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# PROJECT SUMMARIES PART 1

# Municipal Public-Private Partnership Framework

The Municipal Public-Private Partnership Framework can be found at [www.thegpsc.org](http://www.thegpsc.org) and [www.worldbank.org/ppplrc](http://www.worldbank.org/ppplrc)

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# Transportation

## Integrated Multi-Modal Transportation

### 1. Moncloa Transportation Exchanger, Madrid, Spain



Photo Credit<sup>1</sup>

#### Background

Madrid's metropolitan area has a population of about six million people, with most of them located in the center of Madrid. To mobilize its people, the city maintains a metro, an urban bus network, an extensive network of high capacity freeways, interurban buses, and railway services. To ensure effective service delivery, the city needed a way to integrate the different transportation modes, urban and metropolitan.

This led to the introduction of transportation exchanger. Transportation exchangers are intermodal nodes of urban and interurban transport networks that facilitate the integration of different transportation types and minimize the inconvenience of transport transfers for travelers. They are equipped with air-conditioning, commercial areas, and other facilities that make the travelers more comfortable. This infrastructure provides an optimal mode of transfer from regional and inter-regional buses or railway services to the metro network and urban buses.

The Moncloa transportation exchanger was initially constructed in 1995 with public funds. As demand for public transportation grew, however, the Moncloa exchanger's capacity was pushed to its limits during peak hours. This caused problems for travelers trying to enter Madrid, delaying commutes, and contributing to excessive levels of air pollution. Additionally, according to the urban development plans, demand was expected to continue growing over the following years, further intensifying the need to expand and improve the exchanger.

#### Project Structure

In light of budget limitations and the general economic situation of the country, the public

authority invited private sector participation in the expansion. In August 2005, Consorcio Regional de Transportes de Madrid (CRTM), Madrid's transportation authority, initiated a public tender to award a 35-year concession for the construction, maintenance, and operation of the Moncloa exchanger. The contract was awarded to a consortium consisting of Itinere Infraestructuras, Sacyr, and Castromil y Transportes la Unión and signed on 1 March 2006.

The concessionaire receives revenue from three different sources: a) for interurban bus passengers: (i) a fixed payment from CRTM, guaranteeing a minimum demand, and (ii) a sum paid by bus operators corresponding to actual demand; b) fares from long-distance transit passengers; and b) commercial revenues such as commercial and office space leases, vending, ATM spaces, and advertisement sales at the facility. Transit operators collect the user tariff as part of the ticket price paid by passengers who embark or disembark at the exchanger and this is then passed on to the concessionaire. Initially, the private partner assumed all financial and demand risks. At this time, the investment cost was estimated at EUR 112.78 million (USD 127.5 million<sup>2</sup>), and the user tariff for passengers on transit lines within CRTM's authority, which comprise the majority of the passengers that use the facility, was set in the contract at a price of EUR 0.1476 (USD 0.17) (VAT included) per user.

The contract included a clause that established a variable concession term/duration, depending on the real yields obtained by the concessionaire. The variable term mechanism allows the concessionaire to finish the concession five years earlier (maximum) in case the traffic concession is higher

<sup>1</sup> Museo8bits ([https://commons.wikimedia.org/wiki/File:Nuevo\\_intercambiador\\_Moncloa\\_DSC00088.JPG](https://commons.wikimedia.org/wiki/File:Nuevo_intercambiador_Moncloa_DSC00088.JPG)), „Nuevo intercambiador Moncloa DSC00088“, <https://creativecommons.org/licenses/by-sa/3.0/legalcode>

<sup>2</sup> All currency conversions are approximations based on current exchange rates at the time of writing.



than expected, or five years later (maximum) in case the traffic is lower than expected. Hence, the concession term would also act as a cushion for the demand risk

In 2007, there was a modification in the project's design due to a new environmental regulation, which increased the investment cost by 17.2 percent. To compensate for the increase in cost, the tariff for passengers on CRTM lines was increased to EUR 0.20 (USD 0.23) per passenger. However, rather than passing the tariff increase on to end-users, CRTM and the bus operators jointly absorbed the additional cost, meaning they did not increase their fares to reflect the increase in the tariff payable to the concessionaire. In addition, due to serious discrepancies between the estimated and real traffic, the demand risk was modified so that the concessionaire assumed the demand risk only for those transportation lines that did not depend on CRTM. To this end, CRTM guaranteed a minimum fixed payment for user traffic on the lines dependent on CRMT. This mechanism was vital to ensure the project's continued feasibility, as the financial conditions and demand forecasts that were estimated at the beginning of the contract were notably different from those at the time of financial close in 2009.

The concessionaire ultimately delivered a more than 46,000 m<sup>2</sup> facility with 1000 lineal meters of tunnels and four different levels: Level Zero (street access); Level One (bus station); Level Two (metro-

bus connection and commercial zones); and Level Three, two metro lines. The renovated facilities were inaugurated in February 2008 and the number of metro users transiting the exchanger rose from 44,000 in 1995 to 110,000 in 2011.

### Lessons Learned

The Moncloa exchanger has improved Madrid's mobility and its citizens' quality of life significantly. Through this PPP, Madrid was able to develop high-quality infrastructure within a very short period of time and with a lower impact on the public budget.<sup>3</sup>

The project provides the following lessons.

- The importance of robust demand studies permeates all aspects of a PPP project.
- In long-term PPP contracts where user demand is central to the sustainability of the project, mechanisms such as: minimum fixed payments and variable contract term clauses can be used to increase the project's feasibility. However, careful attention must be given to guaranteed fixed payments, as these can represent significant disbursements for the contracting authority.
- Although they provide room for operational growth in the future without additional construction, overly optimistic demand forecasts may result in higher construction, maintenance, and operation costs for a facility that could have had a lower capacity, and so lower costs, while providing the same level of service.

## Railways

### 2. Hong Kong Mass Transit Railway Corporation, Hong Kong SAR, China



Photo Credit<sup>4</sup>

#### Background

Hong Kong is a very densely populated city, with a population of more than seven million people occupying a land area of only 1,104 km<sup>2</sup>. Every day, over 11 million commuter trips are made using Hong Kong's public transportation system, which includes railways, trams, buses, mini buses, taxis, and ferries. Thus, Hong Kong recognized the need to invest heavily in its public transport systems, especially its railways, which serve as the primary public transport modality of Hong Kong.

#### Project Structure

In 1975, the Hong Kong government established the Hong Kong Mass Transit Railway Corporation (MTRC), a government-owned corporation responsible for providing metro services. Although it is majority-owned by the public administration, it is highly profitable and operates without public subsidies. This is possible because MTRC makes profits not only from the mass transit railway but

<sup>3</sup> Source: <http://scioteca.caf.com/handle/123456789/758>, accessed 8 February 2019

<sup>4</sup> Exploringlife ([https://commons.wikimedia.org/wiki/File:Mass\\_Transit\\_Railway.jpg](https://commons.wikimedia.org/wiki/File:Mass_Transit_Railway.jpg)), <https://creativecommons.org/licenses/by-sa/4.0/legalcode>

also from its real estate business.

When planning a new railway line, MTRC does not only assess the cost of construction but also prepares a master plan to assess the potential for property developments along the railway line. Subsequently, it purchases the development rights for 50 years from the public administration, which is the right “to construct property above railway stations and depots, and land adjacent to the railway.” At the time of purchase, the value of these development rights does not consider the rising value resulting from the transport project – or “before rail” land premium.

Subsequently, the MTRC publicly tenders these development rights to private developers, with an additional land premium that takes into account the added value from the intended railway expansion. The private developers are responsible for the construction and commercialization risks and costs for the residential and commercial properties that they develop. MTRC is responsible for supervising the works conducted by the private developers, carrying out related civil works and enforcing technical standards and requirements for the interface between its railway premises and the property developments.

Revenues generated by the residential and commercial properties are shared between MTRC and the private developers. For residential units, if the private developer manages to sell all of the units before a contractually fixed deadline, the MTRC receives an agreed portion of the profit generated from these sales. If units remain unsold by the deadline, MTRC absorbs the unsold units and determines whether to sell or lease them on the open market. For shops and office units, MTRC

earns a share of the revenue from the commercial leases held by the developers, or it may keep a portion of the assets developed to generate long-term rental income. This model also provides a revenue stream for the Hong Kong public administration, through taxes as well as dividends, as it is the majority shareholder of MTRC.

### Lessons Learned

MTRC is widely regarded as the gold standard for transit management worldwide. From 1998 to 2013, property-related operations have generated almost twice the amount of money spent on railway line construction (profit from property operations totaled more than HKD 88 billion, or approximately USD 11 billion).

However, to understand whether the model could be replicated or not in other cities, it is worth considering the following:

- The scarcity of land in Hong Kong – private sector interest is particularly high due to the limited available supply.
- High traffic volumes on the railway network – Hong Kong has an average of 4.5 million passenger trips on metro lines every weekday. The high traffic volume creates a vast commercial potential for the properties connected to the railway network.
- The close relationship between MTRC to Hong Kong’s public administration – this has helped facilitate the design of the project, including granting the development rights alongside the railway lines.
- MTRC’s strong prowess in managing and developing property – this expertise would be difficult to replicate in one-off projects or for cases with limited market potential<sup>5</sup>.

### 3. Challenging Case: Yongin Everline Light Rail Transit, Seoul, Republic of Korea



Photo Credit<sup>6</sup>

#### Background

Anticipating an increase in travel demand based on Yongin City’s development plans, in 1996 Yongin City proposed a PPP to establish the Yongin Everline Light Rail Transit (LRT). However, the project had to be deferred to 2001 due to insufficient bids received. The PPP project was re-announced in 2001 and received only one project proposal submission in 2002 from a consortium formed by Daelim Industrial Co., Ltd. and Bombardier Transportation. The Daelim-led consortium was selected as the preferred bidder in 2002 and subsequently established Yongin Rapid Transit Co. Ltd.

<sup>5</sup> [https://www.unescap.org/sites/default/files/Case%204\\_Land%20Value\\_Hong-Kong%20MTR.pdf](https://www.unescap.org/sites/default/files/Case%204_Land%20Value_Hong-Kong%20MTR.pdf)

<sup>6</sup> Minseong Kim ([https://commons.wikimedia.org/wiki/File:Yongin\\_Everline\\_Livery\\_Animal\\_1.jpg](https://commons.wikimedia.org/wiki/File:Yongin_Everline_Livery_Animal_1.jpg)), <https://creativecommons.org/licenses/by-sa/4.0/legalcode>

### Project Structure

The PPP agreement was signed in 2004 between Yongin City and Yongin Rapid Transit Co. Ltd. The consortium was awarded a 30-year concession to design, construct, and operate the Yongin LRT, which was to span about 18 km and entailed an estimated investment cost of KRW 728 billion (USD 646 million). The agreement stipulated that ownership of the LRT would belong to Yongin City. Yongin City would provide a 90 percent of minimum revenue guarantee (MRG) over the 30-year operation period. At the same time, the consortium was required to provide additional equity (subject to a cap) in the event of any cost overruns.

### Lessons Learned

The project started construction in 2005 and was completed in 2009. In the intervening period, however, a research institute determined that the estimated passenger volume would reach only 32,000 passengers per day, due primarily to competition from other public transport options that had been built or improved during the LRT's construction period. This figure was far below the 2001 estimate of 140,000. To satisfy its 90 percent MRG, this shortfall in demand would cost Yongin City an estimated KRW 2.5 trillion (USD 2.2 billion).

To avoid this financial burden, Yongin City denied the construction completion approval, a precondition to the consortium's receipt of construction payments. Instead, it proposed to move forward with operating the line without the completion approval. This led to the cancellation of the implementation agreement and an escalation of the dispute to international arbitration in 2011. In 2012, an international arbitration court ordered Yongin City to pay a total of KRW 779 billion (USD 692 million) to Yongin Rapid Transit Co., Ltd. The amount was to compensate for the project costs accrued before the cancellation of implementation agreement and the losses arising from opportunity costs.

After the termination of the original agreement, both Yongin City and the Yongin Light Rail Co., Ltd. renegotiated a new 30-year contract, which was subsequently signed in mid-2012. In the new

deal, the MRG provision was removed, but the city was required to pay about USD 20 million per year in operation and management fees, in addition to assuming responsibility for the debt associated with the LRT system.

In April 2013, Yongin Everline officially opened but attracted only about 9,400 users per day in its first month of operation, and around 10,000 people per day subsequently. This ridership is still lower than the significantly reduced 2011 estimate of 32,000 per day. If this continues, the LRT is expected to cost taxpayers around USD 2.7 billion over the next 30 years, including maintenance.

In September 2014, the situation improved after implementing the Metropolitan Unity Fare system, which integrated the fare with surrounding transit systems and improved station-to-station connection. After the integration, the ridership level of the Yongin Everline tripled in less than six months to an average of 30,000 passengers per day, close to meeting the most recent demand forecast of 32,000.

The case highlights the following:

- The danger of optimism bias, particularly in a generally unprofitable project like an LRT, as overestimation can present significant fiscal risks for the contracting authority in the long run.
- The importance of investing in qualified, independent transaction advisors through transparent and competitive procurement processes. Reports stated that the Yongin LRT case was surrounded by corruption allegations, especially during the procurement of the project advisors and private sector partner.
- Being open to renegotiation. In the event of conflict or crisis, both parties should be open to renegotiation to seek the best available solution. Although the solution may not wholly reverse the damage that has already occurred, it can reduce or prevent further damages from happening.
- Avoid redundancy in public transportation. The case highlighted the importance of looking at urban transport in a more integrated manner to account for competition from other modes of transportation along the same corridor.<sup>7</sup>

<sup>7</sup> Sources: <https://www.kdevelopedia.org/download.do?timeFile=/mnt/idas/asset/2016/05/02/DOC/PDF/04201605020144390077279.pdf&originFileName=KSP%2011%20Korea%C2%B4s%20Railway%20PPP%20Projects.pdf>, accessed 17 February 2019

<https://m.worldservicesgroup.com/article.aspx?id=2097>, accessed 17 February 2019

<http://koreajoongangdaily.joins.com/news/article/article.aspx?aid=2972459>, accessed 17 February 2019

## Busses

### 4. Sheberghan City Bus Terminal, Sheberghan, Afghanistan



Photo Credit<sup>8</sup>

#### Background

Bus passengers in Sheberghan had to wait for buses outside on the main road, sometimes for hours, without access to public toilets or other facilities. There was also no organized parking space for drop-offs and pickups, which caused traffic jams and frequent road accidents. After receiving complaints from residents on the absence of a bus station in the city, the municipality decided to construct a modern bus terminal and to enter into a PPP for the operation and management of the bus terminal to ensure its long-term sustainability.

