route would extend from Taipei in the north to Kaohsiung in the south, have a total length of approximately 345 km with 12 stations and 6 maintenance bases. The total work could be divided into three parts:

- Implemented by authority: planning, basic design, land acquisition, construction of underground civil work in Taipei section (Nangang-Banqiao).
- Minimum investment (must be made by the private sector): E&M core system, track work, maintenance depots, stations, test-run section, station area development, operation and maintenance.
- Optional investment (the private sector can choose whether to make or leave it to the authority): Civil work.

d. Stakeholders

In 1997, the private sector was invited to put forward proposals to design, finance, construct and operate the Taiwan High Speed Railway (THSR) using the BOT model. And in September 1997, the authority selected the Taiwan High Speed Rail Consortium as the best applicant to be awarded the concession.

Taiwan High Speed Rail Corporation (THSRC) was registered as a company in May 1998, and signed the Construction and Operation Concession Agreement (C&OA) with the MOTC on 23 July 1998.

e. Composition of stakeholders:

Type of Shareholders	Shareholding (In hundreds of millions of shares)	Percentage (%)
5 leading Chinese Taipei companies	29.4	27.93%
authority agencies and authority-owned agencies	12.5	11.87%
Foreign institutions and natural individuals	3.6	3.45%
Other corporate Investors and Individuals	59.8	56.75%
Total	105.3	100%

II. STRUCTURE OF THE PROJECT

a. PPP Scheme

The HSR project uses the BOT model, which the concession company (THSRC) makes the largest investments (refer to part (b) and (c) of section I. c. Scope). The authority is responsible for the supervision and administration of the project, and takes the basic work such as basic design, planning and land acquisition (refer to part (a) of section I. c. Scope). The BOT concession period is 35 years for the operation and 50 years for the station area development.

b. Risk allocation

Risk Type	Risk Period	Primary Risk Bearer
Land acquisition	Throughout concession period	Public Sector
Project route and station	Throughout concession period	Public Sector
Explicit design criteria	Throughout concession period	Public Sector
Explicit authority's work, assistance and promise.	Throughout concession period	Public Sector
The work assigned to the private (such as engineering and station area development)	Throughout concession period	Private operator
Explicit rule of fare adjusting mechanism	Throughout concession period	Public Sector and Private operator
Explicit statement of solution if Force majeure	Throughout concession period	Public Sector and Private operator
Revenue (no guarantee HSR ridership nor revenue)	Throughout concession period	Private operator
Financing	Throughout concession period	Public Sector and Private operator

c. Special Features

In order to provide sufficient incentives for private investment, "The Statute for Encouragement of Private Participation in Transportation Infrastructure" was passed which contains innovative terms concerning land acquisition and use, financing, and tax incentives in December 1994.

III. PROCESS ANALYSIS

a. Feasibility

The Institute of transportation, MOTC selected a consultant team to jointly undertake the "Taiwan Western Corridor High Speed Rail Feasibility Study" in 1989. The report on HSR proposal completed in February 1990 concluded: "The project is feasible and should be implemented as a first priority".

b. Procurement

The establishment of the "MOTC High Speed Rail Project Preparatory Office" was approved subsequently in June 1990 (the preparatory office was renamed the "Bureau of Taiwan High Speed Rail, MOTC" in January 1997) to bear responsibility for planning and implementation of the HSR project.

The HSR project was approved in June 1992 with the funding provided from the authority budget. But in July 1993, HSR project budget was cancelled and requested continued development as a BOT project.

On 29 October 1996, the BOHSR formally announced a call for private organizations interested in participating in HSR construction and operation. Two private organizations submitted applications before the cutoff date (15 January 1997). After two stages of review, negotiations and overall selection, the MOTC and THSRC signed the Construction and Operation Concession Agreement on 23 July 1998.

c. Development/Delivery

THSRC broke ground on the HSR project on 1 March 2000 and held ceremony to mark start of test-run on 27 January 2005. After the test before operation by the MOTC, the HSR was ratified to operation in December 2006 and finally opened to operate on 5 January 2007.

d. Current Status and key implementation issues

Up to May 2014, the THSR have carried more than 269 million passengers (average 130 thousand passengers per day in 2014), and the punctuality reaches 99.4%. It provides 5-6 trains in one direction per hour on peak hours, and has shorten the travel time from Taipei to Kaohsiung to 90 minutes to realize the one-day-society in Chinese Taipei's western corridor.

IV. FINANCING INFORMATION

a. Project cost

According to the project Taiwan High Speed Rail Consortium submitted in 2007, the construction cost is estimated to be NT\$407.6 billion (not including NT\$105.7 billion that must be performed by the MOTC), which was based on the planning and the designing data provided by BOHSR, MOTC and foreign experience.

In the end of 2013, the total cost of operating asset owned by THSRC is NT\$454.5 billion.

b. Sources of financing

The construction cost of high speed railway is raised by capital stock investment and debt financing. Total capital stock is NT\$105.3 billion and the debt is NT\$364.2 billion as of the end of December 2013.

c. Concession period, Self-Financing Ratio, Project IRR, NPV, and DE Ratio

Based on the 2007 project, the duration of the concession agreement for the HSR, including the construction period and operating period, is 35 years from the contract date. Self-Financing Ratio was calculated at 68.9%. The project internal rate of return was 13.89%. Project NPV at a discount rate of 10% was NT\$139 billion. Debt to equity ratio was 2.9%.

V. ROLE OF PPP UNIT/ CENTER

a. Background

Chinese Taipei enacted an Act for Promotion of Private Participation in Infrastructure Projects (hereinafter PPIP Act) in 2000 and in 2013 set up a permanent PPP unit (Department for the Promotion of Private Participation, PPP Department) under the Ministry of Finance. According to the PPIP Act each PPP project is designed and implemented by authorities in charge in the central and local authorities, the PPP Department of MOF is not involved in project planning and implementation, but announce relevant information of successful cases on PPP Information System, as well as provide training by sectors, learning from the best practices of benchmark cases and relevant operational guidelines for reference, such as a standard operation procedures for checking projects through their entire life-cycle, a checklist for important items, tender documents, references for the signing of contracts.

b. Functions of PPP unit

The PPP Department is in charge of the establishment of related PPP policies and regulations, collection and announcement of related statistics, professional training, counseling, coordination, and supervision in connection with the relevant PPP projects, and the processing of complaints. The PPP Department has adopted the following measures:

1. Enacting the PPIP Act, Enforcement Rules of Act for PPIP, and other relevant laws and regulations.
2. Establishing "[PPP Information System](http://ppp.mof.gov.tw/PPP.Website/English/)(<http://ppp.mof.gov.tw/PPP.Website/English/>)" to monitor the progress of individual projects and announce tender information in due time.
3. Enhancing the professional capacity of staff from both public and private sectors engaging in PPP by providing customized training courses including introduction of laws and regulations, training by sectors, learning from the best practices of benchmark cases and operational guidelines.

4. Providing performance evaluation mechanism of implemented project by each sector including common and specific performance indicators for reference by the authority-in-charge.
5. Providing consulting service and initial assistance for the development of PPIP projects to the authority-in-charge.
6. Setting up the “Platform for Private Participation in Infrastructure” under the Ministry of Finance to create channels for dialogue between the public sector and potential private investors at the early stage, and coordination among public sectors.
7. Establishing Complaint Review Board for PPP projects, and settle disputes encountered during application and evaluation stage.

c. Funding Support of PPP Unit

Chinese Taipei’s PPP projects are implemented on a financially- independent basis. The authority does not provide viability gap financing.

d. Performance of PPP Unit

Chinese Taipei have over 1,100 PPP contracted projects, worth more than NTD 890 billion dollars (equivalent to USD 30 billion, or CNY 178 billion) in capital investment from 2000 till 2013, including hospitals, cultural creativity parks, bus terminals, and port container terminal facilities. At present, the private investment through PPP is around NTD 50 billion dollars (equivalent to USD 1.6 billion, or CNY 10 billion) per year. Chinese Taipei’s PPP projects are implemented on a financially- independent basis. The authority does not provide special loans or guarantee business revenue. We have relevant professional expertise in the legal, financial and technological aspects of PPP, and have set up a list of PPP experts.

V. Key lessons, Experiences and Observations

Since the HSR line traverses Chinese Taipei’s western corridor, the project has involved a complex range of authority and agency duties and powers. Effective coordination channels and operating mechanisms must be established in order to continue coordinate the resolution of various problems.

Because of the enormous costs of the HSR project, the private organization needed to raise more than NT\$400 billion in funds. As a consequence, shifts in economic conditions and the financial environment may readily impede fund-raising efforts.

Project financing is an arrangement in which future net income served as a guaranteed source of funds for repayment of project loans. The HSR project failed to adopting project financing and used traditional debt obligation instead, so in order to strengthen the ability of financing organizations to assess BOT projects and allow financing organizations to participate at an early stage and implement project financing, financial laws and the operating environment should be reviewed and revised as necessary so as to enable financing organizations to supervise projects.

Since major BOT rail transportation projects involve huge investments, long recovery periods, and uncertain revenues (passenger traffic), it is recommended that legislation considering specify mechanisms guaranteeing private organizations a minimum income according to financial characteristic and risk of the project; this will facilitate the arrangement of financing and reasonable apportionment of risk.

The most important things to consider when promoting private participation in public infrastructure projects are the financial plan, financing and repayment plan, and assumption of risk; project review should be led by a dedicated unit assembling professional personnel with experience in BOT financing, law, and project technology.

The important content of the proposals, especially the letters of support from bank consortiums, should be clearly stated in the Concession Contract in order to make sure the promise made by the investor will be carried out.

After chosen the best applicant, authority should stick to the "Bankable or Terminate" rule and do not provide additional financing guarantee unless the guarantee was approved beforehand and was written in the application note.

The Concession Contract should specify the management mechanism for breaching the contract (fundamental/ non-fundamental) so that the rights of the authority can be appropriately safeguarded.

Freeway Electronic Toll Collection, Chinese Taipei

I. PROJECT DESCRIPTION/ASSESSMENT

a. Background and Project Rationale

In order to allow highway users to make toll payments without stopping, without using cash, with more efficiency and under a safe and secure environment, the Chinese Taipei Area Freeway Bureau, MOTC, (hereinafter referred to as “the Organizer”) plans to promote the “Private Participation in Construction and Operation of Freeway Electronic Toll Collection System” project (hereinafter referred to as the “ETC project”) to achieve the goals of increasing toll station capacity, shortening payment time, improving convenience and safety of road users, conserving energy, reducing carbon emission, and reducing air pollution. At the same time, through the construction and operation of the electronic toll collection system, achieve the overall goal of implementing a fair toll collection scheme based on the “distance traveled” by the road user. In addition, to support the development of the intelligent highway, in the future, the electronic toll collection system must be able to integrate all its operations to become an electronic toll collection and traffic management system, thereby laying down the foundations for the application of intelligent transportation systems.

b. Rationale for PPP

The Organizer plans to conduct “Private Participation in Construction and Operation of Freeway Electronic Toll Collection System,” i.e. after establishing an appropriate operation period, a private institution will be commissioned to raise funds and be responsible for system construction, operation, maintenance, handling and marketing services, then based on the commission service fees and payment method agreed between the parties, the Organizer will pay the commission service fees to the private institution. During the contract period, the authority’s expenditure is zero.

c. Project Initiated, Conceptualized and Contract Signing

On August 20, 2003, the Organizer announced the ETC project to attract private enterprises. After the screening and selection process was completed, contract signing with Far Eastern Electronic Toll Collection Co., Ltd. (later changed to Construction and Operation Company) was completed on April 27, 2004. Subsequently, On August 3, 2006 due to the Supreme Administrative Court ruled that the handling of the ETC project must re-conduct the screening and selection process. It was re-validation, negotiation, contract negotiation, the contract finally signing with the Construction and Operation Company was completed on August 22, 2007.

II. STRUCTURE OF THE PROJECT

a. Type of PPP

The implementation of the ETC project by the Organizer is based on the “Act for Promotion of Private Participation in Infrastructure Projects,” in which the BOT method has been adopted.

The ETC contract provides that the Construction and Operation Company should compile its annual financial statements in accordance with Chinese Taipei’s GAAP and audited by a certified public accountant. These financial statements will be submitted to the Organizer each year before May 1 for reference. Financial statements will be prepared quarterly and then

published on the company's website submit as well as submitted to the Organizer for reference within 30 days after the end of each quarter. Therefore, related financial risks will be controlled and monitored by both the Organizer and the Construction and Operation Company.

III. PROCESS ANALYSIS

a. Feasibility

1. **Technical aspect:** There should not be any unexpected technology risks to private businesses when introducing relevant technologies in the future for participating in the construction and operation of the highway ETC system. Hence, private participation in the project from a technical standpoint is feasible.
2. **Environmental aspect:** As the Construction and Operation Company begins to implement ETC, toll collection manpower will be downsized and the existing toll collection facilities will be transferred to the participating private institution for their use.
3. **Legal aspect:** After assessment, Chinese Taipei has adopted the "Act for Promotion of Private Participation in Infrastructure Projects" and its related regulations to carry out the ETC project.
4. **Financial aspect:** Regarding the feasibility of private participation in the highway ETC construction and operation from a financial standpoint, it can be analyzed from three different aspects, "private participation niche," "project costs," and "project's return on investment." The analysis results are feasible.

b. Procurement

The ETC project adopts a qualification review together with a comprehensive assessment during the first stage of selection. Three (including) or fewer of the qualified applicants are chosen to conduct negotiations. After negotiations are completed, one of the qualified applicants will be selected as the best applicant and another will be second-best applicant.

The process is as follows:

1. The applicant shall send the application documents to the Organizer in one submission.
2. The Selection Committee selects three (including) or fewer of the qualified applicants.
3. The Selection Committee authorizes the working group to conduct negotiations with the qualified applicants.
4. The qualified applicants re-submits the revised investment plans along with the assessment comments and letter of financing intent from its major financing institution to the Organizer.
5. From the qualified applicants, the Selection Committee will select the best applicant and the second-best applicant.
6. The Organizer will conduct contract negotiations with the best applicant.
7. The best applicant passes the system functionality testing.
8. Establishment of the Construction and Operation Company is completed.
9. Contract signing (contract period of 20 years).