#### Project Structure

The municipality built the bus terminal and made the project site available to a local private investor. Of the total USD 230,000 investment cost, the municipality contributed USD 50,000, a United States development aid agency contributed USD 120,000, and the private partner provided the remaining USD 60,000.

In addition to the operation and management of the bus terminal, the private partner was responsible for

constructing 16 municipally-owned shops adjacent to the bus terminal at no cost to the municipality. In return, the private partner leases the shops from the municipality at no charge for five years, during which it may recover its initial investment in the project plus a reasonable return by subleasing the premises. After the initial, five-year period, the private investor will begin making lease payments to the municipality, further contributing to the sustainability of the facility.

#### Lessons Learned

The bus terminal was inaugurated on 13 November 2013 and the project site comprises a canopy, shops, a restaurant, modern toilets, and other facilities. The municipality plans to use the lease revenue it will receive from the private partner for reconstruction projects throughout the city.

Through this PPP project, the municipality gained both social and economic benefits. The project not only helped address the traffic problems and improve passengers' well-being, it also allowed the municipality to earn revenue from leasing the shops to the private partner.

### 5. Modern Bus Terminal and Municipal Market, Danli, Honduras



Photo Credit<sup>9</sup>

<sup>8</sup> Julian-G. Albert ([https://commons.wikimedia.org/wiki/File:Coach\\_buses\\_in\\_northern\\_Afghanistan.jpg](https://commons.wikimedia.org/wiki/File:Coach_buses_in_northern_Afghanistan.jpg)), „Coach buses in northern Afghanistan“, <https://creativecommons.org/licenses/by/2.0/legalcode>

<sup>9</sup> Jaetguz (<https://commons.wikimedia.org/wiki/File:AnilloPerifericoTegucigalpa.jpg>), „AnilloPerifericoTegucigalpa“, <https://creativecommons.org/licenses/by-sa/3.0/legalcode>

### Background

The municipality of Danlí in Honduras had an outdated and disorganized bus terminal and was suffering from high traffic congestion on its main roads due to the accumulation of street sellers. To address these problems, an improved and expanded Danlí bus terminal and municipal market was proposed to the municipality, which included 418 commercial stalls, warehouse space, meeting rooms, parking space for 60 buses, waiting rooms and ticket stalls.

### Project Structure

The 99,232,126.97 Lempiras (USD 4 million), 19,000 m<sup>2</sup> project originated as an unsolicited proposal from Flefil y Asociados to the municipality of Danlí. The project as proposed did not require public funding or financing, but it did seek public financial guarantees.

The project site was transferred to Flefil y Asociados for construction of the upgraded and expanded facilities, at a price agreed on in the transfer agreement. The private partner would be in charge of carrying out the study of the land, underground, and all characteristics of the terrain before commencing construction, so that no unexpected or additional costs could be claimed to the municipality. In 2016, Flefil y Asociados solicited approval for the transfer of contractual rights to Celaque Constructora, which was granted on May 26 of the same year.

On completion of construction, Celaque Constructora recoups its investment plus a reasonable rate of return by selling the commercial stalls to transporters, current tenants, small and medium enterprises, and/or the municipality, at a price preset by the municipality and included in the PPP agreement (L. 34,000 / USD 1,390 per m<sup>2</sup>). If the municipality buys part or all the commercial stalls, it can rent them to persons not able to

purchase a stall. Celaque Constructora is also entitled to sell the improved bus terminal spaces to small and medium carriers at a price preset by the municipality and included in the agreement (L. 30,000,000/ USD 1,200,000).

The municipality is responsible for operating and maintaining all common areas and for not granting construction permits to similar works within the

project zone. If the contract is terminated early due to force majeure, the municipality is only obliged to compensate for the works completed prior to the termination date. Other risks such as environmental, design, financial, and construction are borne by Celaque Constructora.

### Lessons Learned

The entire project was designed to be energy-saving and easily accessible by people with physical limitations. It was inaugurated at the beginning of 2018 and is expected to benefit more than 400,000 people.

It was reported that, towards the end of 2017, vendors of the previous market (intended future tenants of the new facilities) began gathering on the streets around the newly constructed bus terminal and market to sell their products, which led to high congestion and several mobility problems. The vendors' argument for selling on the streets centered on the price of the market stalls, which they considered too high for them to proceed with acquiring the new stalls. Several efforts were made to facilitate the purchase of the market stalls, without much immediate success. This led to an agreement between Celaque and the Vendors Association, signed in April 2018, which provided that the stalls would be purchased collectively by the Association, with financing from a local financial institution or individually by each vendor, depending on the case. This financing would be guaranteed by the government.

Problems persisted, however, and the traffic congestion caused by the street sellers was creating serious threats to the safety and mobility of the community. To solve this problem, the Government of Danlí issued an executive order in June 2018 ordering the cessation of all sales activities on the street outside the new market and mandated the expulsion of all the street sellers. In addition, owing to the rise of "private" bus terminals operating near the new terminal, the executive order required all bus operations going in and out of the municipality to use the new bus terminal. The executive order also expanded the number of market stalls to be allocated to vendors and stipulated that the municipality would act as guarantor in favor of the vendors/stall-buyers before any financial institution that would provide loans for stall acquisition.<sup>10</sup>

<sup>10</sup> Source(s): [http://smartcities.gov.in/upload/uploadfiles/files/Compendium\\_of\\_PPP\\_CasesMoUDs.pdf](http://smartcities.gov.in/upload/uploadfiles/files/Compendium_of_PPP_CasesMoUDs.pdf)

## 6. Bus Terminal-cum-Commercial complex in Mohali, India



Photo Credit<sup>11</sup>

### Background

Mohali's bus terminal was not meeting the transport demands of a growing city, which had burgeoned into a commercial and institutional hub and an investment destination for IT, electronics, and real estate development. To better meet the demand for bus services, the Greater Mohali Area Development Authority, the Department of Transport, and the Government of Punjab decided to pursue a PPP for the design, construction, operation and transfer of a new bus terminal. As the terminal facility alone, however, was not viewed as commercially desirable enough to attract investors, the project design incorporated the development of adjacent commercial facilities to increase its financial viability.

### Project Structure

The project design, considered to be the first-of-its-kind "busopolis" in India, included three main facilities: a bus terminal with passenger amenities and retail space; a hotel with a helipad, and a commercial office tower. Revenue from the bus terminal would be derived primarily from the "adda" fee – a fee collected from all buses on exiting the terminal, in addition to revenues from commercial leases to vendors, parking, a cycle stand, and advertising. Hotel operations, including landing charges for use of the helipad, and the sale, long-term lease or rental of commercial developments for retail and office space, are expected to provide substantial additional revenue for the concessionaire.

The private partner undertook to design, build, finance, operate and transfer the bus terminal and adjacent commercial facilities, in return for a 20-year concession for the bus terminal and a 90-year concession for the commercial complex. Investment costs were estimated at approximately Rs 431 crore

(USD 60 million), but due to a change in the project scope and delays in project implementation the total project cost was later revised to Rs. 530 crore (USD 74 million).

The private partner was selected through a two-stage international competitive bidding process. The project was awarded on the basis of minimum eligibility requirements and highest bid for the upfront concession fee, payable to the Greater Mohali Area Development Authority. The winning bidder, an Indian infrastructure construction conglomerate, offered an upfront fee of 57 crore (USD 8 million), in addition to the payment of an upfront project development fee of Rs 1,25 crore (USD 200,000) to the Government of Punjab, which was fixed at 5 percent of the upfront concession fee. In addition, the private partner agreed to pay the Development Authority an annual concession fee of Rs. 2,85 crore (USD 400,000), which increases by 15 percent every three years.

The project investment cost was financed with a debt-to-equity ratio of 0.86:1. The private partner's equity contribution included revenue generated from the sale of a fixed amount of commercial space at an agreed minimum rate. As a credit enhancement, the private partner agreed to a firm tie-up of 50 percent of the funds from the sale of the commercial space required to finance the project before the first loan disbursement.

### Lessons Learned

The busopolis project commenced operations by the end of 2016 and was expected to realize around 2,000 bus-trips daily. However, reports from 2017 indicated that the bus terminal was receiving only around 200 buses and 100 people per day, due to users and drivers continuing to use a pre-existing bus stand and thereby avoid the usage fee charged by the new terminal. In addition, several investors that purchased space in the complex's commercial areas have reported that they have not received the offices and shops they purchased in 2010 or a refund of the purchase price after the developer failed to hand over the spaces in 2012 as agreed.<sup>12</sup>

<sup>11</sup> ak sa ([https://commons.wikimedia.org/wiki/File:Punjab\\_Bus.jpg](https://commons.wikimedia.org/wiki/File:Punjab_Bus.jpg)), „Punjab Bus“, <https://creativecommons.org/licenses/by-sa/2.0/legalcode>

<sup>12</sup> Source(s): <https://www.candcinfrastructure.com/images/PPP%20in%20Urban%20Transport%20Infra.pdf>

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## 7. Challenging Case: Amritsar Intercity Bus Terminal, India



Photo Credit<sup>13</sup>

### Background

Traffic at the Amritsar Bus Terminal, which was serving 1,800 to 2,000 bus arrivals per day, far exceeded the capacity of the available facilities and the existing terminal building was in poor condition. To address this problem, the Department of Transportation (DoT) of the Government of Punjab (GoP), facilitated by the Punjab Infrastructure Development Board (PIDB), decided to expand the Amritsar terminal using a PPP scheme.

### Project Structure

After undertaking a two-stage bidding process, the project was awarded to Rohan Rajdeep Infrastructure (RRI, a partnership between Rohan Builders (India) Pvt. Ltd., Rajdeep Buildcon Pvt. Ltd. and Rajdeep Road Developers Pvt. Ltd.) in February 2004, for a concession period of 11 years and five months. RRI undertook responsibility for financing, building, operating, and maintaining the Amritsar Intercity Bus Terminal Complex. To ensure quality, RRI agreed to submit monthly progress reports to the public authority.

RRI's revenues are derived from tariffs paid by buses for use of the terminal, commercial leases for shops, advertising, and parking fees. RRI agreed to pay PIDB a one-time, fixed project development fee of INR 35 lakhs (USD 50,000) as well as a monthly lease payment to the public authority of INR 50,000 (USD 700) over the concession period.

The contracting authority agreed not to develop any similar facilities within a 10-km radius during the concession period, to ensure that there would be no competition that might hinder RRI in realizing the forecasted demand for the terminal.

### Lessons Learned

When the project was tendered, it was estimated that the terminal would receive 2,000 to 3,000 buses per day. Actual demand, however, proved

to be far less, with only about 1,100 regular buses and 600 mini-busses using the terminal on average each day. This is to some extent attributable to the fact that some buses began operating from outside of the bus terminal to avoid paying the terminal usage fee. To compensate for this, the contracting authority issued a notification that all intercity buses must stop, drop off, and pick up passengers from inside the Amritsar Bus Terminal. The notification had limited impact, however, as there is no monitoring or enforcement mechanism to ensure that all buses comply with the notification.<sup>14</sup>

The case underlines the need to consult with key stakeholders, here the bus operators, as early in the process as practicable and particularly when deciding major issues like user fees. In this case, failure to adequately ensure affordability for facility users appears to have had a role in deterring the bus operators from using the terminal. Additionally, the case highlights the importance of having robust monitoring and enforcement mechanisms to ensure compliance with contractual obligations that bear on project viability, such as non-compete clauses.

<sup>13</sup> Photo in the public domain published by Simbu123 [https://commons.wikimedia.org/wiki/File:ISBT\\_Amritsar.jpg](https://commons.wikimedia.org/wiki/File:ISBT_Amritsar.jpg)

<sup>14</sup> Source(s) <https://www.pppinindia.gov.in/toolkit/ports/module3-rocs-aibtp1.php?links=aibtp1> accessed 10 January 2019

<sup>15</sup> ArmouredCyborg ([https://commons.wikimedia.org/wiki/File:UTC\\_bus.jpg](https://commons.wikimedia.org/wiki/File:UTC_bus.jpg)), <https://creativecommons.org/licenses/by-sa/4.0/legalcode>

<sup>16</sup> Source(s): <https://timesofindia.indiatimes.com/city/dehradun/Uttarakhand-Transport-Corporation-plans-to-build-10-bus-terminals/articleshow/45680911.cms> accessed 17 February 2019

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## 8. Challenging Case: Bus Terminal and Commercial Complex, Dehradun, India



Photo Credit<sup>15</sup>

### Background

Located 236 km from New Delhi, Dehradun is the capital city of the newly formed State of Uttarakhand and a popular tourist and educational hub in northern India. To accommodate the growing population of Dehradun and the influx of tourists, the Mussoorie Dehradun Development Authority (MDDA) – the municipal development authority – decided to build an Inter-State Bus Terminal (ISBT) and Commercial Complex in Dehradun using a PPP scheme.

### Project Structure

Following a two-stage bidding process, Ramky Infrastructure Ltd was announced in 2003 as the successful bidder based on the highest annuity payment to MDDA. Under the resulting PPP agreement, the project developer undertook to design, finance, build, operate, and maintain the ISBT (Phase 1) and commercial entertainment complex (Phase 2). The contract was a 20-year concession agreement, extendable by an additional ten years. At the end of the concession period, both ISBT and the commercial area were to be transferred back to MDDA. The project developer would generate revenue from the following: (i) usage fees charged to the expected 750 buses per day; (ii) lease rental from the commercial area; and (iii) miscellaneous other value-added user services and commercial activities.