IV. FINANCIAL INFORMATION

ETC's main challenge is on financing. The Construction and Operation Company is still operating at a loss. It is difficult to seek financing from banks. The Construction and Operation

Company has obtained consent from the Organizer to use its distance-based construction and operation assets to seek financing from banks.

To guarantee that the Construction and Operation Company will perform the obligations stipulated in the ETC contract, the Construction and Operation Company agrees to provide a performance bond of NTD288 million at the time of contract signing in accordance with the provisions of this Chapter. In addition, the Construction and Operation Company should submit its insurance plan to the Organizer within three months of signing the ETC contract and obtain approval from the Organizer. Thereafter, any changes to the plans should be submitted to the Organizer for approval within one month of the changes.

V. CURRENT STATUS AND KEY IMPLEMENTATION ISSUES

Schedule	Activity
June 27, 2013	Construction and Operation Company completed the infrastructure of all the vehicle lanes
November 14, 2013	completed self-verification checking
December 26, 2013	Organizer completed the verification check
December 30, 2013	Chinese Taipei's highway began implementation of distance-based electronic toll collection

a. Implementation

During the implementation of the ETC project, the Construction and Operation Company committed all its manpower into the construction and operation of the ETC system. The Organizer (including the MOTC, TANFB, the TANFB's Region Engineering Offices, Construction Sections, and Service Areas) facilitated and supervised the Construction and Operation Company in the construction and operation of the ETC system. In addition, the Organizer also hired external technical consultants to assist and supervise the construction and operation of the ETC system.

b. Exit

ETC contract shall end on December 21, 2025. Once the period of operation expires, if the Organizer assesses the Construction and Operation Company to have performed well, at the end of the operation period, based on the provisions in the Act for Promotion of Private Participation in Infrastructure Projects, the Organizer's first priority will be to extend the contract with the Construction and Operation Company which constructed and operated the system and allow the Construction and Operation Company to continue with its operations. The ETC contract also provides for contract modifications, stating the constituent elements modifying the contract. Currently, none of the constituent elements for contract modification has occurred between the Organizer and the Construction and Operation Company; hence, so far no incident has occurred between the Organizer and the Construction and Operation Company that requires re-negotiations for contraction modification.

VI. ROLE OF PPP UNIT/ CENTER

a. Background

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VII. KEY LESSONS, EXPERIENCES AND OBSERVATIONS

The contractual provisions should be more specific and accurate. Some of the contract provisions were ambiguous, leading to different interpretations by the Organizer and the Construction and Operation Company which caused performance issues and further litigation.

Under the strong oversight of the Organizer, ETC related construction and operation disputes have improved, indicating that supervision by the Organizer is an important factor for the completion of the PPP projects.

At the beginning of the PPP project implementation, because the private institution must first raise funds and then is responsible for system construction, operation, maintenance, handling and marketing services, therefore the financial position of the Construction and Operation Company during the initial stages will be at loss, making it difficult for the Construction and Operation Company to seek financing. With the assistance of the Organizer (i.e. agreeing to allow the Construction and Operation Company to use its construction and operation assets to seek financing from banks), the Construction and Operation Company can obtain bank financing and resolve its financial crisis.

Sewage System Building Operating and Transfer (BOT) Project, Lotong Area of Yilan County, Chinese Taipei

I. PROJECT DESCRIPTION

a. Background

Sewage system is an essential infrastructure when dealing with urban development and an important assessment indicator for a modern city. Its main function is to collect wastewater and treat it to comply with environmental standards, as well as to improve the quality of urban life and maintain water quality and safety. However, apart from Taipei and Kaohsiung City, the construction of sewage systems has been slow due to financial difficulties, labor shortages, and the long construction process, among other factors. The usage rate of public sewage was only 35.14% as of the end of December 2013.

After the publication of “Act for Promotion of Private Participation in Infrastructure Projects” on February 9, 2000, the “Promotion of Private Participation in Infrastructure Committee” approved sewage system in 2003 as one of the priority categories for promoting private participation in infrastructure. “Promoting Private Participation in Sewage Infrastructure Program” and the “Third Phase Plan of the Sewage Construction (from 2003 to 2008)” approved in 2003, 36 systems in the economy were designated to be handled using the BOT mode (Yilan County’s Lotong sewage system is one of them), which is a clear policy that promotes private participation in sewage system construction. Since June 2004, Yilan County authority has cooperated with the central authority, Construction and Planning Agency (CPAMI), to promote the participation of private institutions in “Yilan County Lotong Area Sewage System BOT Project Plan” (hereinafter referred to as the Project).

b. Project Rationale, Objectives and Scope

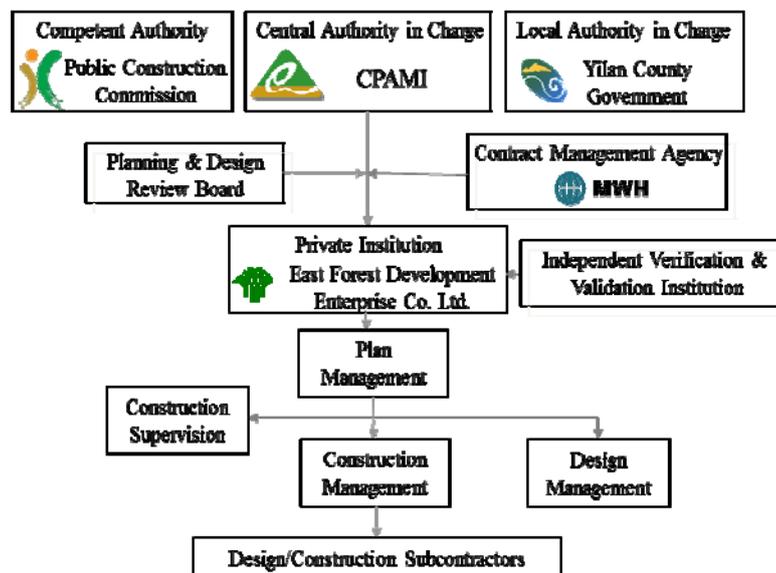
Through public-private partnerships, the Project shall have completed the sewage system construction and obtain ownership within the Project scope by the expiry of the concession period within the limitations of local authority finances. The project increases public sewage usage rate, improves living environment and prevents water pollution. By using this cooperation mode, most of the risks of the Project will be transferred from the authority to the private institution; relying on the profession and flexible management of the private institution, the Project’s risks can be effectively controlled.

I. STRUCTURE OF THE PROJECT

a. PPP Scheme

The Project has adopted the BOT mode, in which the contract involves the two systems of “authority agencies” and “private institutions.” CPAMI as the central authority in charge is responsible for supervising the works and Yilan County authority is the local authority in charge of the Project. The contract management consultant of CPAMI and Yilan County authority shall be entrusted to handle the contract performance of the Project and assist in the implementation of the third-level quality control, as well as submit a monthly progress report to the authority in charge. The authority in charge (or delegated contract management agencies) may adopt an engineering quality check by an objectively detached manner, according to an appropriate quality assessment standard. Regular and irregular construction quality supervision must be carried out and the first level “self-quality control” and second level “quality assurance” shall be audited to confirm the implementation effectiveness of the quality control. Meanwhile, the private institutions, at their own expenses, will commission an independent verification and validation institution to perform audits, focused supervision, inspection (second-level quality control) and certification work, as well as regularly report the progress of implementation to the authority in charge.

Figure 2-1 Organizational Structure of the Project



c. Risk Allocation Matrix

Type of risk	Risk Management Approaches	Risk Bearing Unit			
		Public sector	Private Institution	Subcontractor	Financing Organization
1. Policy Risks					
Fee rate policy	The Construction and Operation Contract regulates that when the Project changes (such as construction schedule changes, etc.) affect the pricing basis of the Project's treatment fee rate, fee rate effectiveness analysis should be performed. Public agencies maintain the right to revise fee rate in accordance with the changed content.		△		
Act amendment risk	This has been specified as a special term in the Construction and Operation Contract.		△		
Tax increase risk	When the tax system changes, resulting in significant operational difficulties, the authority may provide assistances.		●		
Plan or policy change risk	This has been specified as a special term in the construction and operation contract.		△		
Subsidy termination risk	This has been specified as a special term in the construction and operation contract.		△		
2. Environmental risks					
Pollution and nuisance	This requires the private institution to carry out work comply with relevant regulations and committed matters.		●		
Environmental protection standards change	The Construction and Operation Contract has standardized the change terms when environmental protection standards change.		●		
3. Financial Risks					
Interest rate risk	Avoid this risk by insurance		●		△
Exchange rate risk	Avoid this risk by insurance		●		△
Inflation	Avoid this risk by insurance		●		△
4. Market risks					
Under expected ancillary enterprise revenue	The private institution shall be responsible for the operating performance of ancillary enterprise.		●		△
5. Operational risks					
Labor disputes	The private institution shall operate in accordance with relevant laws and regulations; if there is a dispute, the private institution should follow the existing labor dispute treatment methods.		●		
Operating performance	The private institution shall be responsible for its operating performance.		●		△
6. Financial risks					
Financing agreement nonperformance	Except the authority assistance for financing matters, the private institution shall be responsible for the agreement with the financing organization.		●		△
Private institution bankruptcy	This situation shall be handled according to the authority takeover method, in response to the occurrence of bankruptcy.		●		△
7. Risks of force majeure					
Natural and man-made disasters	The construction and operation contract has clearly listed the scope of force majeure and requires the private institution to avoid potential risks in accordance with the appropriate insurance mechanism.		●		△
8. Delay completion risks					

Type of risk	Risk Management Approaches	Risk Bearing Unit			
		Public sector	Private Institution	Subcontractor	Financing Organization
Schedule delays	To regulate the use of the performance bond		•		
Authority changes to the design	Listed in special matters terms		△		
9. Construction cost overrun risks					
Construction cost overruns	The private institution shall be responsible for the construction cost control.		•		△
10. Construction risks					
Public protests	Listed in special matters terms, the authority shall assist in handling the protest.		△		
11. Others					
Risk of management capabilities	The private institution shall bear their own operating gains and losses.		•		△
Business interruption risk	The private institution shall pay the performance bond; if the private institution experiences a service break, the authority shall handle it in accordance with the relevant provisions of the takeover approach.		•		△
Operating cost overrun risk	The private institution shall bear their own operating gains and losses.		•		△

b. Incentives

To improve the willingness of private participation, the Project offers the following investment incentives:

1. Construction and the sewage treatment fees: construction and sewage treatment fees rates are set based on 10% internal return rate; and during the period of the 35-year concession, the authority shall pay private institution based on the actual construction scope and processing water volume.
2. Favorable rentals: the area of Lotong Water Recycling Center is 12.485 hectares. The rent is free during the construction period; during the operating period, the rent is 60 percent of the price calculated according to "Rental Rate of Property Adjustment Program."
3. Pipeline land compensation and road license fees: these fees are paid in full by the authority.
4. Pipeline relocation fee: the pipeline relocation fee subsidy amounts to three percent of the total pipeline project, and the authority shall pay the money every year according to the degree of completion accounting for the total construction of sewer pipe length.
5. Assist with middle and long-term financing and apply for tax incentives.

II. PROCESS ANALYSIS

When the Project adopts the BOT mode, the local authority in charge shall commission a professional service organization to plan construction, operation, land acquisition, financing, risk management, the authority's commitments, permitted extent, ancillary enterprise, as well as contract and tender document. The Project events are compiled in the following table.

Project Timeline

Date	Event
February 2000	• Enacted the Promotion of Private Participation in Infrastructure Projects
June 2003	• Promotion Program was approved
December 2003	• The third phase construction plan was approved
May 2004	• The expansion of the BOT program was approved

June 2004	<ul style="list-style-type: none"> • CPAMI invited each county and city to convene the meeting of promoting the private participation in sewage system.
July 2004	<ul style="list-style-type: none"> • Yilan County Magistrate Liu approved Lotong sewage systems to be adopted in BOT mode
July 2005	<ul style="list-style-type: none"> • The preliminary plan proposal was approved
July 2005	<ul style="list-style-type: none"> • Yilan County Invitation to Tender
October 2005	<ul style="list-style-type: none"> • The best applicant was selected
December 2005	<ul style="list-style-type: none"> • Yilan County authority signed the construction and operation contract with East Forest Development Enterprise Corporation
June 2009	<ul style="list-style-type: none"> • The Phase I construction of the Water Recycling Center completed and officially went into operation
December 2012	<ul style="list-style-type: none"> • The Phase II construction completed

III. Role of PPP Unit/ Center

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IV. CURRENT STATUS AND KEY IMPLEMENTATION ISSUES

a. Current Status

As of the end of May 2014, the program is 68.04% completed, the pipeline layout is 65, 999 meters long, and over 15, 537 households are being serviced. Lotong Water Recycling Center was completed with the scale of 30, 000 CMD by the end of 2012, and the current average daily treatment capacity is about 1 1, 7 5 5 CMD.

b. Implementation

Since June 2009, the Water Recycling Center went into operation, the Project has been concurrently in both construction and operation phases. Implementing and supervising the work of both phases becomes one of the key focuses of program execution. Thus, CPAMI and Yilan County authority should not only get familiar with the job-related provisions of the construction and operation, but also adjust both construction and operation work to the best mode, and figure out the solutions from relevant case studies to problems, such as engineering difficulties, quality checking, pipeline length and household number verification, and water quality and quantity issues during typhoon period, etc., to ensure the Project's implementation and to be used as a reference for other projects.

The Project is a major infrastructure carried out in BOT mode. For the current condition that there is a big difference between the actual treated wastewater volume and the estimated amount, the authority in charge should actively find an effective solution because of its cooperative relationship with private institution. The East Forest Development Enterprise Corporation should be urged to actively find the reason why the in-taking amount does not match the expected amount through the statistical analysis. On the other hand, the authority has to implement its commitments (such as demolition of illegal buildings, the ownership transfer of public sewage system in the adjacent area) or propose a related alternative plan for the common pursuit of the public interest and the protection of the private institution's interests.