The project was to be financed without any contribution from the MDDA and MDDA was expected to receive a fixed annual lease payment from the developer of INR 81 lakhs (USD 114,000), which would increase 5 percent each year, after an initial, four-year moratorium. MDDA was expected to receive about INR 19.16 crore (USD 2.7 million) over the entire concession period.

### Lessons Learned

Phase 1 of the project – the ISBT complex – has been completed and in operation since June 2004. Halfway through the concession period, however, allegations arose that the private developer was not properly maintaining the facilities of the ISBT. In particular, complaints have been made about the poor maintenance of toilets, the lack of sanitation, and the lack of drinking water availability. Furthermore, Phase 2 of the project – the commercial complex – has not been built despite transfer of the leased land from the MDDA, due to a protracted dispute between the parties over the maintenance of the ISBT and the annual lease payment due from the private developer. Nonetheless, the PPP agreement remains in place, as the MDDA is not willing to assume liability for INR 20 crore (USD 2.8 million) loan taken by the private developer to construct the ISBT.

As the complaints in this case suggest, a congested space like a bus terminal may put stress on the supporting infrastructure, such as sewerage and piped water. Hence, the service parameters of the terminal must be clearly defined and included among the key performance indicators (KPI) of the private partner. This would include, for example, the frequency with which toilets must be cleaned and maintained. This case also highlights the importance of having robust monitoring and enforcement mechanisms to ensure the private partner's compliance with service delivery standards, as well as the need for effective communication between the two parties to the PP to find the best solution to resolve any disputes that may arise.<sup>16</sup>



## 9. Challenging Case: Urban Transport Services, Peja, Kosovo



Photo Credit<sup>17</sup>

### Background

In the municipality of Peja, Kosovo, the population's transportation needs were served by a mixture of numerous private buses and taxis, which was contributing to increased congestion and air pollution. This led the municipality of Peja to consider methods to design and implement a more efficient urban transit system, to ease congestion and encourage people to use public transportation.

### Project Structure

Following a tendering process that took about 15 months, the municipality awarded a PPP contract for bus services to a private partner on 17 April 2012. The deal had an estimated value of EUR 4 million (USD 4.6 million) and ten years duration. Under the PPP contract, the private partner undertook exclusive responsibility for providing bus transportation services and designing, constructing, and maintaining bus stops on land provided by the municipality. At the end of the term, the bus stops would transfer to the municipality, but the buses would remain the property of the private partner.

The private partner would derive revenue from the ticket fares charged to passengers and by selling advertising space near bus stops and on buses, per the PPP agreement. The municipality agreed to give exclusive bus operation rights to the private partner to help ensure the realization of forecasted revenues.

However, after the PPP agreement was executed, the municipality failed to comply with the exclusivity provision, as it was unable to end the operations of "illegal" bus and taxi services. Consequently, the private partner had to compete with these other transport service providers, which significantly impacted the revenues of the private partner.

### Lessons Learned

The private partner and the municipality had discussions to address the problem but could not agree on a viable solution. As a result, the PPP agreement has been suspended. No further information has been made available following the suspension of the PPP agreement, including whether there is a plan by the private partner to initiate legal proceedings against the municipality for breach of the PPP agreement.<sup>18</sup>

This case underlines the importance of having the right contract management team to monitor and enforce implementation of the project in accordance with the PPP agreement. Failure to do so might jeopardize the project and transfer risks back to the municipality.

<sup>17</sup> Shkurte ramushi ([https://commons.wikimedia.org/wiki/File:A\\_street\\_in\\_the\\_center\\_of\\_Peja.jpg](https://commons.wikimedia.org/wiki/File:A_street_in_the_center_of_Peja.jpg)), <https://creativecommons.org/licenses/by-sa/4.0/legalcode>

<sup>18</sup> Source(s): Regional School of Public Administration (2015). "Comparative Analysis of Lessons Learned from Recent Development in the Implementation of PPP Program in the Western Balkan Region".

<http://wings-of-hope.ba/wp-content/uploads/2016/12/D3.4.4.3.-Analysis-on-Public-Private-Partnerships-Kosovo.pdf> accessed 29 January 2019

## 10. Transmilenio Bus Rapid Transit Project, Bogotá, Colombia



Photo Credit<sup>19</sup>

### Background

Colombia has been experiencing a dramatic population increase in its urban centers. Bogotá, the capital city, has absorbed a large portion of the people migrating to cities from the more rural areas. This population shift led to heavy congestion of roadways due to the increase in the use of private vehicles as well as the particular structure of bus transport operations in Bogotá. Specifically, under Colombian law, only bus companies can provide public transportation services, which means, in principle, that they should own the buses. In reality, however, the bus companies owned less than ten percent of the bus fleet. Their primary method of operating was to rent their routes to bus owners, who needed to be affiliated with a bus company according to the law, in return for a monthly fee plus an upfront, lump sum payment for the right to operate specific routes. As the bus companies were naturally incentivized to establish, and thereby lease, more routes and the local transportation authority lacked the capacity to evaluate the real need for them, the number of routes and buses increased exponentially. The resulting competition among bus operators, which derived their revenues from the actual fares collected, led to dangerous and notorious practices, including reckless driving and mistreatment of passengers.

In 1999, the city of Bogotá established TransMilenio S.A., with representation from several public agencies, to manage a Bus Rapid Transit (BRT) system in the city to alleviate these problems and provide the city with a better transportation system, one that aimed to be cost-effective and help reduce the level of air pollution in the city. The city had initially considered constructing a metro system to meet its public transit needs. During the planning phase, however, the city found that the capital investment needed for the metro would more than double that of the BRT and that the metro would cover only 8 percent of the city, as compared to the

85 percent offered by the BRT. Accordingly, the city elected to pursue the delivery of a high-quality BRT system instead.

### Project Structure

TransMilenio S.A was given responsibility for designing, planning, and monitoring the BRT system in Bogotá, which operates under the same name as TransMilenio, as well as coordinating all of the other stakeholders involved in the BRT system's operation. TransMilenio S.A competitively tenders contracts for the provision of bus services to private sector operators, which must own their buses. Payment is linked to kilometers operated, instead of passenger serviced, which helps curtail the dangerous old practices of reckless driving and mistreatment of passengers.

The private sector operators are consortiums of traditional local transport companies and national and international investors, which own the buses and hire drivers and maintenance personnel. The private operators are also involved in the larger BRT system's operation and maintenance, as well as ticketing and fare collection. Without any operating subsidies from public authorities, the private operators recover their investments through the collection of fares paid by passengers. Accordingly, the private partners assume the demand risk, but also stand to retain the full the benefit if fare revenues are higher than expected.

TransMilenio operates as a PPP in which the public sector provides fixed capital investments, funded through fuel and other local taxes, while the private sector provides and operates the bus fleet and high-technology ticketing systems within an agreed upon framework. The system consists of a trunk-and-feeder route grid with 9 core routes serving 114 stations, and buses with capacities of 160 or 270 passengers. The core routes (trunk lines) have four exclusive-use lanes (two in each direction) located

<sup>19</sup> Felipe Restrepo Acosta ([https://commons.wikimedia.org/wiki/File:Bogotá\\_biarticulado\\_de\\_TransMilenio\\_por\\_la\\_av.\\_Caracas.JPG](https://commons.wikimedia.org/wiki/File:Bogotá_biarticulado_de_TransMilenio_por_la_av._Caracas.JPG)), „Bogotá biarticulado de TransMilenio por la av. Caracas“, <https://creativecommons.org/licenses/by-sa/3.0/legalcode>

in the center of the city's streets, while the feeders operate without exclusive lanes and assess no additional fare for their use.

In November 1999, Transmilenio S.A. began the bidding processes for trunk line operations by requesting proposals. All the commercial risks, including passenger demand, were assigned to the private operators. The bidding process proved to be a success as, in April 2000, four different companies were awarded concession contracts to provide and operate 470 new buses. At the same time, the tender for the concession for the fare collection system was ultimately won by a local company operating jointly with an experienced fare collection system provider. Separately, a Spanish technology group won the bid for operating the control center of the system, and the feeder service contracts were tendered as well.

Over a 24-month construction period, the new infrastructure for TransMilenio's first phase was completed under the direction and supervision of the local public works agency, Institute for Urban Development (IDU), and delivered by local companies under traditional public procurement contracts. The infrastructure consists of 38 km of trunk lines and seven feeder zones covering 100 km; 4 terminal stations, 4 intermediate integration stations; 53 stations; 17 pedestrian facilities, plazas and sidewalks; and facilities for parking and maintenance. The total investment for the Phase I infrastructure was USD 213 million, funded by a local fuel surcharge (46%), general local revenues especially from a capital reduction of the partially privatized power company (28%), a credit from the World Bank (6%), and grants from the National Government (20%). Infrastructure was completed through 58 construction contracts with national firms and 48 supervision contracts.

### Lessons Learned

Today, Bogotá's TransMilenio is considered as one of the best practice cases in the world for PPP in BRT and the model has been adopted in more than 100 cities worldwide. With three phases in operation, it covers 114,4 km; has 9 terminals and 11 parking facilities; includes 143 regular stations and 12 service corridors; offers 22 bike-parking sites with 5,260 parking spaces; and also provides 5,017 external points to add credit to fare cards. In addition to operating buses, TransMilenio recently opened a 3.3 km gondola lift system (cable cars) connecting a specific area in the south of Bogotá with poorer neighborhoods on the Bogotá hills, which further connects these communities with the rest of TransMilenio system.

With the BRT development, reports have indicated that average travel time has decreased by 32 percent, property values along the main line have increased by 15-20 percent, tax revenues have increased, air quality has improved along the BRT routes, and road fatalities have decreased by 60 percent from 1,299 in 1996 to 551 in 2007.

Stakeholder engagement was key to delivering the TransMilenio project, but this also proved challenging due to the diversity of interests and skepticism of the parties directly involved. The expectations and distrust among the urban planning department, national regulators, local government officials, bus companies, bus owners, and bus drivers created tension over the project proposal. However, strong leadership by the mayor in charge of the initiative since the project's inception helped create strong interest in and support for the project. This included key knowledge exchange activities that sought lessons from other international examples of cities that had successfully implemented BRT systems; an objective timeline that helped generate political support from local officials; and most importantly close engagement with local bus operators in the project development process to avoid protests, create a fair pricing system, and connect underserved routes. In addition, operators under the old system were offered the opportunity to bid for operations under the new and improved system, which encouraged them to recognize and accept the opportunities and benefits of participating in the project. Of the 66 old operators, 62 were shareholders in the initial four firms awarded contracts to supply and operate the new buses.

These positive attributes notwithstanding, TransMilenio is currently subject to criticism domestically due to concerns over pricing. Since the PPP operates without subsidies from the government, the private operators depend on fares to maintain BRT operations and recover their investments. As a result, the fare (now fixed at approximately USD 1) has increased much faster than the income levels and may be unaffordable for low-income users (with average daily incomes of USD 3).<sup>20</sup>

<sup>20</sup> Case source(s): <http://tcdc2.undp.org/GSSDAcademy/SIE/Docs/Vol15/10Colombia.pdf> Accessed on July 3, 2019

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## Airports

### 11. Pulkovo Airport, St. Petersburg, Russia



<sup>21</sup> Photo on the left: Poudou99 ([https://commons.wikimedia.org/wiki/File:Saint-Petersbourg\\_-\\_Aéroport\\_-\\_2015-12-15\\_-\\_IMG\\_0757.jpg](https://commons.wikimedia.org/wiki/File:Saint-Petersbourg_-_Aéroport_-_2015-12-15_-_IMG_0757.jpg)),

<https://creativecommons.org/licenses/by-sa/4.0/legalcode>

Photo on the right: MoukhametovR ([https://en.wikipedia.org/wiki/File:Pulkovo\\_International\\_Airport.jpg](https://en.wikipedia.org/wiki/File:Pulkovo_International_Airport.jpg)),

Pulkovo International Airport", <https://creativecommons.org/licenses/by-sa/3.0/legalcode>

<sup>22</sup> Source(s): <https://home.kpmg/ru/en/home/media/press-releases/2012/08/pulkovo-airport-ppp-receives-global-recognition.html> accessed 10 February 2019

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<https://pulkovoairport.ru/en/about/news/2013/1980/>, accessed 27 March 2019.

Photo Credit<sup>21</sup>

#### Background

St. Petersburg is among Russia's most well-known tourist destinations, the nation's second largest center for business activity, and its second-largest city, with a population of six million. Accordingly, the city needs to have a modern, well-functioning airport. St. Petersburg's Pulkovo Airport, however, was significantly over capacity, which was negatively affecting the level of service provided as well as passenger and airline satisfaction. To address this, the City Government of St. Petersburg (the City) developed plans to renovate the existing terminal, construct a new terminal, extend the apron, and construct a new energy center for the airport, to facilitate economic growth and social development in the growing city. A PPP was proposed to deliver the project to limit the impact on the public budget.

#### Project Structure

The City prepared a feasibility study and a tender process based on international best practice. The project attracted interest from seven consortiums during the prequalification phase and high interest from international commercial banks. Following a competitive bidding process, in late April 2010, amidst the global financial crisis, the City executed a PPP agreement with the Northern Capital Getaway (NCG) consortium. NCG consisted of VTB Capital (50 percent), Fraport AG (35.5 percent), Koltseva Holdings Ltd (7.5 percent), and Horizon Air Investments SA (7 percent). The total project cost was estimated at EUR 1.2 billion (USD 1.36 billion). The private partner undertook to build, maintain, and operate the facility for 30 years.

The project was funded with a debt to equity ratio of 63 percent to 37 percent. NCG contributed the initial equity capital of EUR 440 million (USD 499 million). The long-term debt (15-year tenor) of EUR

750 million (USD 851 million) was provided by a commercial syndicate and international financial institutions (IFIs). The IFIs included the International Finance Corporation (IFC) and European Bank for Reconstruction and Development (EBRD), which provided loans of about EUR 70 million (USD 79 million) and EUR 100 million (USD 113 million), respectively. Notably, due to Pulkovo Airport's ability to generate revenue in Rubles, US Dollars, and Euros, debt for the airport was raised in all three currencies. This helped ensure an optimal financing structure for the project. This project is reportedly the first PPP in the country that did not require any state subsidies or guarantees.