As the implementation of the Project may be up to 35 years and have many connection interfaces and work items, the project management and document management need a high-quality and sustainable management method. In accordance with the basis of current information technology and comprehensive management, the Project is required to strengthen the document management system and improve management efficiency.

d. Exit

Although the Project finished the Phase II construction of the Water Recycling Center at the end of 2012, the current in-taking amount is lower than the estimated. When the private institution reports the Phase III construction plan in accordance with the contract provisions, but the amount of treated wastewater is still not as estimated, whether authorities in charge shall grant the Phase III plan will become a key issue. If they decide not to expand the Water Recycling Center, then they must re-examine the financial plan of the Project as well as revise the rights and obligations of the contract in order to smoothly continue the Project.

Kaohsiung Port Intercontinental Container (Terminal Phase I Construction Project), Chinese Taipei

I. PROJECT DESCRIPTION/ASSESSMENT

a. Background

Kaohsiung Port is located on the Southwest coast of Chinese Taipei, lying at the major juncture of shipping of the Taiwan Strait and the Bashi Channel; possesses a sound footing of developing into a transshipment hub due to the advantageous geographical location and port conditions. Main Axles of Development Policy of "Third-Term Plan for Development in the new century" (Four-Year Plan for 2009-2012) was passed by the N.D.C (former Council for Economic Planning and Development). Kaohsiung Port Overall Planning and Development Project: 2007-2011" was approved as the guidance of comprehensively developing Kaohsiung port on September 12, 2007.

b. Rationale

Port of Kaohsiung, Taiwan International Ports Corporation, Ltd. (TIPC) expressed that in response to increasingly keen competitive environment between Ports in the Asia-Pacific region and trends in Mega Container Ships, substantial doings, which increase operating flexibility of ocean carriers and achieve full employment, include introducing private finance and business concepts, solving the problems in reaching Kaohsiung Port of jumbo container ships, and bringing out the wharves operations integration of Kaohsiung Port. The purposes of launching "Kaohsiung Port Intercontinental Container Terminal Phase I Construction Project" are to respond accordingly to trends in Mega Container Ships to enhance the competitiveness of Kaohsiung Port emerging as an international hub, to cope with the need for container development in Kaohsiung Port to get over container terminal shortages in Kaohsiung Port, and furthermore to effectively and efficiently make use of port resources. Consequently, the procedure for procurement of private finance of "Kaohsiung Port Intercontinental Container Terminal Phase I Construction Project" is implemented in accordance with BOT model (Build-operate-transfer) stated in Paragraph 1 of Article 8 of "Act for Promotion of Private Participation in Infrastructure Projects".

Hungmaugong, a fishing settlement, is on the southwest side of Kaohsiung Port and subsequently designated as the site of the Container Terminal No.6 in Kaohsiung Port. After Taiwan International Ports Corporation, Ltd.(Former Kaohsiung Harbour Bureau) and Kaohsiung City authority struggled together to finalize "Hungmaugong Village Relocation Plan" in 2008, Hungmaugong became the first settlement of collective relocation in Chinese Taipei.

c. Project Objective

The project's primary objectives are to cope with the need for container development in Kaohsiung Port, to meet transportation claims, to advance effective and efficient use of port resources, and to enhance the competitiveness of Port. In addition, the project also aims for the following:

- To get over container terminal shortages in Kaohsiung Port and provide suitable wharves and container yards;
- To meet service properties and public interest of private participation;
- To relieve the burden of authority;
- To achieve full employment; and

- For the sake of smoothly pushing and implementing the project, authority manages the planning and supervision of the project and private participation encourages investment.

d. Type of PPP and Authority's Promotion of Huge Infrastructure Project

Using BOT model as the form of promoting private participation in the economy's infrastructure project of maritime container terminal can not only expedite economic development but also alleviate financial difficulties so that authority works on the infrastructure project and risk spreading.

e. Resources and Capacity

The new container terminal can accommodate 18,000 TEU jumbo container vessels. In addition, additional 3 million TEU in annual container handling capacity of Kaohsiung Port is only to be expected. For this reason Kaohsiung Port will mature as the most competitive container hub in the Asia-Pacific region. The project has 74.8 hectares in total area.

f. Attractive for Private Sector

1. The Work on the Wharves: Planning the investment to build Wharf No. 108, Wharf No. 109, Wharf No. 110, and Wharf No. 111. The 4 new wharves total 1,500 meters in length and the berth depth thereof is -16 meters.
2. Affiliated Facilities behind the Wharves: container freight warehouses, offices, machines and tools maintenance works, operating rooms, and so on.

g. Revenue Sources

1. Container-Handling
2. Transshipment
3. Transportation
4. Warehousing
5. Container Repair Services

h. Project Timelines

The signing of the project is completed in September 28, 2007. The 4 new wharves and affiliated facilities behind the wharves are due to be complete and commence operations by the end of 2014.

The concession period of building (construction) and operation lasts for fifty years, beginning from the contract signing date.

II. STRUCTURE OF THE PROJECT

Kaohsiung Port Intercontinental Container Terminal Phase I Construction Project is the BOT project financed by a member of the Yang Ming Group, "Kao Ming Container Terminal Corp. (KMCT)" which is in charge of planning and design, constructing wharves and facilities, and business operations. In addition, authority plays a leading role in supervising and assistance in promoting.

The project was analyzed and evaluated in the light of private participation feasibility, market feasibility, legal feasibility, engineering technology feasibility, land acquisition feasibility, financial feasibility, environmental feasibility, and so on. In addition, Kao Ming Container Terminal Corp. (KMCT) is competent to invest in and participate in the project through public procedure for evaluation, and moreover, authority implementation and assistance are clearly stipulated in the contract so that both sides jointly assume the risks and contribute to the advance of the project.

III. PROCESS ANALYSIS

Since the contract signing date, September 28 2007, both sides have been convening 40 meetings on administration of contract performance and never cause controversial issues which can neither compromise nor solve.

IV. FINANCING INFORMATION

Port of Kaohsiung, Taiwan International Ports Corporation, Ltd. (TIPC) provides the special permit enterprise with assistance in financing and tax incentives but don't offer such special permit enterprise subsidies for the loan interest; hence the special permit enterprise shall file a financing and tax incentives application of its own accord.

V. CURRENT STATUS

The 4 new wharves (No.108 – No.111) whose total length is 1,500 meters will be completed by September 27, 2014 at the appointed duration. The Container Terminal No.6 at present is still under construction and is planned to become operational in two phases. In Phase I two wharves, No.108 and No.109, will be completed and commence operations by January 5, 2011. In Phase II the other two wharves, No.110 and No.111, will be completed and commence operations by September 28, 2014.

VI. BENEFIT

The project introduces private finance to the participation of infrastructure projects and the management and maintenance of public facilities under authority's limited manpower capital and financial capability. It is beneficial for macroeconomic development and creates a "win-win-win" situation for three sides, authority, contractor and people.

VII. ROLE OF PPP UNIT/CENTER

a. Background

Chinese Taipei enacted an Act for Promotion of Private Participation in Infrastructure Projects (hereinafter PPIP Act) in 2000 and in 2013 set up a permanent PPP unit (Department for the Promotion of Private Participation, PPP Department) under the Ministry of Finance. According to the PPIP Act each PPP project is designed and implemented by authorities in charge in the central and local authorities, the PPP Department of MOF is not involved in project planning and implementation, but announce relevant information of successful cases on PPP Information System, as well as provide training by sectors, learning from the best practices of benchmark cases and relevant operational guidelines for reference, such as a standard operation procedures for checking projects through their entire life-cycle, a checklist for important items, tender documents, references for the signing of contracts.

b. Functions of PPP Unit

The PPP Department is in charge of the establishment of related PPP policies and regulations, collection and announcement of related statistics, professional training, counseling, coordination, and supervision in connection with the relevant PPP projects, and the processing of complaints. The PPP Department has adopted the following measures:

1. Enacting the PPIP Act, Enforcement Rules of Act for PPIP, and other relevant laws and regulations.
2. Establishing “[PPP Information System](http://ppp.mof.gov.tw/PPP.Website/English/)(<http://ppp.mof.gov.tw/PPP.Website/English/>)” to monitor the progress of individual projects and announce tender information in due time.
3. Enhancing the professional capacity of staff from both public and private sectors engaging in PPP by providing customized training courses including introduction of laws and regulations, training by sectors, learning from the best practices of benchmark cases and operational guidelines.
4. Providing performance evaluation mechanism of implemented project by each sector including common and specific performance indicators for reference by the authority-in-charge.
5. Providing consulting service and initial assistance for the development of PPIP projects to the authority-in-charge.
6. Setting up the “Platform for Private Participation in Infrastructure” under the Ministry of Finance to create channels for dialogue between the public sector and potential private investors at the early stage, and coordination among public sectors.
7. Establishing Complaint Review Board for PPP projects, and settle disputes encountered during application and evaluation stage.

c. Funding support of PPP Unit

Chinese Taipei’s PPP projects are implemented on a financially- independent basis. The authority does not provide viability gap financing.

d. Performance of PPP Unit

Chinese Taipei have over 1,100 PPP contracted projects, worth more than NTD 890 billion dollars (equivalent to USD 30 billion, or CNY 178 billion) in capital investment from 2000 till 2013, including hospitals, cultural creativity parks, bus terminals, and port container terminal facilities. At present, the private investment through PPP is around NTD 50 billion dollars (equivalent to USD 1.6 billion, or CNY 10 billion) per year. Chinese Taipei’s PPP projects are implemented on a financially- independent basis. The authority does not provide special loans or guarantee business revenue. We have relevant professional expertise in the legal, financial and technological aspects of PPP, and have set up a list of PPP experts.

VIII. KEY LESSONS, EXPERIENCES AND OBSERVATION

Port of Kaohsiung, Taiwan International Ports Corporation, Ltd. (TIPC) and Kao Ming Container Terminal Corp. (KMCT), under goal congruence which raises ocean carriers entering and being stationed in Kaohsiung Port and shipping routes calling at Kaohsiung Port, together facilitate the performance process effective and steady and encourage mutual enhancement of competitiveness, therefore the container handling capacity of present two wharves operated by KMCT reached 1.13 million TEUs in 2013 and the container handling capacity of all 4 wharves operated by KMCT in the Container Terminal No.6 will expectably reach up to 3 million TEUs on completion and operating of wharf No.110 and wharf No.111.

TOLL EXPRESSWAY SYSTEM (Stage 2), Thailand

I. PROJECT DESCRIPTION

a. Background

In March 1982, Expressway Authority of Thailand (EXAT) as a state enterprise received cooperation from Japan International Cooperation Agency (JICA) to study and analyze the most feasibility and viability of the Second Stage Toll Expressway System (SES). In November 1983, JICA submitted to EXAT a report on their "Feasibility Study on the Second Stage Expressway System in The Greater Bangkok." The studies found that substantial economic benefits were estimated to increase to both expressway user and those traveling on the existing road network as the result of time saving and reduced of operating cost. They also estimated that the SES produced a value for economic and financial internal rate of return. In addition, the SES together with the existing system was estimated to cater for increase travel demands of expressway users to grow from 135,000 vehicles per day on the existing system, to more than 400,000 by the year 2001 on the combined systems.

b. Rationale for Selecting PPP

In March 1985, the Cabinet in principle approved the SES project. Funding the SES project through the regular annual government budget might be limited during that time. For this reason, the Thai government became interested in having the private sector invest and participate in the development of the economy's transportation system and expecting the expansion of the expressway network. To continue implementation of the SES project, the Thai government allowed EXAT to propose the alternative of the private sector invested in the SES project in order to reduce the government budget and enhance efficiency of the project implementation.

c. Key Outputs

The outputs of the SES project was linked with and extended the service area of the existing First Stage Expressway Toll System (FES). The total length of the SES is about 38.4 kilometers (km) consisted of four sectors as follows:

- Sector A shall run from Rachadapisek Road west to Phayathai Interchange and northeast to connect with Rama IX Road and from Si Ayutthaya Road to the Middle Ring Road. The total length of the SES in sector A is about 12.4 km.
- Sector B shall run south from the terminal point of Sector A to Bangkhlo Interchange. Sector B shall also connect Urupong Junction to Phayathai Road, and subject to agreement between BECL and EXAT as to the precise horizontal alignment of this section of the road, shall connect Phayathai Road to Ratchadamri Road. The total length of the SES in sector B was 11.4 km.
- Sector C shall run from the terminal point of Sector A at Rachapisek Road through Prachachun Road north with Chaeng Wattana Road. The total of the SES in Sector C was 8 km.