The concessionaire derives revenue from aeronautical and non-aeronautical activities at the airport. The concessionaire also agreed to pay the City concession fees that are expected to total EUR 650 million (USD 737 million). The figure is equivalent to an average of 9 percent of the revenue expected to be generated by the airport over the 30 years period of the project. After the concession period, ownership of the airport, with its significantly improved facilities, will transfer to the City.

#### Lessons Learned

This project was chosen as one of the 100 most innovative and inspiring urban infrastructure projects in the world in "Infrastructure 100: World Cities Edition Top 100 Projects." In 2013, it was selected by the IFC and Infrastructure Journal as one of 40 PPPs in emerging markets that show best practices for governments partnering with the private sector, earning the silver medal award for the Asia, Middle East and North Africa region. <sup>22</sup>

There are several lessons to learn from the Pulkovo Airport PPP, namely:

- Good leadership is key. The then-Governor of the

City and one of the Deputy Governors, who were the champions of the project, had a clear vision and direction to follow global best practices in implementing the project;

- Invest in hiring experienced international advisers. One of the instructions of the project champions was to hire experienced international advisers, including the World Bank Group (as the strategic advisor), Citibank (as the transaction advisor), and Mott MacDonald (as the technical advisor), among others.
- Value of a strong project team. The success of this project is also partly attributed to the strong project team, which includes senior officials, the

City put together to implement the project.

- Be open to the bidders' comments and suggestions. The project was significantly improved as the project team considered the views and ideas from the bidders during the bidding process.

The above combination has resulted in successful delivery of the project despite the City's limited PPP experience. It deployed a well-structured, interactive, and transparent bidding process leading to the selection of the private partner that best fit the City's strategic aims.

## 12. Commercial and Landside Operations of I Gusti Ngurah Rai International Airport, Bali, Indonesia



Photo Credit<sup>23</sup>

### Background

Run by PT Angkasa Pura I (AP1), I Gusti Ngurah Rai International Airport (Bali Airport) is Indonesia's second-busiest international airport. AP1 is an Indonesian state-owned enterprise responsible for managing 13 airports in the Eastern part of Indonesia, including Bali Airport. It serves 13 million passengers per annum, with an annual growth rate of 10 percent. Most of the airport's revenues historically came from aeronautical activities, such as passenger service charges and aircraft landing and take-off fees. This was partly attributable to a lack of expertise in non-aeronautical (i.e., landside) commercial operations on the part of AP1. To gain insight into international best practice in landside commercial operations, AP1 decided to pursue a PPP with a multinational private company that had the expertise in the field.

### Project Structure

In 2012, AP1 selected GVK, an airport development company based in India, to prepare, develop, operate, and manage the landside commercial facilities at Bali Airport. GVK received a 65 percent stake in the landside airport management concession.<sup>24</sup> The management

contract with GVK was established on a base fee and an incentive fee-based remuneration structure. The Indonesian government reportedly funded all capital expenditures for the renovation of the landside facilities.

In developing the commercial activities, AP1 and GVK organized an open, online selection program to ensure that the selection of business partners would be conducted in a more professional, transparent, accountable, responsible, independent, and fair manner.

In 2013, AP1 and GVK issued some new tenders for commercial activities at Bali Airport. The bidding for retailers resulted in more than 200 prospective bidders for the contracts. Eventually, DFS and Dufry International won the bid for a five-year contract to operate retail and duty-free shops at Bali Airport. AP1 also signed five-year concession agreements with three food and beverage operators, namely Bogajaya, Sumber Mas Utama, and Taurus Gemilang. Tenders for other services such as high-street fashion retailers, car rentals, hotel lounges, and travel agencies were also issued in 2013.

<sup>23</sup> Photo on the left: Photo in the public domain published by Craig [https://commons.wikimedia.org/wiki/File:Flughafentower,\\_Denpasar\\_Airport,\\_Bali.JPG](https://commons.wikimedia.org/wiki/File:Flughafentower,_Denpasar_Airport,_Bali.JPG)

Photo on the right: ([https://commons.wikimedia.org/wiki/File:Denpasar\\_Airport\\_200507-4.jpg](https://commons.wikimedia.org/wiki/File:Denpasar_Airport_200507-4.jpg)), „Denpasar Airport 200507-4“, <https://creativecommons.org/licenses/by-sa/3.0/legalcode>

<sup>24</sup> Under Indonesian law, foreign investors can only own a 49% stake in an Indonesian airport but can own a majority stake in a management concession.

In 2013, AP1 and GVK issued a number of new tenders for commercial activities at Bali Airport. The bidding for retailers resulted in more than 200 prospective bidders for the contracts, with DFS and Dufry International eventually winning a bid for a five-year contract to operate retail and duty-free shops at Bali Airport. AP1 also signed five-year concession agreements with three food and beverage operators, namely Bogajaya, Sumber Mas Utama, and Taurus Gemilang. Tenders for other services such as high-street fashion retailers, car rentals, hotel lounges, and travel agencies were also done in 2013.

### Lessons Learned

The cooperation between AP1 and GVK has resulted in the following achievements:

- Increase in non-aeronautical revenues by 15 times (2009 versus 2014), reflecting an increase from IDR 6 billion (USD 444,000) to IDR 92 billion (USD 6.8 million);
- Increase in customer satisfaction score from 2.89 in Q3 2012 to 4.9 in Q2 2016, on a total scale of 5;

- Ranked World's Third Best Airport for 2015 in the category of 15-25 million passengers per annum, based on Airport Council International survey; and
- Ranked the Best Airport in Indonesia for Airport Service Quality based on Airport Council International survey.<sup>25</sup>

The project benefitted from a clear vision on the part of high-level officials regarding the strategic aims of the PPP, which translated into a well-directed project. In this case, the contracting agency acknowledged its lack of experience in generating non-aeronautical revenue and thus invited an experienced, international player to leverage their knowledge and insight in non-aeronautical operations. The private partner was given a 65 percent stake in the management concession to enable and ensure the transfer of knowledge. This grants the private partner the right to be included in the airport commercial strategic business unit as one of the decision-makers, while ensuring the involvement of representatives from AP1 who can gain insight from their strategic partner.

<sup>25</sup> <http://www.airport-world.com/news/general-news/2632-gvk-s-bali-international-airport-awards-duty-free-and-retail-contracts.html> accessed 16 February 2019

<https://www.gvk.com/ourbusiness/airports/iaindonesia.aspx> accessed 16 February 2019

<http://www.globalconstructionreview.com/markets/7indias-gvk-plans-indo7nesias-fir7st-privately/> accessed 16 February 2019

<https://swa.co.id/swa/trends/management/pt-angkasa-pura-pendapatan-non-aeronautical-melonjakhingga-ratusan-kali> accessed 16 February 2019

<https://economictimes.indiatimes.com/news/international/gvk-calls-tenders-for-services-contracts-at-bali-airport/articleshow/20332322.cms> accessed 16 February 2019

<https://ap1.co.id/en/information/news/detail/selesaikan-proyek-bandara-i-gusti-ngurah-rai--angkasa-pura-airports-gandeng--umkm-dan-pengusaha-lokal> accessed 16 February 2019

<http://www.sify.com/news/gvk-hands-over-bali-airport-project-contracts-news-default-nfxp0eecbfsi.html> accessed 16 February 2019

<sup>26</sup> Bradleyzm ([https://commons.wikimedia.org/wiki/File:Porto\\_de\\_suape\\_em\\_Pernambuco\\_\(foto\\_drone\).png](https://commons.wikimedia.org/wiki/File:Porto_de_suape_em_Pernambuco_(foto_drone).png)), <https://creativecommons.org/licenses/by-sa/4.0/legalcode>

## Ports

### 13. Tecon 1 Container Terminal at Suape Port, Pernambuco, Brazil



Photo Credit<sup>26</sup>

### Background

Established in 1978 as part of an industrial development zone, the Suape Port in the State of Pernambuco, Brazil occupies an area of 13,500 hectares in a prime location at the intersection of the main commercial long-haul routes that link the eastern coast of South America to other continents, as well as routes that connect the north and south of Brazil. Pernambuco is situated in the northeast of Brazil, an area that was experiencing larger than

average economic growth at the end of the 1990s. As part of a strategy to make the port a container shipping hub for the region, the Government of Pernambuco conducted an international, competitive tender for a PPP using a concession scheme to develop the first dedicated container terminal at Suape Port (Tecon 1). To assist with this, the Government of Pernambuco hired IFC to be its principal advisor on the PPP.

### Project Structure

International Container Terminal Services (ICTSI) of the Philippines was selected as the winning bidder from three qualifying proposals. ICTSI offered the highest commercial bid, agreeing to pay minimum lease payments of nearly USD 175 million (NPV during the concession period), equivalent to a 244 percent premium over the minimum lease amount of USD 51.5 million – at the time a record premium for a Brazilian port concession.

The PPP agreement was signed in March 2001, with ICTSI undertaking responsibility for financing construction, procuring and installing equipment, and operating the terminal as a common-user container terminal open to all carriers, operators, and cargo. ICTSI assumed the financial risk and agreed to clearly defined obligations for service quality. The concession covers a non-renewable 30-year period, at the conclusion of which the assets are to be transferred to the State of Pernambuco. Project revenues are derived from the tariffs charged to terminal users. No contractual cap on transshipment tariff rates was imposed, as these are customarily market-driven.

ICTSI is expected to invest USD 385 million in port operations and infrastructure over the concession period. Container terminal operations began three months after the signing of the PPP agreement and, between 2001 and 2007, ICTSI invested about USD 80 million in human resources, information technology, equipment, sheds, and patios for storing general cargo and containers.

IFC's role in the project included: advising the port authority; reviewing institutional, legal, and marketing aspects of the PPP; analyzing different project structuring options; preparing the transaction documents; marketing the project; and advising the government throughout the bidding process.

### Lessons Learned

Currently, Suape Port is the nation's largest port in terms of overall movement and has shown above-average annual growth among Brazilian public ports. The Tenco 1 terminal has an annual capacity of about 600,000 twenty-foot equivalent units (TEUs) and handled 398,000 in 2015 and just under 400,000 TEUs in 2016. ICTSI expects to handle over half a million TEUs annually by the end of the concession. Brazilian authorities are also pursuing plans for a concession for a second container terminal at Suape Port.<sup>27</sup>

From the project, we can learn the following.

- Competitive procedures for selecting the right partner for the project allows the contracting authority to measure the expertise and financial muscles of its bidders. In this case, the Government of Pernambuco was able to award the contract to an experienced company with more than 50 other ports in its global portfolio, which demonstrated excellent results in its operations.
- Proper identification and selection of projects is essential for the success of PPPs. Suape Port has been able to provide financial and commercial sustainability because there was a clear need and strategic opportunity to develop the area, commercially exploit it, and sustain operations over the long-term.
- Leveraging qualified, external advisors can help deliver sound PPPs. The long and successful international experience of the IFC advising PPPs around the world was a key factor in the successful design and award of this concession.

<sup>27</sup> Source(s):  
<http://documents.worldbank.org/curated/en/359901468001165124/Brazil-Suape-Container-Terminal>  
 accessed 17 February 2019

<http://www.suape.pe.gov.br/en/port/the-port-of-the-future>  
 accessed 17 February 2019

## 14. Challenging Case: Doraleh Container Terminal, Djibouti



Photo Credit<sup>28</sup>

<sup>29</sup> Case source(s):  
<http://www.transportevents.com/presentations/Mozambique2015/MTBS.pdf> Accessed on May 27, 2019.

[https://www.slideshare.net/TristanWiggill/djibouti-ports-infrastructure-investments?next\\_slideshow=1](https://www.slideshare.net/TristanWiggill/djibouti-ports-infrastructure-investments?next_slideshow=1) Accessed on May 27, 2019.

<https://www.africanews.com/2019/02/12/legal-battle-for-control-of-djibouti-ports-comes-to-hong-kong/> Accessed on May 27, 2019.

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<https://www.ship-technology.com/features/flight-doraleh-legal-battle-djiboutis-port/> Accessed on May 27, 2019.

<https://www.maritime-executive.com/article/djibouti-terminates-dp-world-s-concession-at-doraleh> Accessed on May 27, 2019.

<https://www.busiweek.com/djibouti-ordered-to-pay-us385-million-for-breaching-doraleh-container-terminals-rights/> Accessed on May 27, 2019.

<sup>28</sup> Skilla1st ([https://commons.wikimedia.org/wiki/File:The\\_container\\_terminal\\_at\\_the\\_Port\\_of\\_Djibouti.jpg](https://commons.wikimedia.org/wiki/File:The_container_terminal_at_the_Port_of_Djibouti.jpg)), <https://creativecommons.org/licenses/by-sa/4.0/legalcode>

### Background

Djibouti is located strategically in the Horn of Africa between the Gulf of Aden and the Red Sea and adjacent to the Suez Canal, one of the world's busiest shipping lanes. Its port – the Djibouti Port – serves as Djibouti and landlocked Ethiopia's main seaport. To leverage this strategic opportunity and to diversify its port operations, the Djibouti government decided to build a new container terminal in Doraleh, a location just outside Djibouti City. It elected to pursue PPP to construct the new container terminal – the first-ever PPP in Djibouti.

### Project Structure

The Djibouti government and Dubai Ports (DP) World, a Dubai-based, multinational port terminal operator, entered into a joint venture (JV) called the Doraleh Container Terminal SA (DCT). DCT is 67 percent owned by PAID (Port Autonome International de Djibouti – the authority of the old port of Djibouti) and 33 percent owned by DP World. The JV is responsible for the development, financing, design, construction, management, operation, and maintenance of the container terminal under a 30-year, Build-Operate-Transfer (BOT) PPP structure. The concession agreement came into effect in February 2004, with the option for two, 10-year renewals. The agreement stipulated that the Djibouti government could not grant concessions for any other port and free zone facilities within Djibouti during the contract period. The contract also granted DCT the right to appoint most DCT board members, despite being a minority shareholder. This right allowed them to retain control of the JV's management and operations.

The total project cost was estimated at USD 396 million. Of this, USD 263 million came from five banks (Bank of London and the Middle East, Dubai Islamic Bank, Islamic Development Bank, Standard Chartered Bank, and WestLB AG – with

guarantees provided by the Multilateral Investment Guarantee Agency totalling USD 160 million. The main financing was provided under an Islamic, Sharia-compliant structure, with a 10-year tenor that included a two-year construction phase; with another USD 103 million provided by the African Development Bank and Proparco under a 10-year senior loan. The remaining investment cost was financed through equity. The project generates its revenue from terminal handling charges, while the government also receives income through import and export taxes.

### Lessons Learned

The terminal, with an annual capacity of 1.5 million shipping containers, was opened in 2009 and has created around 10,000 direct and indirect jobs. It was regarded as Africa's most advanced container terminal, equipped with modern facilities that offer world-class productivity of 34m/hour/crane average. It has been reported that the net income of the new terminal ranges between about USD 55 to 80 million per year.

In February 2018, however, the government of Djibouti unilaterally terminated the 30-year contract with DP World, stating that the move was intended to "save the country's sovereignty and economic independence." The government also accused DP World of bribing the head of PAID to get advantageous terms for the concession. Concurrently, the government of Djibouti seized control of the terminal, forcing DP World employees to leave the country. It was reported that, in 2013 before termination, the Djibouti government sold 23.5 percent of PAID's shares to China Merchant Holding International (CMHI). Following the sale of these shares, PAID signed a deal with CMHI to build the new Doraleh Multipurpose Port, which opened in 2017.



Following the unilateral termination, DP World commenced arbitration against Djibouti before the London Court of International Arbitration. DP World accused Djibouti of breaching the agreement by revoking DP World's exclusive rights and developing a partnership with CMHI on various port projects. DP World also denied the allegations of corruption, given that the agreement was approved by the Djibouti parliament. The Tribunal found in favor of DP World, finding that the contract with the government of Djibouti is still valid and binding. The Tribunal awarded DCT USD 385 million plus interest for Djibouti's breach of DCT's exclusive rights and another USD 148 million for historic non-payment of royalties, plus costs and fees incurred in arbitration. To date, the government of Djibouti has yet to respond to the arbitral award. DP World is

also pursuing litigation against CMHI before courts in Hong Kong SAR, China. A wholly publicly owned Djiboutian company called SGTD now runs the Doraleh Container Terminal.<sup>29</sup>

The case exemplifies private partner concerns about the possibility of expropriation when entering into PPPs, especially in emerging PPP markets where there is little past practice. Prospective private partners are likely to insist on robust, contractual protections against such adverse actions, with equally reliable dispute-resolution mechanisms, including international arbitration, as well as assurances that such arbitral awards are ultimately enforceable. This is vital to protecting the private partner's investment over the life of the PPP.

## Roads, Tunnels, and Bridges

### 15. Bundled Bridge Replacement, Pennsylvania, United States



Photo Credit<sup>30</sup>

<sup>30</sup> Photo in the public domain published by Nyttend [https://commons.wikimedia.org/wiki/File:Arroyo\\_Bridge\\_replacement.jpg](https://commons.wikimedia.org/wiki/File:Arroyo_Bridge_replacement.jpg)

<sup>31</sup> PABs are tax-exempt debt instruments allocated by the U.S. Department of Transportation (DoT) to qualifying authorities, for projects that leverage private investment. The aggregate amount of tax-exempt bonds that can be allocated by DoT is capped at USD 15 billion. The aim of the PAB facility is to attract greater private sector investment in transportation infrastructure by reducing the cost of capital for eligible projects by providing tax-exempt debt instruments.

#### Background

The State of Pennsylvania needed to replace a series of small bridges spread throughout the state. The Pennsylvania Department of Transportation (PennDOT) selected bridges based on the need for the replacement and a set of deliverability considerations, including minimizing disruption to the public; minimizing changes to existing alignment; maintaining existing profiles; limiting impact to utilities, waterways, and other users; and minimizing environmental impacts. Through this process, more than 2,000 bridges were screened, and 558 were selected. PennDOT then aggregated the repair and maintenance of these bridges into a single PPP project under its old bridges' rehabilitation program. While the average investment cost for each individual bridge was estimated to be as low as USD 2 million, the aggregate project was large enough to attract serious investors and significant competition, which

may not have been the case with multiple, smaller projects.

#### Project Structure

The winning bidder of PennDOT's public tender for the aggregated bridges project was Plenary Walsh Keystone Partners (PWKP), a consortium that includes companies specializing in large infrastructure projects and local construction companies. The resulting PPP agreement has a duration of 28 years, with 42 months of construction and 25 years of contracted maintenance, and an estimated value of USD 1.1 billion. Other key stakeholders in the project include the local governments where the bridges are located.

The project is financed through a combination of tax-exempt Private Activity Bonds (PABs)<sup>31</sup> issued by PennDOT worth USD 793 million and private equity contributions totaling USD 58 million.

The financing is to be repaid through milestone payments linked to the achievement of prescribed levels of work, totaling around USD 224 million, and periodic availability payments that include both a fixed element (90 percent) and a CPI-indexed element (10 percent) of around USD 35 million. The performance-based availability payments were set to begin upon substantial completion of the bridges to incentivize early completion of construction. A portion of the milestone and availability payments due will be used by PennDOT to pay the PAB purchasers. Accordingly, payment of the PABs is linked to the achievement of required asset performance levels.

### Lessons Learned

By bundling, the project achieved economies of scale for due diligence, project preparation, and the tendering process, and hence saved money. This project will address a sizeable portion of the

4,000 structurally deficient bridges in the state. Logistically, this would take an estimated ten to fifteen years for PennDOT to complete on its own. Instead, the private partners are assuming the construction risk and can better mobilize a large-scale construction effort than the resource-constrained PennDOT. Moreover, the efficiency inherent in bundling numerous projects together will save taxpayers an estimated 30 percent of what it would otherwise have cost to replace the bridges.

Although the project is considered a success in terms of clearing PennDOT's backlog of bridge repairs, its progress towards completion has proven slower than expected, with the completion date moved from 2017 to 2019. Challenges such as higher than anticipated costs, difficulties obtaining right-of-way access, and issues related to utility coordination have been cited as causes of the delay.<sup>32</sup>

## 16. Challenging Case: Hangzhou Bay Bridge, China



Photo Credit<sup>33</sup>

### Background

To showcase China's growing economic prowess and further stimulate growth, Ningbo and Jiaxing municipal governments decided to pursue the construction of a trans-sea bridge connecting the two municipalities in 1993. The trans-sea bridge was expected to help boost economic development in the Yangtze River Delta, known as the Golden Industrial Triangle.

### Project Structure

In 2001, after nearly a decade spent completing feasibility studies and designing the bridge, the Ningbo and Jiaxing municipal governments and 17 private enterprises jointly set up a project company

called Ningbo Hangzhou Bay Bridge Development Co. Ltd. The project company was tasked to build the bridge under a Build-Operate-Transfer (BOT) scheme with a concession term of 30 years. The project company would be responsible for delivering and managing the bridge over the life of the project, including preparation, financing, construction, operation, maintenance, and transfer; as well as overseeing and coordinating related projects and ancillary facilities. The project company invested RMB 11.8 billion (USD 1.42 billion) in the project, of which RMB 149 million (USD 18 million) was provided by the 17 private enterprises.

<sup>32</sup> Source(s): [https://github-webtools.s3.amazonaws.com/local-umbraco/media/1455/gih\\_showcaseprojects\\_penn-bridges\\_art\\_web.pdf](https://github-webtools.s3.amazonaws.com/local-umbraco/media/1455/gih_showcaseprojects_penn-bridges_art_web.pdf) accessed 25 January 2019.

[https://www.thegpsc.org/sites/gpsc/files/26\\_feb\\_small\\_scale\\_municipal.pdf](https://www.thegpsc.org/sites/gpsc/files/26_feb_small_scale_municipal.pdf) accessed 25 January 2019.

<sup>33</sup> Glabb ([https://commons.wikimedia.org/wiki/File:Hangzhou\\_Bay\\_Bridge\\_South.JPG](https://commons.wikimedia.org/wiki/File:Hangzhou_Bay_Bridge_South.JPG)), „Hangzhou Bay Bridge South“, <https://creativecommons.org/licenses/by-sa/3.0/legalcode>

The primary revenue source for the project was expected to be toll fees. Additional income would come from hotels, restaurants, gas stations, and a viewing tower located on a platform in the middle of the bridge. Based on the feasibility studies, the project was expected to recover the capital cost in 15 years with a return on investment (ROI) of 12.58 percent (including construction period).

### Lessons Learned

Construction began in June 2003 and was completed in June 2007. Following a series of trials and evaluations, the bridge opened in 2008 as one of the longest trans-sea bridges in the world, with a length of 36 km. It shortened the travel distance between the two municipalities from 400 km to 180 km, or from a four-hour drive to only two hours. In 2013, however, the project was struggling and in debt RMB 85 million (USD 13.71 million), due in part to the following:

- i. The government decided to build a bridge near the Hangzhou Bay Bridge with a toll price that was half that charged at the Hangzhou Bay Bridge – resulting in a decrease in traffic on the Hangzhou Bay Bridge;
- ii. An updated study completed in 2011 readjusted the ROI to under four percent and forecast that total costs would not be recovered over the 30-year concession period;
- iii. In light of the above, the private partners, which initially owned 80 percent of shares in the project company, quit the project, which resulted in a capital shortage; and

iv. After the private companies' divestment, the public sector became the majority shareholder (85 percent), such that the risks that had been assumed by the private sector were transferred back to the government.

The platform in the middle of the bridge that offered hotels, restaurants, and viewing deck was ultimately closed down due to the high losses associated with it, amounting to RMB 50 to 60 per year, to reduce costs.

This project provides the following lessons:

- Practitioners need to consider all potential risks throughout the whole project life and ensure a fair allocation of risks between the public and private partners during the contract negotiations. In this project, nearly all of the risks were transferred to the private partners. When these risks proved unmanageable and losses continued to mount, the private partners abandoned the project, thereby transferring all of the risk back to the public authority.
- PPPs entail a long-term agreement, over the course of which both parties need to be able and properly incentivized to work together to ensure the project's success. This may include reasonable accommodations, alterations in the scope or design of the project, and not taking actions that would threaten the project's viability. In this case, the government failed in to support the project by ensuring the project's exclusivity – instead constructing another, competing bridge nearby.<sup>34</sup>

<sup>34</sup> Case source(s): [https://www.eng.mcmaster.ca/sites/default/files/uploads/case\\_study\\_on\\_p3\\_failures\\_in\\_china\\_report-likun\\_wang.pdf](https://www.eng.mcmaster.ca/sites/default/files/uploads/case_study_on_p3_failures_in_china_report-likun_wang.pdf) Accessed on May 25, 2019.

[https://books.google.co.id/books?id=1u2QcFznqxQC&pg=PA295&lpg=PA295&dq=hangzhou+bay+bridge+zhejiang+province+PPP&source=bl&ots=QURAkp8Lsv&sig=ACfU3U21BtCatudemU4KuxrRG4Dwoi\\_Szw&hl=en&sa=X&ved=2ahUKEwihjOX-4rPiAhVT6XMBHX\\_7CdQQ6AEwEXoECAsQAQ#v=onepage&q=hangzhou%20bay%20bridge%20zhejiang%20province%20PPP&f=false](https://books.google.co.id/books?id=1u2QcFznqxQC&pg=PA295&lpg=PA295&dq=hangzhou+bay+bridge+zhejiang+province+PPP&source=bl&ots=QURAkp8Lsv&sig=ACfU3U21BtCatudemU4KuxrRG4Dwoi_Szw&hl=en&sa=X&ved=2ahUKEwihjOX-4rPiAhVT6XMBHX_7CdQQ6AEwEXoECAsQAQ#v=onepage&q=hangzhou%20bay%20bridge%20zhejiang%20province%20PPP&f=false) Accessed on May 25, 2019.

[https://www.researchgate.net/publication/260267511\\_Public-Private\\_Partnerships\\_in\\_China's\\_Infrastructure\\_Development\\_Lessons\\_Learnt](https://www.researchgate.net/publication/260267511_Public-Private_Partnerships_in_China's_Infrastructure_Development_Lessons_Learnt) Accessed on May 25, 2019.

<https://siteselection.com/ssinsider/snapshot/sf030818.htm> Accessed on May 25, 2019.

<sup>35</sup> Photo in the public domain published by OSX [https://commons.wikimedia.org/wiki/File:Cross\\_City\\_Tunnel\\_entrance,\\_Harbour\\_Street,\\_Sydney,\\_New\\_South\\_Wales\\_\(2010-10-16\)\\_01.jpg](https://commons.wikimedia.org/wiki/File:Cross_City_Tunnel_entrance,_Harbour_Street,_Sydney,_New_South_Wales_(2010-10-16)_01.jpg)

## 17. Challenging Case: Cross-City Tunnel, Sidney, Australia



Photo Credit<sup>35</sup>

### Background

To ease congestion in the Sydney Central Business District (CBD), the Roads and Traffic Authority of New South Wales (NSW) planned to build a cross-city tunnel (CCT) – a 2.1 km twin two-lane motorway running east and west beneath the Sydney CBD.

The estimated total project cost was as high as AUD 1.050 billion (USD 712.7 million). Due to the high cost, the NSW authority decided to pursue a PPP to deliver the project.

### Project Structure

In October 2000, a total of eight consortia expressed interest in bidding for the project. Of the eight, three were shortlisted, leading to the selection of Cross City Motorway Pty. Ltd. (CCM), a consortium comprising Bilfinger Berger AG, Baulderstone Hornibrook Pty Limited, and Deutsche Bank AG, as the winner in 2002. CCM was selected due to its innovative design, more aggressive traffic forecast, and willingness to provide an upfront payment of around AUD 100 million (USD 68 million) to the NSW state government. Per the proposal submitted by CCM, the project would be delivered at no cost to the government.

The consortium was responsible for financing, designing, building, operating, and maintaining the CCT. The state government bore the native title risks, force majeure, uninsurable risks, and legislative and government policy risks. Meanwhile, the consortium bore the design, construction and commissioning risks, delay and completion risks, demand risks, ground/geotechnical condition risks, and operation and maintenance/facility management risks.