- Sector D shall run from the terminal point of Sector A at Rama IX Road west to Srinakarin Road. The total length of the SES in Sector D was 8.6 km.

d. Project Timeline

Year of the SES project was initiated and reached technical including financial closure, operational term and completion date of each phase showed as follow:

Standardized project timeline	Dates recorded
Project was initiated	4 March 1982
Project approved	12 March 1985
RFP released	14 August 1987
Operational term	Completion date
Contractual close achieved	22 December 1988 – 29 February 2020
Construction completion	
- Sector A and Sector C	1 March 1990 - 1 March 1993
- Sector B	1 August 1992 - 1 August 1995
- Sector D	22 April 1997
Operational commissioning	
- Sector A	2 September 1993
- Sector B	6 October 1996
- Sector C	2 September 1993
- Sector D phase I	2 December 1998
- Sector D phase II	1 March 2000

II. STRUCTURE OF THE PROJECT

Bangkok Express Company Limited (BECL) agreed to carry out the work—to operate and maintain the SES in the capacity as a person authorized by EXAT, until the end of the Contract Period at BECL's own cost and risk without resourcing to EXAT credits or guarantees. Furthermore, BECL acknowledges and agrees that BECL has no title to the land on which the SES is or is to be constructed but without prejudice to BECL's rights under. This SES project was undertaken in Build-Transfer-Operate (BTO) type. The functions undertaken showed as follow:

Functions	EXAT	BECL
Design	-	Base on the EXAT design
Financing	-	Debt to Equity : 80 : 20
Construction	-	BECL except provided land by the EXAT
Operations and Maintenance	-	BECL

EXAT ensures that all tolls paid by users at toll booths or other means in respect of the Urban Network shall be collected from the toll booths on the Urban Network by such other person, firm or entity Thailand as may from time to time be appointed for this purpose by EXAT (with the prior written consent of BECL). EXAT paid the Relevant Proportions to BECL. The Relevant Proportions shall, in respect of the periods set out below, be that percentage set out hereunder:

Stages of the Project	EXAT's share of toll revenues (%)	BECL's share of toll revenues (%)
The first nine years from Priority Component Opening Date	40	60
The period between the first nine year and the last nine years	50	50
The last nine years of the Contract Period	60	40

BECL was granted the exclusive right during the Contract Period to receive tolls for the SES Suburban Network except during the period prior to the completion of the construction of Sector B, the toll revenues arising there from apportioned between EXAT and BECL in their Relevant Proportions and until completion of BECL's obligations to carry out the Works in relation to Sector B

III. PROCESS ANALYSIS

a. Inception, Project Preparation, Feasibility

After the SES project was approved in principle by the Cabinet. In March 1985, EXAT employed National Engineering Consultants Co., Ltd. (NECCO), Thai DCI Co., Ltd., Metropolitan Engineering Co., Ltd., Pacific Consultants International and De Leuw Cather International Ltd., as a consultant team. This team worked on Detailed Design and Environment Impact Assessment of the SES in Greater Bangkok. This report was submitted to EXAT in May 1986. This report summarized the project's reviews and findings of JICA's report so as to cover current and future traffic, route location and preliminary engineering, and evaluation and recommendation. It found that the total of investment in the SES project was estimated 17,799 million baht and produced the value of EIRR and FIRR.

In October 1986, a selection subcommittee was appointed by the broad committee of EXAT in order to select a private sector for investment in the SES project. The subcommittee had powers and duties to consider the approval of the draft invitation to tender and to negotiate and select the private entity for investment. In June 1986, the Council of Ministers approved the concession to private sector in investing the SES project. Yet, if none of private sector was interested in the SES project within one and a half year, EXAT must invest in this SES project by itself.

Upon the Council of Minister's project implementation approval in June 1986, EXAT assessed a private sector that was potential to construct and operate the SES project in thirty-year duration according to rules and conditions as approved. EXAT considered following details for inviting and assessing private sectors: an invitation to tender, investment tender documents, procedures for inviting tenders, selection procedures of the subcommittee, terms of reference, bid bond, and conditions of the concession. EXAT offered those documents (Request for proposal (RFP) documents) to tenders in price three hundred thousand baht during 14 August 1986 until 30 September 1986. Apparently, there were five tenders buying RFP documents namely Balfour Beatty Limited Kumagai Gumi Co., Ltd., G.T.M International, C. Itoh and Co., Ltd., and Sogea. In October 1986, those five tenders were invited by EXAT to explain and query about RFP document and others relevant rules. EXAT carried on any issues and questions to revise RFP document and send it to those tenders.

b. Procurement

Before submitting the RFP document to EXAT, the deadline of submitting the RFP document was postponed two times because of size of the SES project. On the deadline dated 1st February 1988, BECL, Kumagai Gumi as the leader of consortium, and Thai Expressway Development Joint Venture, Balfour Beatty and G.T.M International as the major stakeholders of consortium, submitted investment proposals to EXAT. On 29th February 1988, the selection subcommittee assessed both investment proposals and on 14th February 1988, the selection subcommittee's resolution deemed to negotiate BECL and Thai Expressway Development Joint Venture respectively.

On 23rd March 1988, the broad committees of EXAT acknowledged the examining the private entity selection result in accordance with the selection subcommittee's resolution. The selection subcommittee invited BECL to negotiate in details of concession conditions and plans of construction and investment during April 1988 – June 1988.

On 20th September 1988, the Cabinet approved that EXAT proceeded to sign the investment contract with BECL. BECL worked on constructions and operations the SES project. The draft investment contract had to be reviewed by the Office of Attorney-General. On 22nd December 1988, the SES agreement was signed between EXAT and BECL.

c. Implementation

For implementation the SES project, EXAT and BECL established a Coordination Committee under the chairmanship of EXAT's representative, and vice-chairmanship of BECL's representative, and comprising a senior representative from each of the Relevant Authorities and the Project Manager as a committee member and such other persons and advisors as EXAT or BECL may invite from time to time to attend any committee meeting. The Coordination Committee shall meet at least one a month during the period of Works to assist in resolving any problems related to the carrying out of the Works and shall meet thereafter as it deems appropriate when any problem or necessity related to construction or operation of the SES arises.

Information relating to the works, BECL shall furnish to EXAT's Engineer such reports and other such information as EXAT's Engineer may reasonably request from time to time for the purpose of ensuring that the construction of the SES by BECL is in compliance with BECL's obligations. Moreover, upon Construction Completion, BECL shall supply EXAT's Engineer with copies of all as-built drawings and such other technical and design information relating to the finished Works as EXAT's Engineer may reasonably request. When BECL considers all or any part of the SES to be suitable for use as a public highway, BECL shall give notice thereof in writing to the Independent Certification Engineer and EXAT shall take all necessary measures to open the same for use, unless the Independent Certification Engineer, in consultation with EXAT's Engineer, shall within 14 days from the date of receipt of the said BECL's notice, state in writing that the same is not ready for use as a public highway on the grounds of safety.

d. Development and Delivery

Regarding the renegotiation during the period of SES agreement, it is the intention of the parties that the Contract Period may be extended for two further periods of 10 years each upon such terms as may be agreed between EXAT and BECL in the light of the continuing feasibility of the Contract Rights, the rate of return to both EXAT and BECL, and the interests of the public and BECL's shareholders and the Lenders, Before expiry of the Contract Period, EXAT and BECL shall negotiate together in good faith with a view to extending the Contract Period on mutually acceptable terms.

IV. FINANCING INFORMATION

The total cost of implementation in the SES project was estimated as followed:

Total Implementation Cost (Year 1986, in Billions Baht)

Cost Category	Foreign Component	Local Component	Total
Construction	5.64 (42%)	7.95 (58%)	13.59 (100%)
Toll/Traffic Control Facilities	0.58 (56%)	0.46 (44%)	1.04 (100%)
Land and Compensation	-	5.11 (100%)	5.11 (100%)
Contingencies and engineering	0.81 (30%)	1.89 (70%)	2.70 (100%)
Totals	7.03 (31%)	15.41 (69%)	22.44 (100%)

Source: NECCO report in May 1986

a. Project's EIRR and NPV

The rate of interest to be assessed by the lenders on the aggregate utilized portion of the credit facilities was targeted to be not more than the Minimum Lending Rate with a possible provision of a fixed rate of interest during a portion of the construction period for the Priority Component. As the result of NECCO studies, Economic internal rate of return (EIRR) was 22.6 % and Net Present Value (NPV) was 20,616 million baht.

b. Multilateral, Commercial Guarantee or Insurance Instruments

For guarantee or insurance instruments, the SES project is backed by guarantees to enhance the financing structure as follows:

- Guarantees to be issued by foreign banks of up to the foreign currency equivalent of five billion baht for a period of up to ten years.
- Provisions under the credit facilities to issue guarantees in respect of instruments to be issued by BECL and placed with entities in Thailand and overseas.
- Export and multilateral credits.

The contract renegotiated during the SES agreement period could negotiate in accordance with conditions in the SES agreement specially the section of the SES project extension leading to revise to system tolls as well.

c. Dispute Settlement

In this agreement, any dispute, controversy or claim arising out of or in connection with this agreement shall first be submitted to the Panel in order to ascertain whether an amicable settlement can be achieved, and in the event that no such resolution can be achieved within sixty days or such other period as may be agreed between the parties, either party may settle such dispute or controversy by submitting it to arbitration in accordance with the Arbitration Act of Thailand.

V. ROLE OF PPP UNIT/CENTER

This SES project was initiated before the PISU Act B.E. 2535 (1992) at the mean time there was no central PPP Unit. However, the Cabinet and relevant government agencies; the National Economic and Social Development Board and the Bureau of the Budget were responsible for considering the project feasibility and financing the project budget including approving in the project principle. Moreover, the private entity was selected by the EXAT board committee and must be approved by the Cabinet to implement the SES project. After the PISU Act B.E. 2535 (1992) enacted on 8 April 1992, to be specific, under the Ministry of Finance, State Enterprise Policy Office (SEPO) is responsible for projects conducted by state enterprises while the rest will be under the consideration of Comptroller General's Department.

Thanks to the new PISU Act B.E. 2556 (2013), the national PPP Unit has been established within SEPO. Under section 18 of the Act, SEPO is mainly accountable for preparing a draft Strategic Plan for submission to the Private Investment in State Undertakings Policy Committee, chaired by the Prime Minister, analyzing projects and submitting opinions to the Committee for approval, preparing draft monetary or fiscal measures to support the project, providing draft rules and procedures for state undertakings, and engaging in technical collaboration, research and development.

VI. KEY LESSONS, EXPERIENCE AND OBSERVATION

During the agreement period of the SES project, the risk might be occurred because both contract parties might misunderstand in the rules and conditions of the agreement specially revision to system tolls issue. This leads to carefully consult the Office of Attorney-General before proceeding any further.

Toll rate generally would be based on the investment value of private party during the agreement period leading to overprice toll rate. This is impact on end users and EXAT as state enterprise. Therefore, the government agency should be able to control the service rate and be fair with a private party.

**The Container Terminal B5,
Laem Chabang Port (Deep-Sea Port), Thailand**

I. PROJECT DESCRIPTION

a. Background and Project Rationale

The current Bangkok Port was very crowded and has reached its full capacity which led to traffic congestion in Bangkok area. The Thai Government, as a result, decided to limit throughput at Bangkok Port in amount of 1,000,000 TEU./annum and promoted the construction of a new deep-sea port as well as appointed Port Authority of Thailand (PAT), a responsible state enterprise, to undertake the project. PAT constructed the new Laem Chabang Port (LCP) located in the northeastern shore of the Gulf of Thailand approximately 120 km. Southeast of Bangkok. It was the Government policy to allow private sector to participate in the port services to a great extent practicable in order to ensure efficiency. To this end, the Government has decided to grant a lease contract which will allow the private sector, a Terminal Leasing Company (TLC) or a lessee, to design, construct, manage and operate the container terminal B5.

b. Rational for public sector involvement in the project

PAT has a legal obligation to perform this duty according to the founding objectives of PAT, conducting and promoting port undertakings and carrying on other businesses relating or incidental to port undertakings, under to section 6 and section 9 of Port Authority of Thailand Act, B.E. 2494 (1951) stipulating PAT's objectives and power. Also, this undertaking requires the utilization of PAT' properties. Therefore, PAT has to involve in the project.

c. Rational for selecting PPP method and Objectives

It was the government policy to encourage private participation in port undertakings as much as possible to increase operation efficiency together with national economic stability. In addition to the efficiency in manning business, another reason for giving concession to the private is the public's limited budget in investment. Therefore, the important characteristic of a concession is the transfer of public to private investment, partially or entirely, in order to operate projects in faster pace with more efficiency. The private firm with a concession has to provide all the project's equipments before operating the port business and charge the port users for the use of these services and facilities.

d. Scope

Scope of services:

1. The TLC is solely and exclusively responsible for providing all the services and facilities to port users as are necessary for efficient operation of the terminal according to its business plan and follow an internationally acceptable standard. has to provide all services
2. Throughout the duration of the contract, the company is responsible for offering port infrastructure and superstructure, container quayside cranes and other handling equipments in addition to the infrastructure provided by PAT.

e. Key outputs and key performance standards

Key outputs:

1. Terminal construction, management and operation

The TLC is responsible for the design and construction of all infrastructure, superstructure and facilities and for obtaining all statutory approvals to their design including from the PAT and other concerned Government Agencies. The infrastructure, superstructure and facilities mentioned above include but not be limited to the following:

- Quaywall with quay fittings- The structure of Quaywall has to be designed for, at least, 50,000 DWT of vessel and for future deepening of the basin up to -15.00 m. MSL. And the front of quaywall must not exceed the existing quaywall.
 - Container yard and pavement
 - Office
 - Gate and fence
 - Repair shop
 - Lighting, water supply, drainage, sewage
2. The TLC has to provide Container Quayside Crane and other container equipment for utilization on the terminal. The container quayside crane should be rail mounted type which can handle a container not less than 40 tons under spreader from Panamax Vessel
3. The TLC has to provide all services to port users as are necessary for efficient operation of the terminal according to its business plan.
4. In accordance with its business plan, TLC has to provide all equipments and infrastructure which is necessary for the operation of the Terminal.
5. The TLC has to implement the lease contract in accordance with the provisions of Annex C as agreed on concluding the lease contract and related to:
- Senior personnel in charge of the project
 - Investment in infrastructure and equipment
 - Marketing initiatives

Any change to these provisions shall be submitted to the PAT for approval.

Terminal management information system

The TLC will establish an appropriate computerized Terminal Management Information System (MIS). The system will embrace generally accepted accounting procedures, operational activities, manpower and traffic statistics. The data generated by this system will provide, on a regular basis, information to measure port performance against the business plan. The TLC has to provide information and port records to the PAT on an online basis.

Transport in and out of the port

Any truck into and out of the port is the responsibility of the TLC. The TLC has to organize the trucking into and out of the port to/from its own terminal and shall take full responsibility of any legal liability of the trucker inside the port.

Key Performance Standards

The TLC must, at least 30 days from the date of signing the contract, submit to the PAT in accordance to its business plans. And also in accordance with the following requirements:

1. The terminal has to be operational within 30 months from the date of signing the lease contract. "Operation" means that the TLC has to be able to receive and/or dispatch cargo on the terminal, to store cargo and to load and/or unload the cargo to vessels at an average gross crane productivity of not less than 15 boxes/hour.