Based on CCM's high traffic estimation, around 86,000 to 90,000 vehicles per day, the project attracted both local and international financiers. Debt was provided by Deutsche Bank, Westpac Banking Corporation, and other syndicated debt financiers; while equity was provided by CKI Tunnel Investment (Malaysian) Ltd (50%), Bilfinger Berger BOT GmbH (20%), SAS Trustee Corporation (12.5%), JP Morgan Nominees Australia Ltd (10%), PSS Board (3.75%), and CSS Board (3.75%). It was expected that toll fees would recover the costs of design, construction, and maintenance of the CCT.

### Lessons Learned

Construction started in January 2003 and the CCT officially opened to the public in August 2005. It was the first motorway in Sydney to have full electronic tolling. However, the toll was set very high, at around AUD 3.56 (USD 2.42) each way, which was the highest per km of any toll in Sydney. Owing likely in part to the high fee, the actual traffic was only around 30,000 vehicles per day – less than half of the forecasted amount.

At the same time, the government elected to close off the surface roads to benefit from the presumed reduction in traffic on the surface that would result from the opening of the tunnel. These roads were meant to be set aside for use by pedestrians, public transport, and cyclists. However, the closure of the surface roads caused public controversy. Public opinion regarded the closure of the surface roads as a scheme to 'funnel' traffic to the CCT, to ensure

the financial viability of the project, rather than as a decision made purely for traffic planning purposes. The private consortium sought compensation from the government or a toll subsidy, but the government declined. A public argument in the media between the private consortium and the government exacerbated the situation. Less than two years after opening the tunnel, the private consortium went into bankruptcy, with outstanding debts of AUD 560 million (USD 380 million).

The government then sold the project to ABN Amro and Leighton contractors in 2007 for a sale price of AUD 700 million (USD 475 million). The original creditor banks were all paid in full and the equity investors received their expected return due to the high selling price. Currently, the tunnel is privately owned and operated and will be returned to the NSW state government in 2030.

The project provides several lessons learned:

- Rational pricing, taking into account the willingness and ability of end-users to pay, is essential where a project is expected to be entirely funded by user fees. Setting prices too high in order to make the project appear "free," that is with no public subsidy or other fiscal support, can negatively impact demand, impairing the viability of the project, and lead to a public backlash.
- Be mindful of optimism bias in demand forecasts, especially when demand is difficult to guarantee, as in the case of a toll road with free alternative routes.
- PPP is first and foremost a "partnership." When problems arise, the public and private partner need to be open to discussing in good faith all possible means of mitigating the damage. Working together or agreeing on mediation is much more likely to deliver a positive outcome for both parties than a public argument. In this case, the rumors regarding the surface road closures and the public disagreement between the private consortium and the government may have created some political embarrassment for the NSW state government.
- Relatedly, the public partner should have an appropriate communications strategy in place to manage public perception of the project. Ultimately, the public partner is responsible for ensuring public support for the PPP and realizes the full benefit of the project only if users and the broader population view the project positively.<sup>36</sup>

<sup>36</sup> Case source(s):

<https://www.carecprogram.org/uploads/3-PPPs-in-Australia.pdf>  
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<https://www.hkis.org.hk/ufiles/2008-apcchan.pdf>  
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Accessed on August 6, 2019.

<https://www.oecd.org/gov/budgeting/45039865.pdf>  
Accessed on August 6, 2019.

[https://books.google.co.id/books?id=60mkCgAAQBAJ&pg=PA77&pg=PA77&dq=lessons+learned+sydney+cross-city+tunnel&source=bl&ots=X9\\_YRSKH0o&sig=ACfU3U277JLPBYkkTqDYJEZzWGbBgsI3OQ&hl=en&sa=X&ved=2ahUKEwjYuDfx-PjAhX36nMBHfJFBVYQ6AEwGXoECAoQAQ#v=onepage&q=lessons%20learned%20sydney%20cross-city%20tunnel&f=false](https://books.google.co.id/books?id=60mkCgAAQBAJ&pg=PA77&pg=PA77&dq=lessons+learned+sydney+cross-city+tunnel&source=bl&ots=X9_YRSKH0o&sig=ACfU3U277JLPBYkkTqDYJEZzWGbBgsI3OQ&hl=en&sa=X&ved=2ahUKEwjYuDfx-PjAhX36nMBHfJFBVYQ6AEwGXoECAoQAQ#v=onepage&q=lessons%20learned%20sydney%20cross-city%20tunnel&f=false)  
Accessed on August 6, 2019.

# Water Supply and Sanitation

## Water Supply Services

### 18. Water and Sanitation System, Bucharest, Romania



Photo Credit<sup>37</sup>

#### Background

The municipality of Bucharest was facing numerous challenges related to its water supply and sanitation system, including leaks in its water supply distribution network and an inadequate metering system. This contributed to high water losses (nearly 50 percent) and lower revenue collected by the municipality. The municipality also imposed relatively low tariffs and maintained a complicated ownership structure over the water infrastructure assets, which led to a lack of incentives to improve efficiency. At the same time, the municipality's water and sanitation system needed to be brought into compliance with European Union (EU) standards. To address these issues, the municipality decided to pursue a PPP for the operation and maintenance of its water and sanitation system with assistance from IFC as its transaction adviser. In designing this PPP, the municipality aimed to: (i) improve the consumer service level with minimal tariff increases through efficiency gains; (ii) make the system as self-sufficient as possible by transferring most of the investment responsibilities to the private sector, and (iii) avoid a private monopoly.

#### Project Structure

Based on the municipality's goals, IFC recommended a long-term concession that would allow the municipality to retain ownership of the assets while delegating responsibility for the provision of water and sanitation services and all related capital investments to a private partner.

Upon approval by the municipality, IFC helped conduct the prequalification process and drafted the concession contract.

Six large, multinational companies were prequalified and, in 2000, Vivendi of France (now Veolia) won the bid to operate and maintain the water and sanitation system for 25 years. The award was based in large part on Vivendi having proposed the lowest average net present value tariff, which was about EUR 0.17 (or USD 0.19) per cubic meter. Subsequently, Vivendi entered into a subsidiary joint venture, named Apa Nova București, which serves as the operating entity and counterparty to the concession agreement. Apa Nova București was 80-percent owned by Vivendi and 20-percent owned by the municipality. The joint venture concessionaire is responsible for all operations and capital investments.

The contract included time-based performance targets for improvements in service quality and delivery as the key performance indicators for the private partner, as well as penalties for non-compliance. It also included a periodic tariff review scheduled at five, ten, and fifteen years, with readjustments in the event of project returns above or below a predefined band.

The project was financed by loans provided by multilateral development banks and commercial banks, including the European Bank for Reconstruction and Development. Vivendi also contributed approximately EUR 35 million (USD 39 million) in equity.

<sup>37</sup> Mihai Burlacu ([https://commons.wikimedia.org/wiki/File:Sector\\_6,\\_Bucharest,\\_Romania\\_-\\_panoramio.jpg](https://commons.wikimedia.org/wiki/File:Sector_6,_Bucharest,_Romania_-_panoramio.jpg)), „Sector 6, Bucharest, Romania - panoramio”, <https://creativecommons.org/licenses/by-sa/3.0/legalcode>

### Lessons Learned

The project has achieved much during the concession period. It obtained 100 percent compliance with EU water quality standards, recorded an increase in overall customer satisfaction (up from 46 percent in 2002 to 75 percent in 2009), expanded the coverage area (covering 92 percent of the city), and reduced leakage, non-revenue water, and commercial losses previously resulting from under-billing and theft. By 2008, efficiency gains had produced cost savings totaling USD 49 million. As of 2010, Apa Nova București had invested more than USD 250 million in upgrading and servicing the system without public subsidies. Despite no subsidy, it has been able to provide a service quality above Romanian standards and nearly on par with Western European quality levels. It was also able to keep the tariffs well below the Romanian average. Of Apa Nova București's USD 250 million investment, USD 66 million was invested in pipe replacement and other measures to reduce leakage, which will help keep costs and tariffs low in the long term.

The private partner was able to maintain low tariffs without subsidy due to the following:

- Tariff increases were tied to improvements in service delivery, providing an additional incentive for the concessionaire to be efficient.
- The most significant factor in efficiency gains was the improvement in labor productivity. This was obtained by investing in new equipment that increased employee safety and productivity, delegating more responsibility to the staff, and selling 10 percent of the shares in Apa Nova București to workers in 2007 to improve relations between management and workers. Increased energy efficiency, collection efficiency, reduced leakage, and reduced non-revenue water further contributed to the efficiency gains.

The project has proven to be advantageous for both partners, public and private. The municipality has gained access to the private partner's know-how and technology and receives a portion of the profits through its shares in the concessionaire and additional revenue from taxes paid by the private partner. At the same time, the private partner has recorded regular profits, stemming from operational efficiency and excellent performance in commercial management.<sup>38</sup>

<sup>38</sup> <https://www.apanovabucuresti.ro/en/company/who-we-are/the-concession-contract/> accessed 12 February 2019

[https://www.ifc.org/wps/wcm/connect/6eebdf00498390bc82dcd2336b93d75f/PPP\\_Stories\\_Romania\\_BucharestWaterAndSanitation.pdf?MOD=AJPERES](https://www.ifc.org/wps/wcm/connect/6eebdf00498390bc82dcd2336b93d75f/PPP_Stories_Romania_BucharestWaterAndSanitation.pdf?MOD=AJPERES) accessed 12 February 2019

Earhardt, D., Rekas, M., and Tonizzo, M., (2011). "Water in Bucharest." In: Viewpoint: Public Policy for the Private Sector.

Teicher, J., Neesham, C., and Profiroiu, M., (2013). Sharing Concerns: Country Case Studies in Public-Private Partnerships.

<https://ppp.worldbank.org/public-private-partnership/ppi-project-summary-romania-bucharest-concession-agreement-water-and-sanitation-services> accessed 12 February 2019

<sup>39</sup> Davide Restivo from Aarau, Switzerland ([https://commons.wikimedia.org/wiki/File:Water\\_drop\\_impact\\_on\\_a\\_water\\_surface\\_-\\_1.jpg](https://commons.wikimedia.org/wiki/File:Water_drop_impact_on_a_water_surface_-_1.jpg)), „Water drop impact on a water surface - (1)“, <https://creativecommons.org/licenses/by-sa/2.0/legalcode>

## 19. Small Scale Water Infrastructure, Busembatia, Uganda



Photo Credit<sup>39</sup>

### Background

Busembatia is a small town located in Uganda with a population of about 14,500 people. Its water sources are limited and the ones it has are often contaminated, affecting the health and economic well-being of the people of Busembatia. A locally-run facility was able to provide water of an acceptable quality, but only served 200 people and provided a very low standard of service. The town was struggling to fund efforts to provide a more reliable supply of water without grants from either donors or the national government, as local funding for public capital investments was tightly

constrained. While the private sector was active in operating water distribution networks in small towns throughout Uganda, this participation was limited mainly to basic management contracts, with little to no private financing of new investments.

### Project Structure

In 2010, with support from the Austrian Development Agency, the Public-Private Infrastructure Advisory Facility (PPIAF), and DevCo, a multi-donor facility affiliated with the Private Infrastructure Development Group (PIDG), IFC helped to deliver a small-scale water

PPP in Busembatia by providing three types of assistance: (i) transaction advice; (ii) public sector capacity building; and (iii) access to finance. The project aimed to leverage existing private sector participation in the operation of water distribution networks by developing a standard operation and maintenance contract suitable for small towns and rural growth centers that could be modified to include the design and construction of extensions to the distribution system. The management contract would have a term of five to ten years, as compared to the one to three years typical of existing management contracts in Uganda, to be more attractive to private operators and lenders. Following a prequalification process, three local companies were invited to bid for a five-year management contract in Busembatia. In 2010, the contract was awarded to Tradint Limited, one of the largest local water system operators in Uganda. Tradint Limited was selected because its proposal met the minimum technical requirements, it had already secured a financing arrangement with lenders, and it offered the lowest bid price of USD 270,000.

Under the management contract, the private operator assumed exclusive responsibility for managing the assets and providing services to Busembatia town, paying utility expenses and taxes, and collecting user charges in accordance with a schedule of tariffs and rates agreed upon with the local authority and fixed in the contract. The local authority maintained responsibility for setting tariffs pursuant to an approved business plan, ownership of the underlying assets, and responsibility for managing critical situations should there be a termination of contract or a dispute. Tradint Limited further agreed to install at least 400 new connections during the first two years of the contract (by 2012) and not to seek a tariff increase throughout the duration of the management contract.

While prior experience in Busembatia and similar towns in Uganda indicated that tariffs would be sufficient to cover operation and maintenance costs, the majority of the capital investment would be funded by performance-based subsidies provided by the Global Partnership for Results-Based Approaches (GPRBA), formerly known as the Global Partnership on Output-Based Aid (GPOBA). This grant funding, however, would be released in phases throughout the project and could only be disbursed upon certification of commissioning and verification of outputs. Accordingly, the private operator would need to pre-finance the investment to access the output-based grants.

For pre-financing, Tradint Limited obtained a loan of USD 100,000 from a local commercial bank, DCFU Bank. This was the first time in Ugandan history that a local bank provided financing for a small-scale water supply project.

### Lessons Learned

A total of 430 connections were installed during the first year of the project alone. About 750 water distribution stations in Busembatia now provide an uninterrupted water supply that serves thousands of people in the area. In addition, water production has increased from eight to twenty-one cubic meters per hour and collection rates have increased from 70 to 85 percent.

The participation of IFC as transaction adviser and the availability of the grant from GPRBA helped change the situation in Busembatia.

- The longer contract duration of five years, compared to the previous practice of only three years, provided greater assurance of investment recovery.
- IFC's intervention helped to stimulate local banks' interest in the water sector and increase the understanding of PPPs among local stakeholders.
- The output-based grant helped incentivize local private sector participation in the extension of Busembatia's water supply system.<sup>40</sup>

<sup>40</sup> Source(s):  
[https://www.ifc.org/wps/wcm/connect/news\\_ext\\_content/ifc\\_external\\_corporate\\_site/news+and+events/news/a-water-project-revives-an-ugandan-community](https://www.ifc.org/wps/wcm/connect/news_ext_content/ifc_external_corporate_site/news+and+events/news/a-water-project-revives-an-ugandan-community) accessed 13 February 2019

[https://www.ifc.org/wps/wcm/connect/838c700045139b7099359dc66d9c728b/WBG\\_AfricaWaterPPPs.pdf?MOD=AJPERES](https://www.ifc.org/wps/wcm/connect/838c700045139b7099359dc66d9c728b/WBG_AfricaWaterPPPs.pdf?MOD=AJPERES) accessed 13 February 2019

[https://www.ifc.org/wps/wcm/connect/1e93004b9ae888bcc5ff1be6561834/T\\_3b\\_UgandaSSIP\\_BotbaNjock.pdf?MOD=AJPERES](https://www.ifc.org/wps/wcm/connect/1e93004b9ae888bcc5ff1be6561834/T_3b_UgandaSSIP_BotbaNjock.pdf?MOD=AJPERES) accessed 13 February 2019

## 20. Challenging Case: Drinking Water Supply, Jakarta, Indonesia



Photo Credit<sup>41</sup>

### Background

Jakarta, the capital and largest city of Indonesia, was facing a water crisis. In 1997, only 42 percent of its residents had access to piped water and even many of these piped water users still relied in part on groundwater or bottled water. Those without piped water connections, particularly residents of disadvantaged neighborhoods, largely drew their water from community ground pumps, which provided intermittent flows and very poor-quality water. This inequality in access to piped water and in the quality of water was partly attributable to the tariff structure imposed by the municipal water utility, which disincentivized connecting poorer households. Later that year, the local government decided to pursue a PPP for the provision of piped water in Jakarta in an attempt to address the problem.

### Project Structure

To increase the opportunities for local companies to participate in the project, the public utility was split into two coverage areas, comprising the portions of the city to the east and west of the Ciliwung River in Jakarta, respectively. Two major international water companies expressed interest in providing piped water under this arrangement, though by law each would need to partner with a local company in order to operate as a public utility. Accordingly, a PPP would need to be executed for each coverage area.

Different international and Indonesian partners would form the private sector side of each PPP and the government-owned municipal water utility, PAM Jaya, would act as the public partner to both PPPs. However, none of the private companies were chosen on the basis of open, competitive procurement. Instead, the companies were selected based on personal connections to government officials. The government further determined, unilaterally, which international company would pair with which Indonesian company.

In June 1997, both private consortiums signed 25-year agreements with PAM Jaya, pursuant to which they undertook responsibility for operating and managing Jakarta's water supply system in their respective service areas, east and west, with an emphasis on expanding coverage to poorer residents. The private partners were further responsible for maintaining the customer database and billing. PAM Jaya retained ownership of the underlying assets.

The private companies originally agreed to invest USD 318 million in the first five years of the contract to expand coverage and improve service delivery. While the private partners ultimately invested only USD 188.6 million over this period, the decline may be partly attributable to the fact that expected investments were denominated in Rupiah, which suffered rapid depreciation in connection with the Asian Financial Crisis that began in 1997. Farther into the contract term, in November 2007, the east Jakarta operator received a USD 5 million loan from the World Bank and, in May 2008, the Asian Development Bank provided USD 50 million in financing to the west Jakarta operator. Additional information on financing is limited, due to a lack of transparency concerning project details.

Funding for the project was premised on fixed payments by PAM Jaya to the private partners based on the volume of water supplied and billed, which effectively decoupled the private partners' revenue from the actual billing revenue received. Accordingly, the government remained free to adjust user tariffs and to charge different user categories variable tariffs, while paying the private operators the same fixed amount per volumetric unit supplied. It was hoped that de-linking the private partners' profits from the billing revenue would remove a key disincentive to expanding coverage to poor neighborhoods, where billing revenue is typically low. In addition, the fee payable to the private operators was indexed to the Rupiah-USD exchange rate and

<sup>41</sup> Photo in the public domain published by Harlimesit <https://pxhere.com/en/photo/1422229>



the Indonesian inflation rate. As a result of the above mechanisms, the public partner assumed the risk of currency exchange and actual cost recovery.

This proved challenging when the Asian Financial Crisis struck only a few months after the contracts were signed, resulting in political and economic turmoil in Indonesia and a drastic depreciation of the Rupiah. As the fee payable by PAM Jaya was tied to the USD, payments owed to the private partners rose at the same as revenues from customers fell. When the contracts were signed, the average tariff charged to consumers was eleven percent higher than the fee payable to the private operators. By 2001, the fee owed to the private partners was 60 percent higher than the average tariff. Due to political tensions, PAM Jaya was unable to raise tariffs in a manner sufficient to compensate and was forced to acquire more and more debt to cover its liabilities to the private operators. This cycle would repeat several times when the government lacked the political will to raise tariffs during periods of inflation. As a result, PAM Jaya struggled to make the payments due to the private operators, which in turn diminished their profits. The situation did not change much even after the contracts were revised in 2001 and again in 2004 to provide for regular tariff increases and to reallocate some of the risks.

While the contracts set ambitious performance targets, they provided little in the way of enforcement and incentives. The agreements envisioned universal coverage for Jakarta by 2023, with a target of 70 percent of Jakarta's population by 2002, as well as a significant reduction in nonrevenue water and improvements in the quality of service and overall quality of the water.

### Lessons Learned

After 18 years of operation, the water service coverage remains low at 59 percent, with coverage remaining especially limited among low-income households. The water leakage level was still at 44 percent as of 2013, down from 56 percent under PAM Jaya but well above the contractual target of 35 percent by 2003. In 2014, the deficit incurred by Jakarta's municipal water utility stood at IDR 1.18 trillion (USD 84 million) and was expected to reach IDR 18.2 trillion (USD 1.3 billion) by the time the contracts conclude in 2022. However, water-focused non-governmental organizations in Jakarta intervened by challenging the concession agreements in court. In 2018, the Supreme Court ordered the Jakarta government to terminate contractual relations with the two private partners.<sup>42</sup>

This case highlights that open and transparent processes are essential for a PPP project, be it in the form of a competitive procurement process or at least disclosing key information about the project to the public, subject to appropriate restrictions on the disclosure of confidential or proprietary information. Although the project went through some renegotiations to improve the PPP, it did little to fix the problem as the public, who is the main customer, was never involved in the process.

In addition, this case demonstrates why it is necessary to plan for and remain flexible in the face of the unexpected in pursuing PPP. In this case, it was not possible to predict the Asian Financial Crisis, but its occurrence exposed serious flaws in the design and structure of this PPP that plainly threatened its viability over the long term. Both parties to a PPP need to be ready to come together in good faith to negotiate appropriate adaptations to such significant changes in circumstances and, in case either party refuses to do so, the PPP agreement needs to have sufficient safeguards in place to ensure a reasonable outcome. These can range from provisions permitting the aggrieved party to procure independent, third-party technical assessments with enforceable recommendations, to mediation and, ultimately, more formal dispute resolution mechanisms, such as arbitration.

<sup>42</sup> Source(s): <http://jakarta.bisnis.com/read/20140418/77/220319/dki-terus-merugi-akibat-kerja-sama-dengan-pam-lyonaisedan-aetra> accessed 12 February 2019

<https://megapolitan.kompas.com/read/2018/03/22/15021601/maputusan-penghentian-swastanisasi-air-ini-kata-aetra> accessed 12 February 2019

<http://tcdc2.undp.org/GSSDAcademy/SIE/Docs/Vol15/22Indonesia.pdf> accessed 12 February 2019

Philippe Marin, *Public-Private Partnerships for Urban Water Utilities: A Review of Experiences in Developing Countries*, World Bank (2009), available at: <https://ppp.worldbank.org/public-private-partnership/library/public-private-partnerships-urban-water-utilities-review-experiences-developing-countries>

## 21. Desalination Plant, Ensenada, Mexico



Photo Credit<sup>43</sup>

### Background

In 2012, the municipality of Ensenada in Mexico was facing deficit of water supply of 130 liters per second. Additionally, Ensenada's growing population; Valle de Guadalupe's developing winegrowing industry; the area's touristic boom; and the increase in commercial exchange with East Asia were further straining this already insufficient supply. To help address this issue, the public authorities decided to pursue the construction of desalination plant in Ensenada.

### Project Structure

The project consists of a 20-year concession for the design, construction, operation, and transfer of a desalination plant that will have a nominal production of 250 liters of desalinated water per second (7.884.000 m<sup>3</sup> of drinking water per year) through reverse osmosis. In addition to the desalination plant, the planned works include facilities for seawater capture, pre-treatment and post-treatment; a pumping station; pressurized pipeline; concentrate discharge system to the ocean; storage tanks; pumping plants; and pipelines to connect the plant to Ensenada's water distribution system.

The contracting authority is Baja California's water state commission - Comisión Estatal del Agua de Baja California (CEA). The project was awarded through an international public bidding process to OHL Medio Ambiente Inima S.A.U. (Inima), which after the award established an SPV called Aguas de Ensenada, S.A. de C.V, on August 31, 2011. The project cost is estimated at more than MXN 1 billion (USD 50 million). The project is to be financed by an MXN 490 million (USD 25 million) loan from the North American Development Bank; MXN 162 million (USD 8 million) in non-reimbursable federal resources from the national infrastructure fund - Fondo Nacional de Infraestructura; and MXN 355 million (USD 17.8

million) in private financing. The rate of return was 17.55 percent. The contract provided that at least 25 percent of the capital provided by the private partner must come from the investor's risk capital and the remaining amount may be complemented through loans.

The project's funding source is a payment and administration trust (fideicomiso de administración y pago), which will backstop and cover the investment fixed tariff and the operation and maintenance fixed tariff. The Fideicomiso will be established by the public services state commission - Comisión Estatal de Servicios Públicos de Ensenada (CESPE), with the revenues obtained from the rights per water consumption services. The establishment of the Fideicomiso is a precondition to the contract entering into force. Once the contract enters into force, CESPE will continue depositing money into the Fideicomiso, with a view to creating a contingent fund of a sum equal to six months of the consideration plus VAT that CEA is obliged to pay to Aguas de Ensenada monthly.

Among the risks retained by the public sector are the portion of non-reimbursable financing provided by the Fondo Nacional de Infraestructura and the contract payment and demand risks. The risks transferred to the private partner include: obtaining necessary permits; carrying out investments and expenses necessary to realize the project (that is: to construct, furnish, test, operate, and maintain the plant); and meeting the quality standards established in the contract. The design, risk capital contribution, and loans are the sole responsibility of the private partner.

CEA's monthly payment comprises the following sums: a) fixed cost for investment executed with credit; b) fixed cost for investment executed with risk capital; c) fixed cost for investment; d) fixed cost for operations; e) variable cost of operation per

<sup>43</sup> Beau Hudspeth - Digi-Gen Design Studios - Photography (<https://commons.wikimedia.org/wiki/File:Ensenada-mexico-night-flag-sm.jpg>), „Ensenada-mexico-night-flag-sm“, <https://creativecommons.org/licenses/by-sa/2.5/legalcode>

m3 of drinking water; f) monthly volume in cubic meters of drinking water measured at the exit of the plant.<sup>44</sup> The plant started operations on June 2018.<sup>45</sup>

### Lessons Learned

The project provides a key lesson learned on blended financing options. In this case, the project was able to mobilize several different financing

sources under the State Development Plan, which sets the guidelines to properly manage the resources from different financing sources for water investment programs. As a result, the public authorities were able to combine and leverage a combination of resources available at the federal and state levels and from international financing institutions, to optimize their application.

## 22. Challenging Case: The Dar Es Salaam Water and Sewerage Authority (DAWASA), Dar es Salaam, Tanzania



Photo Credit<sup>46</sup>

### Background

Dar es Salaam is Tanzania's former capital and largest city. Before this project, Dar es Salaam's water and sewerage infrastructure, built in the 1970s, was in poor condition, even posing significant potential health hazards. In 1997, the government established the Dar es Salaam Water and Sewerage Authority (DAWASA) to develop and operate the city's water infrastructure. However, it failed to provide much improvement to the city's water and sewerage system. Leakage and illegal connections contributed to around 50 percent loss of the water produced. Equipment was outdated and the billing and collection system was extremely inefficient. Filters and sewage pumping stations were out of operation, resulting in partial treatment of water and significant pollution of the coastline. Revamping the entire system would require a considerable amount of money.

In 2002, International Monetary Fund (IMF) and the World Bank offered debt relief assistance to Tanzania under the condition that the Government of Tanzania privatizes its SOEs, including DAWASA. The Government of Tanzania agreed.

### Project Structure

Following a recommendation by the IMF, the government invested around USD 145 million to upgrade DAWASA before selling the company. Multilateral donors provided loans to the Tanzanian

government to finance the project. The African Development Bank (AfDB) provided a loan of about USD 47 million, while the World Bank, the European Investment Bank, and Agence Française de Développement (AFD) provided a total of USD 98 million in financing. The World Bank also contributed another USD 61.5 million for restructuring DAWASA.

The project underwent six years of negotiations with private companies and several bidding processes. Initially, there were four private companies interested in the project, namely Northumbrian Water Group, Saur Internationale, Vivendi Environment (also known as Veolia Environment), and Biwater Gauff Tanzania Limited (BGT). However, three of the four companies left due to concern over the high level of risk transferred to the operator. BGT (a joint venture between United Kingdom-based Biwater International and a German engineering firm, HP Gauff Ingenieure) then became the sole bidder, though it never fully satisfied the qualification criteria. As a result, BGT won the bid, with no-objection from the World Bank as the transaction advisor.