2. The terminal has to be fully developed with appropriate operational and administrative facilities including computer system and all other facilities and equipment necessary to be able to handle a throughput of 300,000 TEU per year according to the business plan.
3. Should the TLC, at any time, fail to provide a gross quayside crane productivity of minimum 15 boxes/hour, gross ship productivity of minimum 27 boxes/hour for ships worked with 2 cranes, or fail to provide the necessary services at an internationally acceptable standard, then the PAT may instruct the TLC to upgrade its service and the TLC shall act accordingly.

f. Project timeline

Schedule	Activity
July-Aug 1991	Ministry of Transportation ordered PAT to undertake the project
November 1994	The Cabinet principally approved the project
April 1996	Contract signed

g. Resources/ existing capacity of the public and private partners

The company must be Thai-owned with not less than 51% Thai shares according to Thai law throughout the period of the lease. The minimum registered capital must not be less than 100 million Baht. The TLC must notify any change in shareholdings to the PAT as soon as possible.

Guarantees:

1. Construction Guarantee: is provided as a means of guaranteeing the construction as described in the lease contract. The guarantee must be in the amount of 75 million Baht.
2. Performance Guarantee: is provided as a means of guaranteeing the management and operation by the TLC of its obligations as described in the contract. The amount of the performance guarantee must be 20 million Baht and must be kept at this level.
3. Payment Guarantee: is provided as a means of guaranteeing the good and accurate performance and non-violation of any condition of the lease contract including payment of the lease fee and any other dues in accordance with the lease contract. The payment guarantee must be the same amount as the total annual lease fee to be paid to PAT.

PAT shall provide port land and outside areas designated in Port Authority of Thailand Acts

h. Entity responsible for procuring the PPP

- PAT as the project agency
- The Selection Committee under section 13 of Private Investment in State Undertaking (PISU) Act B.E. 2535 (1992)
- Ministry of Transportation as the line ministry

i. Key risks, risk allocation, party bearing the risk

Risk Identified	Risk Allocation and Party bears the risk
1. Land expropriation	Risk retained to PAT to provide port land and outside

Risk Identified	Risk Allocation and Party bears the risk
	areas by land expropriation.
2. Construction risk – project delay and cost overrun	Risk transferred to the TLC which is responsible for the design and construction of infrastructure along with other facilities from wharfs, container fields, offices, fences, maintenance buildings for lifting equipment to other public utilities namely electricity, plumber, water supply system and sewage disposal. Additionally, the TLC must deliver construction guarantee, performance guarantee, and payment guarantee to PAT, significantly reducing risks related.
3. Operation risk	
4. Maintenance risk	
5. Financial risk	Risk transferred to TLC to bear financial costs.
6. Legal risk	The TLC must compensate and prevent PAT from any allegation, including relevant expenses incurred to PAT due to the management and operation of the TLC.
7. Demand risk	PAT is responsible for managing risk on port charge from port users while the private firm collects fees from berth and cargo services.
8. Externalities impacts	During the construction period, the TLC must control and prevent environmental impacts and any obstructions caused by the construction work which affect or disturb other existing port activities. The TLC must submit the Action Plan for environmental mitigation measures and monitoring program to PAT, Harbor Department, and Office of environmental Policy and Planning for approval in order to control and prevent any adverse environmental impacts.
9. Labor and staff	The TLC must be responsible for the provision and conduct of any staff and hired labor.

II. STRUCTURE OF THE PROJECT

a. Roles and responsibilities of private and public partners

Beginning of Laem Chabang port project since 1993-1995

Leasehold agreement, the port authority invests in infrastructure: port cargoes, container fields, crane rails and some of the tools, with the adjustment in small details according to each port's contract, is used during the period. Lessees or private port operators have to provide tools and equipment apart from those that already provided by the authority such as cranes and other lifting tools. The ownership over properties supplied by the lessee belongs to them from the beginning of the contract until the end which will be transferred to the port authority.

Since 1996

The contracts during the time is in the form of BOT (Built Operate Transfer), resulted from public policy to encourage the private to participate more in port business. In this model of concession, private companies are responsible for the design and construction of infrastructure along with other facilities from wharfs, container fields, offices, fences, maintenance buildings for lifting equipment to other public utilities namely electricity, plumber, water supply system and sewage disposal.

In terms of ownership according to the concession for this model, the port authority owns only public properties provided which is port land and outside areas designated in port authority acts of Thailand whereas private firms take hold of infrastructure, equipment and facilities they provided during the duration in the concession. After the end of the contract, the ownership over immovable properties including infrastructure will be transferred to the port authority while the authority can partially or entirely buy moveable properties from the companies with the worth based on the account (initial cost minus accumulate depreciation according to the usage)

b. Revenue and Payment Mechanism

Port charge

1. The TLC collects from the port users and retains all port charges related to berth services, cargo operations, cargo storage and any other services provided on the terminal by the TLC. The charges must not exceed the service rate designated by PAT.
2. PAT will invoice and collect all port charges related to navigation services due by the port users at the tariffs fixed by the PAT

Payments

Payments by the TLC to PAT consist of a lease fee consisting of 2 parts. The first, fixed, part of the lease fee has been determined by PAT while the second part is additional fee. The total annual fee must be paid proportionally before the beginning of each quarter.

c. PPP reflection on public financial statement

Having the private company to responsible for most of the investment required for the project, the government fiscal burden is significantly released. Moreover, PPP helps maintaining public debt at a sustainable level for the nation and enhances the government's ability to borrow for future projects.

III. PROCESS ANALYSIS

a. Feasibility study

The PISU Act B.E. 2535 (1992) states that the project agency which desires a private individual to participate in any project has to submit a detailed result of the studies and project analyses of the topics prescribed by the Office of the National Economic and Social Development Board. Moreover, for the project cost or asset exceeded 5 billion baht, the project agency must hire a qualified consultant who must prepare a separate report. The project feasibility report needs to examine the following topics;

The alignment of the project to:

1. Policy frameworks: the National Economic and Social Development plan and government policy

2. Economic and social environment: benefit and cost analysis of the project impact on the macro economy and society
3. The alignment and synergy with projects in the same sector and in other sectors
4. Project Agency's capacity: the capacity (resources and regulation) of the project agency for private participation

The feasibility of the project: location, infrastructure and utility system required for the project, procedure and project timeline, technical analysis, financial analysis (forecasted capital expenditure, sources of financing, and return on investment), economic feasibility

b. Project Impact

- Environment community and users
- Politics and national security
- Project agency's performance: financial position, organizational and human resource management, and long term planning
- Compliance to other laws and regulation

c. Private Sector Role

- Rational for PPP
- PPP model options
- Terms and conditions required by private sector for government fulfilment: investment promotion, land expropriation, government investment, government protection

d. Summary of feasibility study

Location Feasibility: The project location, situated in the current custom area, is reclaimed land extended from the B4 port terminal; therefore, it is possible to further develop the project.

Technical Feasibility: Since the area has already been reclaimed and adjacent to B4 terminal, quayside container crane of the project could be connected with the B4 cranes. Moreover, the terminal berth could be constructed along the port basis.

Project Time Line:

- Project detail design and identification of equipment requirements - 6 months
- Request for proposal and construction – 24 months
- Financial Feasibility: The project is financially viable as the expected IRR is higher than the local opportunity cost of capital (12%).
- Internal Rate of Return (IRR): 12%

Payback period: Year 11 from the operation.

Economic Feasibility: The project will yield both direct and indirect benefit to the economy.

e. Procurement

The project agency appoints a selection committee under section 13 of the PISU Act B.E. 2535 (1992), consisting of representative of the Responsible Ministry who is a civil servant, State enterprise officer, State agency officer or local administration officer, as the case may be, as Chairperson, representative of the Ministry of Finance, representative of the Office of the Attorney General, representative of the Office of the National Economic and Social Development Board, representative of the Bureau of the Budget, a representative each of other two Ministries, and not more than three qualified persons as members, and a representative of the project agency should be member and secretary.

The Committee under section 13 had the following powers and duties:

1. To give approval for a draft invitation for private participation, draft project scope and essential terms and conditions to be included in the agreement for private participation;
2. To determine the bid security and the performance security;
3. To select a private individual to participate;
4. To consider other matters related to the project as deems appropriate.

The request for proposal, document in private company's proposal, announcement methods, selection method of the Committee which must be carried out by bidding, and determination of bid guarantee and performance guarantee must at least contain the details as prescribed in the Ministerial Regulation.

In requesting for proposal, if no private company make a bid to participate, such requesting shall be cancelled in order that a new request shall be made. If there is only one bid or there are several bids but only one of which satisfies the description in the written proposals for private participation, the Committee under section 13 shall proceed further; provided that, the Committee is of the opinion that it is beneficial to the State.

The Office of the Attorney-General shall examine the draft agreement for private participation before signing.

The Committee under section 13 shall, within 90 days as from the date of its decision, submit the result of the selection together with the justification, the issues negotiated and bargained on the interest of the State, draft agreement and all other documents through the Responsible Minister to the Council of Ministers for consideration.

f. Implementation and Development

After the signing of the agreement, the project agency shall establish a co-ordinating Committee consisting of representative of the project agency as Chairperson, a representative of the Ministry of Finance, a representative of the Office of the National Economic and Social Development Board, a representative of any other agency which is not the project agency, a representative of the private individual who participates in the project, a representative of the Responsible Ministry and other representatives of not more than three persons whom the project agency deems appropriate to appoint, totaling not more than nine persons, as members.

The coordinating Committee shall have the following powers and duties:

1. to monitor and supervise the implementation as provided in the agreement;
2. To report the result of implementation, progress, problems and solutions to the Responsible Minister for information.
3. The period for reporting shall be as prescribed by the coordinating committee; provided that, it shall not exceed six months for each report.

4. In the case where it appears that the project agency neglects or fails to comply with the binding obligations of the agreement which has already been signed, the representative of the Ministry of Finance in the coordinating committee shall submit the report to the Minister of Finance for further submission to the Cabinet.

g. Exit

The new PISU Act B.E. 2556 (2013) which repealed the PISU Act. B.E. 2535 (1992) came into effect on April 4th, 2013. Section 48 of the new PISU Act stipulates that a host agency shall prepare a plan for operating a state undertaking subsequent to the expiration of investment contract term by comparing the operation of the state undertaking in the case of operations by the state, the case of private investment and the case of investments by the current private entity, which shall be submitted to the Responsible Minister at least five years prior to the expiration of the investment contract after taking into account the benefits of the state and continuity of state undertaking operations. The plan shall be submitted to the Responsible Minister who will consider making a submission to the Committee and the Committee shall then consider and submit an opinion to the Council of Ministers.

In the case where the Cabinet passes a resolution to instruct that the operation of a state undertaking subsequent to the expiration of an investment contract be implemented by private investment, and if it appears that the project has the value prescribed under section 23 (Currently prescribed at 1000 billion Baht), the host agency shall proceed as in a new project and shall commence from the process of project proposal.

IV. FINANCING INFORMATION

a. Project cost, types of funding, sources of financing

Type of Cost	Cost (in Baht)
Construction Cost	740,400,000
Equipment Cost	603,912,000
Total Operating Cost	1,322,312,000
Terminal Operating Cost	1,130 Baht/TEU

Funding is composed of 33% Equity and 67% long term loan that has an interest rate of 14.5%.

b. Project's economic and financial internal rate of return

The project's Financial Internal Rate of Return (FIRR) is at 12%. Economic returns includes direct benefit (Explicit outcome) e.g. the lease paid by the TLC and indirect benefit (Implicit outcome) e.g. international trade promotion, domestic consumption, employment, etc.

c. Multilateral or commercial guarantee or insurance instruments

Long term loan is obtained from JBIC.

V. CURRENT STATUS AND KEY IMPLEMENTATION ISSUES

a. Status of implementation, key issues and Delivery

Over all, the TLC has operated the terminal according to the contract. However, the competition among port operators has increased for certain period and has driven the price down. As a consequent, though the number of container serviced is more than what was forecasted in the business plan, the revenue is still lower than the amount expected. Furthermore, there are other operators outside the port who try to attract the Feeder from the LCB port by giving special discount.

PAT, as a regulator, has tried to solve this problem by making sure that every operators charge port users at the designated rate and provide container service according to its business plan.

b. Conflict resolution in place

Settlement of disputes and arbitration

In case of controversy or dispute arising between the TLC and PAT concerning the lease contract, either party may refer such dispute or controversy to arbitration. Unless both parties agree to the appointment of a single arbitrator, either party shall serve upon the other a notice of intention to submit the controversy or dispute to arbitration and specify the name of an arbitrator to be appointed by him. Then the controversy or dispute shall be referred to two arbitrators, one to be appointed by the issuing party as aforesaid and the other one to be appointed by the other party, within 30 days after receipt of the said notice.

Pending decision from arbitration of a dispute, the TLC shall, except in case of termination, proceed with the performance of the lease contract in accordance with the decision of PAT.

VI. ROLE OF PPP UNIT/CENTER

This project was first undertaken under the former PISU Act B.E. 2535 (1992), when there was no central PPP Unit. However, the government agencies responsible for considering the project feasibility were the National Economic and Social Development Board for new projects and the Ministry of Finance for projects with existing assets. To be specific, under the Ministry of Finance, State Enterprise Policy Office (SEPO) is responsible for projects conducted by state enterprises while the rest will be under the consideration of Comptroller General's Department.

Thanks to the new PISU Act B.E. 2556 (2013), the national PPP Unit has been established within SEPO. Under section 18 of the Act, SEPO is mainly accountable for preparing a draft Strategic Plan for submission to the Private Investment in State Undertakings Policy Committee, chaired by the Prime Minister, analyzing projects and submitting opinions to the Committee for approval, preparing draft monetary or fiscal measures to support the project, providing draft rules and procedures for state undertakings, and engaging in technical collaboration, research and development.

VII. KEY LESSONS, EXPERIENCES AND OBSERVATIONS

On Policies: Differences in investment provided by private companies in the project: In the second phase of Laem Chabang port project in 2004, private companies invested more in the construction compared to that in the first phase, reducing the port authority's investment. However, it causes a larger amount of initial investment for private firms joining the project compared with the firms in the first phase who almost meet their profit after ten years. In consequence, private companies in the second phase have a disadvantage to compete with those in the first since their investments are much higher, leading to a higher service rate and impeding them from competing for market share (decked vessels) with the first phase companies.

Differences in service rate from private companies to port authority

From the payment conditions in leasehold and BOT agreement, the authority receives service rate in two forms

- a. Annual Rent only
- b. Annual rent with royalty fee

The two forms, consequently, create different risks. For example, if the number of transportation is low, private companies with the contract of fixed annual fee risks face higher risk than those with royalty fee. On the other hand, if the volume is high, they will profit more than the other group. The different forms of payment can lead to arguments between private firms. As for PAT's aspect, the limitation in the contract for not recognizing abnormal profit prohibits PAT from fully benefiting the upside returns.

Port of Baltimore, Seagirt Marine Terminal, USA

I. PROJECT DESCRIPTION

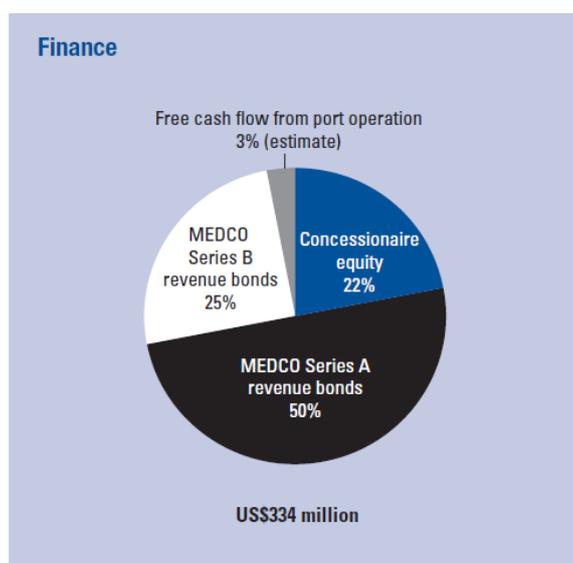
a. Background

The Port of Baltimore project is a 50-year lease and concession signed in November 2009 between the Maryland Port Administration (MPA) and Ports America Chesapeake (PAC) that entails the operation of the Seagirt Marine Terminal at the Port of Baltimore. As part of this arrangement, PAC will construct a 50-foot-deep berth and associated infrastructure, ready for use by the larger vessels that will be able to come through a widened Panama Canal from 2014. As well as an annual rent payment, the concession includes a fee-sharing arrangement whereby the MPA will receive a US\$15 fee (indexed) for each container handled over a threshold of 500,000 per annum.

b. Stakeholders

The MPA, as owners of the Seagirt Marine Terminal and the public authority responsible for procuring the project. The Maryland Transportation Authority (MdTA), as the previous owners of the terminal and the public authority responsible for carrying out certain upgrades to the roads and bridges in Maryland PAC, an affiliate of Ports America Group, which is owned by Highstar Capital—a specialist infrastructure fund. The Maryland Economic Development Corporation (MEDCO), a body created by the State of Maryland to own or develop property for economic development. For this project MEDCO was the conduit to issue approximately US\$249 million in revenue bonds on behalf of PAC. MEDCO also facilitated the purchase of the terminal by the MPA from the MdTA.

Size	US\$334 million
Location	Seagirt Marine Terminal, Baltimore, Maryland, United States
Approach	Concession
Market	Developing
Date	November 2009
Type	Economic
Phase	Expansion of existing



II. FINANCIAL INFORMATION

The financing of this project was unusual as it is one of the first US port concession projects to be financed through the bond market. It was structured so that the private concessionaire could fund its obligations with tax-exempt finance.

A high-level summary of the upfront sources and uses of funds is outlined below.

Source of funding	Amount	Percentage	Uses
Concessionaire equity	US\$75 million	22%	US\$140 million to the MdTA as the purchase price of the terminal
MEDCO Series A revenue bonds	US\$167 million	50%	
MEDCO Series B revenue bonds	US\$82 million	25%	
Free cash flow from port operation (estimate)	US\$10 million	3%	US\$194 million to fund the terminal upgrade
TOTAL	US\$334 million	100%	

The US\$140 million payment to the MdTA will be for investment in roads, tunnels, and bridge facilities in Maryland. This was partly funded with concessionaire equity and partly by Series A Economic Development Revenue Bonds issued by MEDCO.

The cost of berth expansion (approximately US\$105 million) will be principally funded from the proceeds of Series B Economic Development Revenue Bonds issued by MEDCO, the balance of the concessionaire equity, and some free cash flow generated by the operations of the terminal.

PAC is the obligor on the revenue bonds, which are secured against PAC's interest in the concession and its assets.

Moreover, PAC expects to invest a further US\$500 million over the life of the concession to maintain and upgrade the terminal as necessary. This investment is forecast to come from free cash flow from the operation of the terminal.

III. KEY CONTRACTUAL FEATURES

PAC will lease the 200-acre Seagirt Marine Terminal for a 50-year period, and will make an annual payment to the MPA.

PAC will construct a 50-foot berth in the Port of Baltimore and will also invest in cranes and other infrastructure at the port.

PAC will have full control over the operations of the terminal under the terms of the lease and concession, but the MPA will continue to own it.

The state will receive a US\$15 fee for every container after the first 500,000 moved through the port annually. This fee will be adjusted for inflation, and is projected to provide over US\$450 million in future value to the MPA and the State of Maryland.

Ports America will give the port an annual rent payment of US\$3.2 million, adjusted for inflation.

IV. KEY DRIVERS FOR THE INVOLVEMENT OF PRIVATE FINANCE

The need to increase the competitiveness of the Port of Baltimore: The construction of 50-foot berths would enable the larger ships to dock and bring additional business to the port and help to secure the jobs at the port. Without this private funding, the port would see business opportunities shift to other US East Coast ports, such as the Norfolk Port, which already has 50-foot berths.

The MdTA will reinvest funds as part of a capital program. This will include upgrades to I-95, the US 40 Hatem Bridge, and the US 50/301 Bay Bridge.

V. LESSONS LEARNED

On Long-Term Revenue Sharing Arrangement- Arrangements can be put in place to ensure the public authority shares in the future success of a project

The concession has been structured so that the public authorities benefit not only from an upfront receipt but will also share in the future success of the port.

The financing arrangements were complex to ensure that the financing risk sat with the concessionaire yet the project could still benefit from tax-exempt debt rather than using commercial bank debt.

VI. REFERENCES

Highstar Capital. 2010. "Deal Analysis: Seagirt Marine Terminal." January 11. Available at <http://www.highstarcapital.com/newsFull.php?id=63>.

Maryland Economic Development Corporation
website:<http://www.medco-corp.com>.

Maryland Economic Development Corporation. 2010. Analysis of the FY2010 Maryland Executive Budget, 2009: Financial Statement Data, document T00A99. Available at http://mlis.state.md.us/2010rs/budget_docs/all/Operating/T00A99_-_MEDCO.pdf (accessed March 15, 2010).

Office of Governor Martin O'Malley. 2009. "Governor O'Malley Announces 50-Year Contract with Ports America to Operate Port of Baltimore's Seagirt Marine Terminal." Press Release, November 20. Available at <http://www.governor.maryland.gov/pressreleases/091120.asp>.
Project Finance. 2010. "Maryland Seagirt: Homeland Advantage." Project Finance Magazine, February 2010 Deal Analysis. Available at <http://www.projectfinancemagazine.com>.

Chicago Skyway LONG-TERM CONCESSION OF A REAL TOLL ROAD

I. PROJECT DESCRIPTION

a. Background

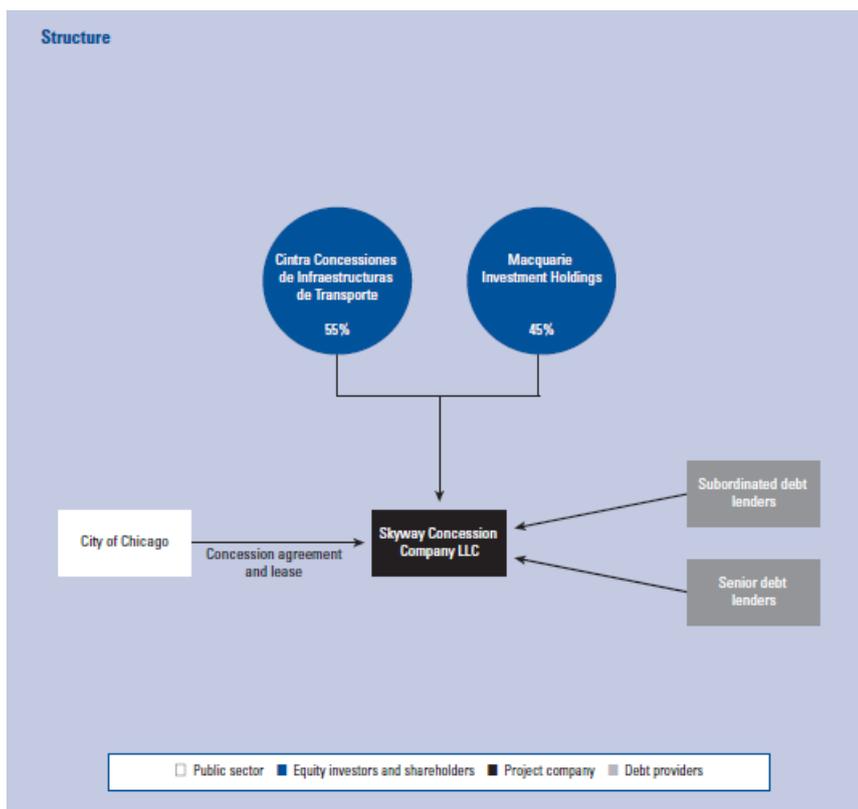
The Chicago Skyway Bridge is a 7.8-mile real toll road built in 1958 (and extensively reconstructed in 2001–04) to connect the Dan Ryan Expressway to the Indiana Toll Road. Up until the time of the transaction the road was operated and maintained by the City of Chicago.

b. Rationale for PPP

The effective privatization of a real toll road can generate significant upfront payments for the public authority

c. Stakeholders

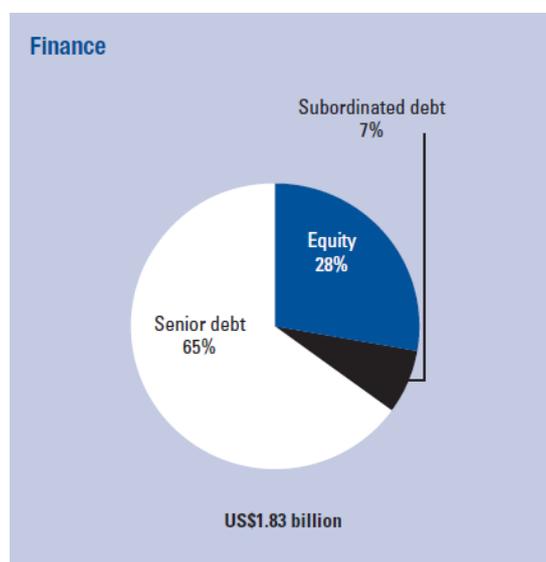
The City of Chicago had lead responsibility to procure the project and managed the competitive process to let the concession. The SCC is a private company owned by the Spanish Cintra Concesiones de Infraestructuras de Transporte (55 percent) and by the Australian Macquarie Investment Holdings (45 percent), both of which have been active investors in infrastructure projects.



II. PROJECT STRUCTURE AND PROCESS ANALYSIS

In January 2005, the City of Chicago entered into a 99-year operate-and-maintain concession with the Skyway Concession Company (SCC). The contract was awarded in October 2004 and the lease commenced in January 2005. The structure of the concession effectively meant that the road was privatized, and the SCC assumed responsibility for all operations and maintenance of the Skyway, including the right to all toll and other concession revenue. Upon entering the concession, the SCC paid the City of Chicago US\$1.83 billion (the US\$1.82 billion bid adjusted for inflation). By August 2005 the transaction was refinanced, creating a total finance package of US\$2.15 billion.

Size	US\$1.83 billion
Location	Chicago, Illinois, United States
Approach	Concession
Market	Developing
Date	January 2005
Type	Economic
Phase	Existing and established



III. FINANCIAL INFORMATION

The financing put in place at the time of the concession award in January 2005 was soon refinanced in August 2005; these two financing structures are summarized below.

Source of funding	January 2005	August 2005
Concessionaire equity	US\$1.00 billion (45.5%)	US\$0.60 billion (28%)
Concessionaire raised subordinated debt	—	US\$0.15 billion (7%)
Concessionaire raised senior debt	US\$1.19 billion (54.5%)	US\$1.40 billion (65%)
TOTAL	US\$2.19 billion	US\$2.15 billion (100%)

Note: Amounts are approximate.

The original senior loan was a nine-year loan underwritten by a group of European banks. When the SCC refinanced, US\$1.4 billion of AAA-rated bonds were issued and US\$150 million of subordinated debt was arranged. This refinancing enabled the SCC's shareholders to recover approximately US\$400 million of their original investment.

IV. KEY CONTRACTUAL FEATURES

a. Revenue Mechanism

The SCC is responsible for all operating and maintenance costs of the Skyway, and has the right to all toll and concession revenue. The concession agreement sets out the required operating standards.

b. Control Mechanism

The concession agreement limits the amount and level of toll increases the SCC can make, although cumulatively, if the maximum increases are implemented, the rise in toll charges could be significant. From 2008 through 2017, any increase is limited to a maximum amount of 7.9 percent per year; in the remaining 86 years, the SCC can adjust tolls by the greater of (1) 2 percent per year, (2) inflation, or (3) the increase in GDP per capita.

c. Restrictions or Provisions

The concession agreement places no restrictions on the public authorities constructing competing tollfree highways (such non-compete clauses are often a feature of real toll concessions).

There is no revenue-sharing provision between the SCC and the City of Chicago. There are provisions to ensure that the road is maintained during the final 10 years of the concession prior to its being handed back to the City.

V. KEY DRIVERS FOR THE INVOLVEMENT OF PRIVATE FINANCE

There appear to have been three main drivers for this project:

Financial: The main driver appears to have been the desire for asset maximization by the City of Chicago and the opportunity to monetize an existing infrastructure asset to help address budget deficits, although the project does remove future revenue for the City from the road. The proceeds from the project were used as follows:

Use of proceeds	Amount
Refund outstanding Skyway bond principal and interest	US\$453 million
Retire a proportion of outstanding General Obligation debt	US\$392 million
Permanent operating budget rainy day fund	US\$500 million
Eight-year capital budget and operating budget stabilization fund	US\$475 million
TOTAL	US\$1,820 million

Source: Crain's Chicago Business, November 2004.

Upon completion of these disbursements, Moody's upgraded the City's overall bond rating a notch to Aa3.

—When the City started the competitive process in 2004, they knew that the road was in good condition, there was an established track record of traffic volume, and a long concession period was on offer. All these factors were likely to attract significant interest from private investors.

—The three bids received in October 2004 ranged from an upfront payment of US\$505 million to the US\$1.82 billion bid by the SCC.

Operational: The project entailed the divestiture of an asset that the City regarded as non-core and was underpinned by the belief that an experienced private-sector operator would run the toll road more efficiently than the City could. One of the first things the SCC did was to install automatic tolling systems.

Political: The number of union workers working on the toll road was small (about 100), therefore there was little union protest as these workers were mostly retained or relocated to other city departments. Also, the potential toll-rate increase backlash would be geared more toward the private-sector operators than toward the incumbent political leaders. As a result, the potential political opposition has been minimal.

VI. LESSONS LEARNED

The project demonstrates that public authorities can receive significant revenues from the monetization of its assets, but to maximize revenue and mitigate public opposition, the choice of asset to be monetized is important. The Chicago Skyway was an existing, well-maintained asset with established traffic patterns, yet it was a non-core asset for the City, users had alternative routes available to them, and only a small workforce was affected by the changes. The receipts from some monetization of assets are difficult to predict. There was a difference of more than US\$1.3 billion among the three bids for this project. It is probably too early to conclude whether or not this project will be a long-term commercial success because, as with any real toll road, the ability to continue to increase tolls and maintain traffic is unpredictable.

VII. REFERENCES

Chicago Skyway website; <http://www.chicagoskyway.org/about/>.Crain's

Chicago Business: <http://www.chicagobusiness.com/> (accessed November 2004).

Johnson, C., M. Luby, and S. Kurbanov. 2007. "Toll Road Privatization Transactions: The Chicago Skyway and Indiana Toll Roads." School of Public and Environmental Affairs, Indiana University, Paper, September. Available at <http://www.cviog.uga.edu/services/research/abfm/johnson.pdf>.

Lopez de Fuentes, J. M. 2006. "Experiences with PPP in North America." Presentation. January 4, Orlando, Florida. Cintra. Available at <http://www.teamfl.org/pdf/407%20ETRChicago%20Skyway-Trans-Texas-Lopez-De-Fuentes.pdf>.

US DOT (Department of Transportation). Case Studies: Chicago Skyway. Federal Highway Administration. Available at http://www.fhwa.dot.gov/ipd/case_studies/il_chicago_skyway.htm.

———. Public-Private Partnerships. Federal Highway Administration. Available at <http://www.fhwa.dot.gov/ipd/p3/index.htm>.

Port of Miami Tunnel, USA

I. PROJECT DESCRIPTION

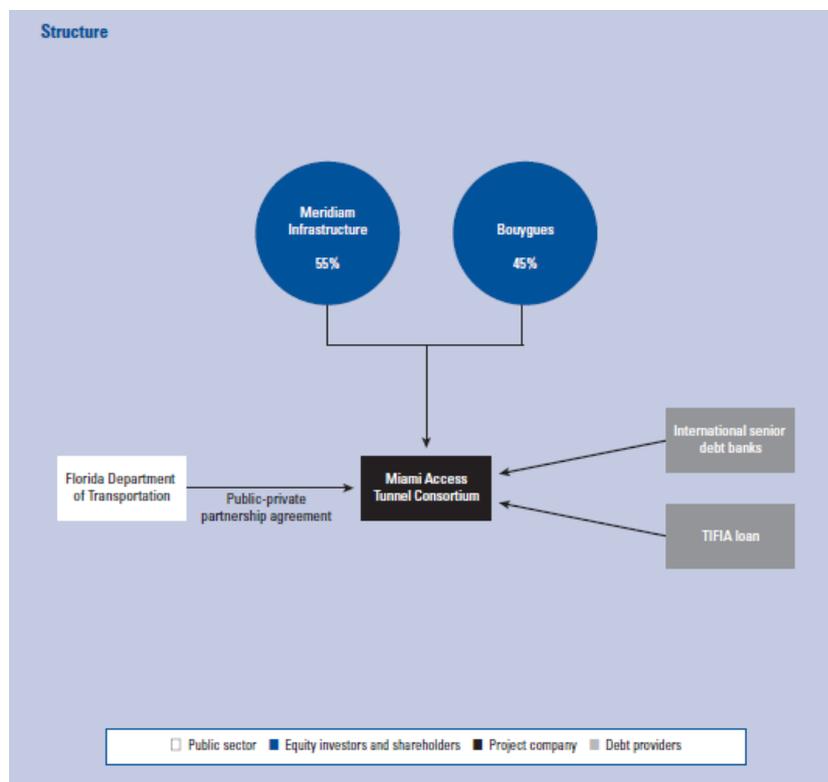
a. Background

This project entailed an approximately 35-year publicprivate partnership (P3) contract between the Florida Department of Transportation (FDOT) and the Miami Access Tunnel consortium (MAT) to design, build, finance, maintain, and operate approximately three miles of tunnel and upgrade a linked causeway and feeder roads. Financial close for the project was reached on October 15, 2009. The project is intended to improve port access by diverting port traffic from city streets, thereby relieving congestion in downtown streets. Construction is expected to commence by mid-2010 and operations are expected to commence in 2014.

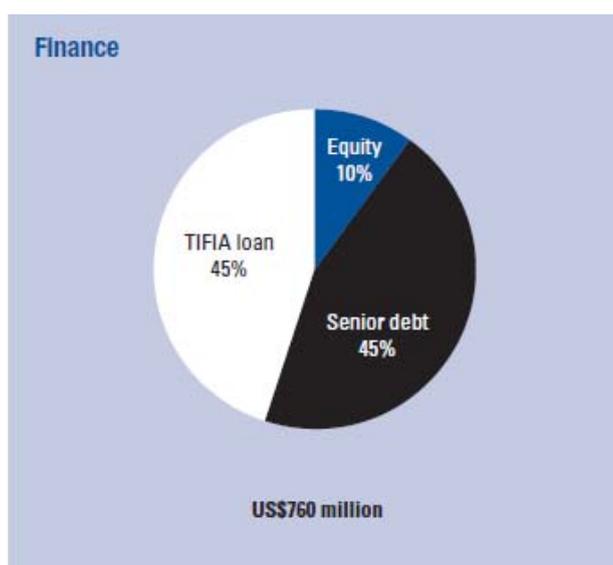
The tunneling is technically challenging, and one of the aims of FDOT's procurement strategy was to attract overseas contractors with the necessary technical experience.

b. Stakeholders

FDOT led the procurement with additional federal government funding provided through the Transportation Infrastructure Finance and Innovation Act (TIFIA), managed by the US Department of Transportation (US DOT). The shareholders of the private-sector concessionaire are Meridiam Infrastructure (90 percent), a specialist infrastructure fund; and Bouygues Public Travaux (10 percent), a subsidiary of Bouygues Construction. Bouygues will also carry out the project construction.



Size	US\$760 million
Location	Miami, Florida, United States
Approach	Public-private partnership
Market	Developing
Date	October 15, 2009
Type	Economic
Phase	New



II. FINANCIAL OVERVIEW

The financial structure is summarized in the table below:

Source	Amount	Percentage
Equity	US\$80 million	10%
Senior debt	US\$340 million	45%
TIFIA loan	US\$340 million	45%
TOTAL	US\$760 million	100%

Senior debt funding was arranged by a group of 10 international banks. The loan is split into two tranches: US\$310 million is a six-year loan, and US\$30 million is a five- to six-year term depending on when the first availability payment is received.

III. KEY CONTRACTUAL FEATURES

The contract is based on FDOT making milestone payments at various stages of the project's development (totaling US\$100 million) and a final acceptance payment of US\$350 million once construction is complete. FDOT will also provide an availability payment to MAT subject to the assets being available and operated and maintained to a pre-defined condition established by FDOT. The maximum availability amount is US\$32.5 million annually.

IV. KEY DRIVERS FOR THE INVOLVEMENT OF PRIVATE FINANCE

This project was first considered nearly 20 years ago, and has had many different designs and approaches put forward over the years. It was always known that whatever solution was picked, it would be technically challenging. As a result, public authorities were keen to transfer this design and construction risk to another party, and a public-private partnership approach offered them the route to do so and also to attract bidders with the relevant tunneling experience from around the globe.

V. LESSONS LEARNED

The choice of procurement approach for a technically challenging project is as important as that for a financially challenging one

This project demonstrates that complex construction projects can attract private finance, including investment from an infrastructure fund. The project also shows the importance of getting the right contract approach—one that reflects the project specific risks and issues. When this happens, private sources will be willing to provide finance.

VI. REFERENCES

FDOT (Florida Department of Transportation). 2007. Port Access Project: The Port of Miami Tunnel. January 3. Available at <http://www.dot.state.fl.us/construction/PPP/PPPWorkshop/PortAccessMiami.pdf>.

———. 2010. Summary of Major Milestones: Port of Miami Tunnel Project, January 14. Miami: PMOT. Available at <http://www.portofmiamitunnel.com/Documents/09-1223Milestones.pdf>.

Port of Miami Tunnel Project Fact Sheet. Available at <http://www.portofmiamitunnel.com/Documents/Funding.pdf>.

Port of Miami Tunnel Project website: <http://www.portofmiamitunnel.com/index.html>.

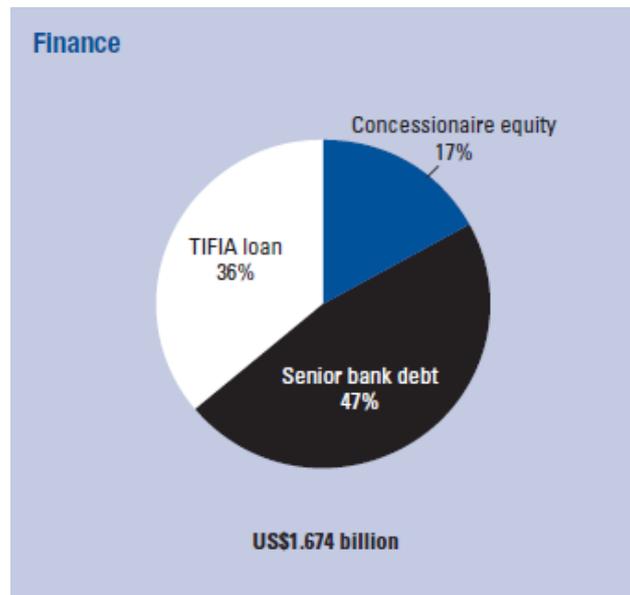
Florida I-595 Road Project, USA

I. PROJECT DESCRIPTION

a. Background

The US\$1.674 billion public-private partnership (P3) project encompasses the reconstruction, widening, and resurfacing of the 10.5-mile I-595 road corridor under a 35-year design, build, finance, operate, and maintenance concession in Florida. Financing for the project was complex and severely affected by the global economic crisis in 2008, but the concession was awarded in March 2009 to ACS Infrastructure Development. Construction of the improvements is expected to be completed in spring 2014.

Size	US\$1.674 billion
Location	Broward County, Florida, United States
Approach	Public private partnership
Market	Developing
Date	March 2009
Type	Economic
Phase	Existing and established



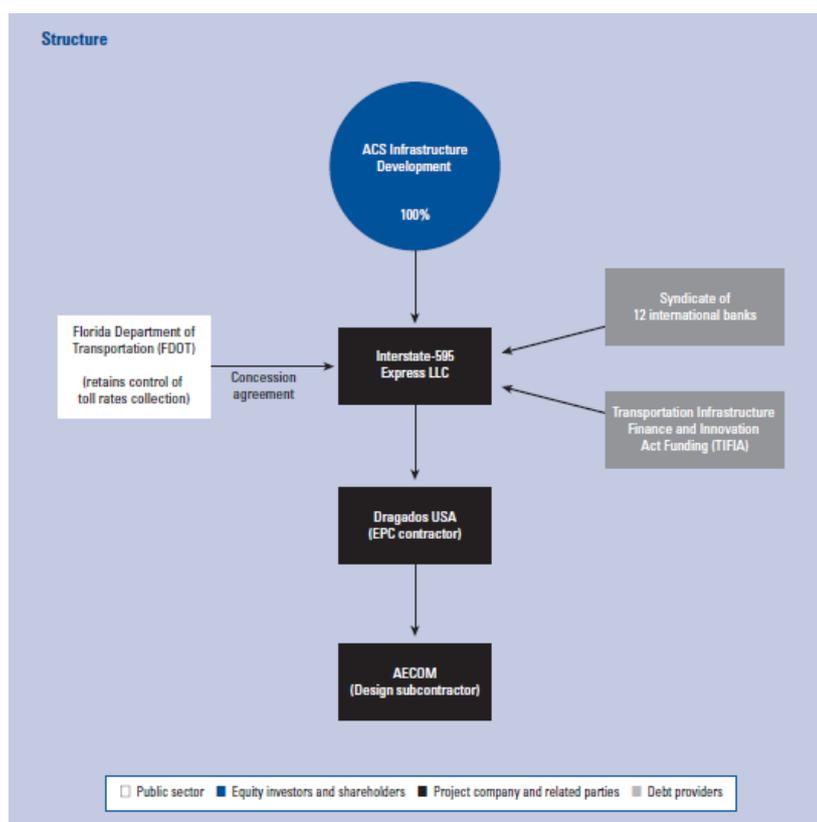
b. Stakeholders

The Florida Department of Transportation (FDOT) led the procurement with additional federal government funding provided through the Transportation Infrastructure Finance and Innovation Act (TIFIA) managed by the US Department of Transportation (US DOT).

The private-sector concessionaire is wholly owned by ACS Infrastructure Development, a subsidiary of Grupo ACS. Dragados USA, a subsidiary of Dragados A.S., is the design-build contractor.

II. FINANCIAL INFORMATION

The financing structure for the project was a combination of commercial debt and a loan. Originally, it was anticipated that much of the funding would come through issues of private activity bonds (PABs). To encourage this, FDOT obtained approval from US DOT for a provisional allocation of US\$2 billion. Nonetheless, private financing was all arranged in the senior debt bank market, with the balance provided by a TIFIA loan.



Source of funding	Amount	Percentage
Concessionaire equity	US\$290 million	17%
Senior bank debt		47%
	<i>Tier 1: US\$525 million</i>	
	<i>Tier 2: US\$256 million</i>	
TIFIA loan	US\$603 million	36%
TOTAL	US\$1,674 million	100%

Senior bank debt was split into two tranches of short-term debt, one with a term of 9.5 years and the other with a term of 10 years.

III. KEY CONTRACTUAL FEATURES

This project is based on availability payments being made to ACS by FDOT for making the highway available for use and maintaining it to a required standard. FDOT retains the revenue risk and will control toll rates and toll collection on the corridor, while the ACS consortium will focus on delivering the requested services for both toll and non-toll lanes.

The ACS consortium will be awarded a lump-sum payment of US\$685 million once construction is completed in 2014. ACS will then receive an annual, inflation-adjusted availability payment of US\$65.9 million for the remainder of the concession's life.

ACS's main risk is that it performs to the required levels and that FDOT will honor its payment obligations.

Such a contractual approach is seen as less risky by senior debt providers and helps facilitate the raising of sufficient private finance.

IV. KEY DRIVERS FOR THE INVOLVEMENT OF PRIVATE FINANCE

Expansion of I-595

In 1992, Hurricane Andrew triggered a large number of residents in Miami-Dade County to relocate to neighboring Broward County, increasing the latter's population by approximately 200,000 in just two years after the storm. As a consequence, Broward's I-595 expressway became congested far ahead of forecasts made by FDOT. The goal of the expansion was to increase throughput of vehicles in the I-595 corridor.

Private financing

Traditional pay-as-you-go arrangement for financing infrastructure projects in Florida meant that construction phases for I-595 would occur only as public funding became available. Given the high cost of the I-595 project at more than US\$1.5 billion, pay-as-you-go would result in a 20-year construction period—not ideal given the severity of congestion in its present state. Awarding the concession to a private partner was viewed as a faster alternative.

During evaluation of the final bids for concession in October 2008, Lehman Brothers went bankrupt, precipitating a major disruption in the commercial lending market, making the PABs prohibitively expensive. This prompted ACS to revise their financing plan and negotiate consequential factors, such as refinancing risk. As detailed above, debt financing is based on two tranches of mini perms. The two tranches reflect the two tranches of revenue that FDOT pays. Although the cost of the commercial debt increased during bidding, the cost of the TIFIA loans fell (they are linked to the US Treasury rate), and so the maximum amount of TIFIA loans was used. The commercial banks required additional equity as well.

ACS was able to deliver European banks as participants in a syndicate loan. These banks would not typically lend in the United States.

V. LESSONS LEARNED

Willingness to redistribute credit risk across parties can help bring projects to financial close.

Flexibility in payment structure: FDOT's adoption of availability payments scheme allowed the department to lower the credit risk of the I-595 project to the concessionaire. This project was able to target a completion date approximately 15 years earlier than it would have under a publically financed approach.

Availability of public funding: TIFIA's countercyclical lending policies meant that long-term financing for the project was available at affordable interest rates. The TIFIA loan stabilized the project's cost of capital enough to prompt the syndicate of banks to lend the remaining sum, enabling ACS to switch from the bond market to the more affordable bank market.

VI. REFERENCES

Dealogic database (accessed November 3, 2009).

FDOT (Florida Department of Transportation). 2009. I-595 Corridor Roadway Improvements: Value for Money Analysis, June. FDOT. Available at http://www.transportationfinance.org/pdf/funding_financing/financing/i595_vfm_0609.pdf.

I-595 Express website: <http://www.i-595.com/default.aspx>.

Podkul, C. 2008. "ACS-Led Group Wins \$1.8bn Florida Toll Road Bid." PERE News. Posted October 29. Available at <http://www.perenews.com/Articles.aspx?aID=5824>.

———. 2009. "North America Special: I-595 Corridor True Partnership." *Infrastructure Investor* 6 (October): 24–9. Wood, D. 2009. "A Stimulating Project Work Begins on \$1.8-Billion Interstate 595 Express-lane Project." *Southeast Construction*, Features section, November 1: 9 (12): 25.

Phu My 2 Phase 2 Power Project, Vietnam

I. PROJECT DESCRIPTION

a. Background

The Phu My 2.2 project was intended to help ameliorate the lack of electricity supply in Vietnam against a rapidly growing demand for energy. The project is a 715-MW gas-fired power project to be built, owned and operated by Mekong Energy Company Ltd. (MECO). The project is located in the Phu My Power Generation Center in Ba Ria – Vung Tau (BR-VT) province, 70km southeast of Ho Chi Minh City. It is implemented under a 20-year BOT Contract and would be transferred to Vietnam Ministry of Industry after the contract expired. The project sells power exclusively to state-owned Electricity of Vietnam (EVN) under a 20-year Power Purchase Agreement, and will be fueled by domestic gas supplied by state-owned Vietnam Oil and Gas Corporation or Petro Vietnam (PV) under a 20-year Agreement for the Sale of Natural Gas. The gas will be sourced from the Nam Con Son Basin gas fields jointly owned by private developers and PV; and will be transported onshore by the new 400km gas pipeline under construction. Power generated by the project will be evacuated through the existing transmission system augmented by the new 500kV transmission line being constructed by EVN.

Schedule of Activities – Phu My PPP	
Late 1997	Request for Proposals and indication of offers
Jan 1999	Award of project to consortium EDF-SUMITOMO-TEPCO
Sept 2001	Issue of Investment License
May 2002	Agreement between lenders and sponsors
Oct 2002	Signing financing documents

b. Project Revenue

The project will deliver power to EVN at US cents 4.1/kWh (including fuel costs based on gas price agreed with PV) on a levelized basis over the life of the project. Retail electricity tariffs, currently uniform across Vietnam, are set by the government and have been raised periodically since 1992. Average retail tariffs were raised to US 5.6 cents/kWh in October 2002 and are expected to be gradually increased to achieve US 7.0 cents/kWh, close to long run marginal cost for the sector, by 2005.

Name of Equity Sponsor	Economy	Amount and Percentage (US\$ million)
Electricité de France International	France	56.25 (56.25%)
Sumitomo Corporation	Japan	28.125 (28.125%)
Tokyo Electric Power Company	Japan	15.625 (15.625%)
Stand-by Equity (all 3 sponsors)		40

Total	140.
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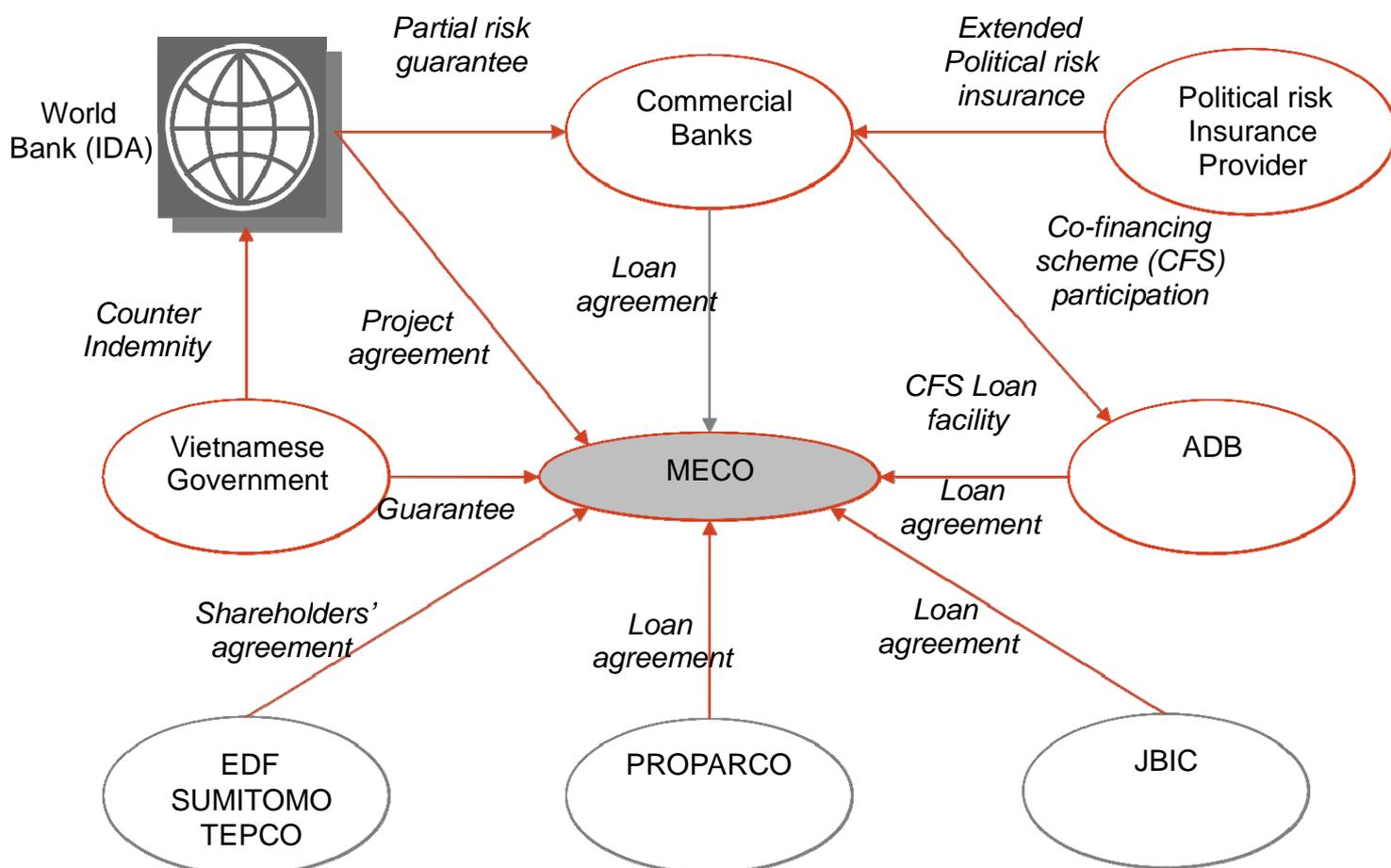
c. Project Costs and Debt:

The total financing requirement for the project was US\$480 million, including stand-by financing of US\$80 million, financed with debt of US\$340 million (base debt of US\$300 million; stand-by debt of US\$40 million) and sponsor equity of US\$140 million. The debt equity ratio was 75:25 for the base project costs; and the contingent financing would be disbursed on the basis of a 50:50 ratio.

The debt facility consists of: two commercial bank tranches, the US\$75 million IDA guaranteed loan and the US\$25 million loan with ADB as the guarantor of record covered by private political risk insurance (PRI); US\$50 million ADB direct loan; US\$150 million JBIC loan; and US\$40 million Proparco loan. The commercial bank debt facilities, including the IDA guaranteed loan, were arranged by ANZ Investment Bank, Société Générale and Sumitomo Mitsui Banking Corporation. The IDA guaranteed loan has a 16-year maturity including a 2-year construction period. For the guaranteed loan, IDA charged a guarantee fee of 75bp per annum on the outstanding principal amount, payable by MECO. The award of the loan was contingent upon the IDA and Vietnam concluding the Indemnity Agreement, under which the state counter guaranteed IDA for any payments made under the Guarantee Agreement.

Total project cost (Phase I):	US\$480 million
Debt:Equity Ratio	71:29
Total senior debt	US\$340 million
Senior debt breakdown	IDA PRG Loan – US\$75 million ADB GOR+Private PRI – US\$25 million ADB – US\$50 million JBIC – US\$150 million Proparco – US\$40 million

d. Financing structure



II. KEY RISKS

Risk Type	Key Risk
Political risk	Covered by IDA Partial Risk Guarantee. This included currency convertibility and transferability risk, given the role of the Vietnamese government in regulating currency markets.
Environmental risk	Stipulated in the project agreement between IDA and MECO, under which company covenants state that it will comply with World Bank environmental guidelines and other applicable requirements.
Demand risk	Covered by a 20 year electricity PPA between MECO and EVN on the basis of a two-part tariff.
Supply risk	Natural gas supply agreement between PV and MECO for the purchase of gas for 20 years; Water Supply Agreement between MECO and BR-VT provincial Water Supply Company (WSC) defines the supply of potable and process mark-up water for the

	power station by the WSC.
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III. KEY LESSONS, EXPERIENCES AND OBSERVATIONS.

The presence of Partial Risk Guarantees was necessary to convince international participants with the financial resources and expertise to invest in the project. While IDA support was only US\$75 million, it catalyzed another US\$400 million in co-financing. In addition, it helped mobilize long-term debt substantially beyond prevailing market terms for the economy, contributing to the achievement of competitive generation tariffs.

Adhering to international environmental safeguards (in this case imposed by the World Bank through its contract) helped mitigate environmental damage and concerns, which also helped attract international investors.