Following the award, BGT created an operating company called City Water Services Limited (CWS) in partnership with a local investor, Super Doll Trailer Manufacture Company Limited (STM). BGT owned 51 percent (the minimum required by the winning bidder) of the shares in CWS and

<sup>44</sup> Case Source: [http://www.cca.org.mx/ps/funcionarios/muniapp/descargas/Documentos\\_de\\_apoyo/informaciontematica/capp/Caso\\_PlantaDesaladora\\_Ensenada.pdf](http://www.cca.org.mx/ps/funcionarios/muniapp/descargas/Documentos_de_apoyo/informaciontematica/capp/Caso_PlantaDesaladora_Ensenada.pdf); [https://www.proyectosmexico.gob.mx/proyecto\\_inversion/0839-planta-desaladora-de-ensenada/](https://www.proyectosmexico.gob.mx/proyecto_inversion/0839-planta-desaladora-de-ensenada/); <http://www.becc.org/projects/certified-projects/desalination-plant-ensenada-baja-california> Accessed on April 5, 2019.

<sup>45</sup> [http://www.nadb.org/Reports1/Press\\_Releases/spanish/2018/110618.pdf](http://www.nadb.org/Reports1/Press_Releases/spanish/2018/110618.pdf) Accessed on April 5, 2019.

STM owned 49 percent. Subsequently, CWS operated under a lease contract with DAWASA to provide water supply and sewerage services in Dar es Salaam for ten years. DAWASA was also responsible for funding and implementing capital investments. The project was primarily financed through external loans, with CWS providing USD 8.5 million in equity.

Under the contract, CWS was responsible for: (i) increasing revenue (double monthly collections within 12 months), (ii) identifying and regularizing unregistered connections, (iii) introducing a new billing system, (iv) renovating the city's water and sewerage infrastructure, and (v) reducing water losses from an estimated 70 percent to 44 percent in the first three years.

After it assumed operations in August 2003 however, CWS faced numerous challenges. These challenges include failures by CWS shareholders to provide their agreed equity contributions, below forecast average monthly collections in 2004/05 (only 52 percent, less than that achieved by DAWASA in 2002/03), very low installation of new water meters (only 2,500 out of the required 170,000 water meters), and launch of an inadequate billing software system. CWS also inherited many disputed and unverifiable connections, including the army camps' water connection. CWS had to disconnect the army camps' water supply due to an unpaid bill of over 200 million shillings (USD 172,000), leading to a backlash from the Tanzanian soldiers. CWS also inherited as many as 1,400 DAWASA employees with limited tools and incentives to change the culture or improve their performance.

These challenges crippled CWS' finances. It failed to pay a rental fee to DAWASA regularly and deposit First Time Connection Tariffs into the account of that program. CWS also withheld lessor tariff collections periodically to cover its operating costs. By March 2005, its accumulated losses were nearing USD 12.3 million.

Subsequently, CWS renegotiated the contract with the government with the involvement of a mediator, but the parties failed to reach a consensus. The government objected to extending the lease contract for five more years unless CWS improved its collection performance. Meanwhile, CWS insisted on the extension without the requirement of committing to the higher collection target. In May 2005, DAWASA delivered a notice of termination of the contract, which was opposed by CWS. This stalemate, coupled with the declining public support for privatization and an upcoming election, prompted the Minister of Water to intervene. Within the first 18 months of the contract period, the Tanzanian government deported

the expatriate managers of CWS, leading to the dissolution of the contract.

### Lessons Learned

In August 2005, CWS brought the case to two different international arbitration tribunals in parallel, namely the ICSID Tribunal and UNCITRAL Tribunal. The former found that the Government of Tanzania did violate some treaty obligations, but the breaches did not cause CWS any losses. Therefore, CWS was not awarded any damages from the Government of Tanzania. The UNCITRAL Tribunal rejected CWS' claims and instead awarded around USD 3.8 million in damages to DAWASA.

In June 2005, a public corporation called Dar es Salaam Water and Sewerage Company (DAWASCO) took over CWS management. DAWASCO also faced the same challenges as CWS but, over five years, the operational performance improved. In 2018, DAWASA was merged with DAWASCO to provide better services to the citizens of Dar es Salaam.

The failure of this project can be tied to a number of factors, namely:

- The non-competitive bidding process. BGT was selected as the winning bidder despite not meeting the prequalification criteria after it became the sole bidder as a result of the other bidders withdrawing from the procurement process.
- Inadequate risk allocation. Most of the risks were transferred to the private operator, although the sole bidder never fully met the qualification criteria. The private operator assumed significant risks without sufficient qualification or knowledge of the situation on the ground and proved unable to manage the situation on taking control over operations.
- Lack of due diligence. The private operator relied solely on the information contained in the tender documents regarding the status of the water infrastructure to be inherited from DAWASA, without independently confirming the data. In reality, many of the water connections identified in the bid documents proved to be unverifiable.
- Lack of a sound legal and regulatory framework. There were insufficient legal mechanisms to curtail illegitimate water connections or to seek redress when customers refused to pay water bills.
- Poor communication. It was evident that there was poor communication and a general unwillingness to compromise on the part of both DAWASA and CWS, ultimately leading to cancellation of the contract by the Tanzanian government.

## 23. Challenging Case: Water Supply Project, Mysore, Karnataka, India



Photo Credit<sup>47</sup>

### Background

Uninterrupted access to tap water remains a luxury for many Indians, as most water supply systems in India suffer from inefficiencies stemming from leakages and poor management. This results in significant costs for many Indians, due to the need to invest in water storage tanks and filters as a backup in case of interruptions in piped water supply.

Starting in 2004, the Government of Karnataka (GoK) together with the World Bank launched the Karnataka Urban Water Sector Improvement Project (KUWASIP). The project, first piloted in three cities in Karnataka, aimed to reform the water supply and sanitation sector in Karnataka state. Due to the success of the program, GoK replicated the project in other cities in Karnataka, including Mysore in 2008.

### Project Structure

A six-year concession to rehabilitate Mysore's century-old water supply system and oversee its operation and maintenance was awarded to Jamshedpur Utilities and Services Co. Ltd. (Jusco) in November 2008 through an open bidding process. The project was valued at INR 1.64 billion (USD 23.4 million). The Jawaharlal Nehru National Urban Renewal Mission of the Union's government financed the project, requiring no investment from the private company. The project comprised three phases: one year of preparation, three years for rehabilitating the system, and another two years for operation and maintenance.

According to the agreement, the public sector (Mysore City Corporation and GoK) was responsible for pricing and disconnecting illegal water connections, with help from the private company to survey and map out the illicit connections in the city. The private company was given the rights to collect revenue from the consumers, to be subsequently handed over to the public sector. The agreement also stipulated performance clauses, under which the private

company would be entitled to bonuses for strong performance. Accordingly, financial, pricing and demand risks were borne by the municipality. Responsibility for operation and maintenance was assumed by the private operator, while both parties would share the technical risk.

### Lessons Learned

After Jusco took over the water supply system in Mysore, revenue collection improved from INR 160 million (USD 2.3 million) in 2008-09 to INR 250 million (USD 3.6 million) in 2011-12. In January 2013 alone, the revenue reached INR 230 million (USD 3.3 million). Jusco has also identified 70,000 illegal connections. Of the 70,000, Mysore City Corporation has regularized 19,000.

However, the project later began to struggle, due to the following:

- Data discrepancies and financing issues. There were data discrepancies between the data in the original agreement and what was found by Jusco through its survey. The agreement stated that the network of pipelines was over 910 km with 117,000 connections, while in fact the pipeline network was 1,910 km with 174,000 connections. The discrepancies have caused changes in the scope of work and increased the estimated cost of projects, leading to a difficult renegotiation process.
- Lack of cooperation between Jusco and Vani Vilas Water Works. The municipality seconded the employees of Vani Vilas, the city's existing waterworks department, to work under Jusco. But reports suggested that there were conflicts between Jusco and the employees of Vani Villas.
- Delayed work. The project was delayed due to the above issues. The new system was only able to connect 61,000 of the 174,000 identified households. Of the 61,000, only 13,000 homes are receiving continuous water supply. Since Jusco failed to meet its targets, it was unable to secure its bonuses.

<sup>47</sup> Maksym Kozlenko ([https://commons.wikimedia.org/wiki/File:Brass\\_water\\_tap\\_in\\_park.jpg](https://commons.wikimedia.org/wiki/File:Brass_water_tap_in_park.jpg)), <https://creativecommons.org/licenses/by-sa/4.0/legalcode>

In 2012, protests arose due to a drinking water crisis, unsatisfactory progress in the modernization project, and high water bills. The protesters urged the city to cancel its agreement with Jusco. This project highlights the following lessons learned.

- The private company did not make any investment in the project, such that it had little incentive to protect and renegotiate the project contract after discovering the data discrepancies. It is important in any PPP that the private partner have a meaningful financial stake in the success of the project.
- Little attention was given to incentivizing the existing municipal waterworks staff following the transfer in management, contributing to a dispute between the existing staff and the new private operator. In addition to avoiding disputes, designing proper incentives for workers can also help improve performance in the long run.
- Pricing was an issue. Public opinion was that the higher water bills were not justified by improved service, leading to dissatisfaction among the population, especially the poorer communities. Pricing must always be set in an equitable and transparent manner, with due care to the willingness and ability of end-users to pay.<sup>48</sup>

## Wastewater Treatment

### 24. Waste Water Treatment Plant, Udaipur, India



Photo Credit<sup>49</sup>

#### Background

Udaipur, a city located in the water-scarce Indian state of Rajasthan, is an economically dynamic city and a popular tourist destination. Before 2012 Udaipur city produced, on average, around 70 million liters of sewage per day. Due to the city's inadequate wastewater infrastructure, the city was struggling to maintain the cleanliness of its lakes, which were being contaminated by the raw residential sewage. In September 2012, a court order was issued to hotels and the municipality to deal with the problem. The local authority decided to pursue a PPP to deliver the infrastructure needed to comply with the court order.

#### Project Structure

In 2012, a 25-year PPP contract was executed between Hindustan Zinc, a major corporate zinc mining company, and the local government authorities, which included the Udaipur Municipal Corporation and Rajasthan State-Owned Urban Improvement Trust, to develop the city's first Wastewater Treatment Plant (WWTP). From the publicly available sources, the project appears to

have originated as an unsolicited proposal initiated by Hindustan Zinc. Hindustan Zinc's involvement in the project was motivated primarily by its goal of finding options for additional water resources that would reduce its dependence on freshwater extraction. This is also Hindustan Zinc's efforts to increase its production and sustainability.

The private partner undertook to design, build, own, and operate the WWTP for the full length of the contract, after which it would be transferred to the Government of Rajasthan in 2039. The private partner was also responsible for fully financing the investment cost of the new WWTP (estimated at USD 27 million), land acquisition, and construction of the WWTP and the 78 km pipeline linking the WWTP with the industrial complex. The local government contributed 70 percent of the cost for the pipeline connecting the city's sewerage system with the WWTP. From the publicly available sources reviewed, it is unclear what entity contributed the remaining 30 percent of the cost for this pipeline or is responsible for operating and maintaining this pipeline. The WWTP was expected to have the

<sup>48</sup> Case source(s): <http://www.worldbank.org/en/news/feature/2013/01/01/karnataka-three-towns-pilot-water-supply> Accessed on May 21, 2019.

<https://www.livemint.com/Politics/veuBt9zArpvuusysCLntK/Mysore-24x7-water-project-falls-short-of-targets.html> Accessed on May 21, 2019.

<sup>49</sup> TeshTesh ([https://commons.wikimedia.org/wiki/File:Udaipur\\_views\\_Rajasthan\\_India\\_2015.jpg](https://commons.wikimedia.org/wiki/File:Udaipur_views_Rajasthan_India_2015.jpg)), <https://creativecommons.org/licenses/by-sa/4.0/legalcode>

capacity to treat 20 million liters of sewage per day, or about 30 percent of Udaipur's domestic sewage, using Moving Bed Bio-reactor technology.

The treated effluent produced by the WWTP, amounting to 20,000 m<sup>3</sup> per day, would be used by Hindustan Zinc for its mining and smelting operations, specifically the beneficiation plant at the mining location, during the smelting process, and the cooling towers of the captive power plant. However, Hindustan Zinc's operations only required 9,500 m<sup>3</sup> of treated effluent per day, so the excess treated effluent would be used in horticulture or released back into the river. Also, the WWTP would produce treated manure, amounting to 120 tons per year, which would be sold by Udaipur Municipal Corporation to local farmers. Sales of the treated manure were expected to generate annual revenue of around USD 156,000.

### Lessons Learned

During the construction period, the private partner faced many challenges. Concerning land

acquisition, the company had difficulty identifying a financially viable site for the WWTP and negotiating with local stakeholders. Further challenges arose in the process of laying pipe-network in busy areas and from operational difficulties at the Hindustan Zinc Industrial Complex. However, these problems were overcome through the continued effort of the private partner to communicate closely with neighboring communities and the local government to acquire necessary approvals and to obtain acceptance of marginal modifications to the wastewater treatment process.

Construction was completed in 2014, and the project has successfully helped Hindustan Zinc reduce its water extraction by 60 percent, from 16,500 m<sup>3</sup> per day to 7,000 m<sup>3</sup> per day. It also improved the water quality of the Ahar River and Pichola and Udai Sagar lakes, increasing the tourist appeal of the area. Due to the success of the project, Hindustan Zinc has announced its intentions to scale up the project's capacity from 20 to 60 million liters per day.<sup>50</sup>

## 25. Integral Treatment of Wastewater and Bio-Solids, Municipality of Saltillo, Mexico



Photo Credit<sup>51</sup>

### Background

The municipality of Saltillo was not complying with environmental laws on wastewater and was discharging its non-treated wastewater into regional bodies of water. In addition to incurring substantial fines for the municipality, the untreated discharge was contaminating local waters and presenting a growing health hazard for the surrounding inhabitants. Accordingly, the construction of appropriate wastewater infrastructure was urgently needed.

### Project Structure

The resulting PPP project is a 20-year concession for the design, construction, operation, and maintenance of a primary wastewater treatment plant with the capacity to treat 1,200 liters of

wastewater per second, as well as an auxiliary plant with the capacity to treat 70 liters per second. In addition to the plants, the project entails construction of four emitters for the conduction of wastewater to the primary plant and a network of treated water for supply to five sites within the municipality of Saltillo. At the end of the 20-year contract, the developer would transfer the new infrastructure and its operation to the municipality.

The project was awarded to Frisco S.A de C.V. through a public national bidding process in which 16 companies competed. IDEAL Sanamiento de Saltillo, S. A. de C. V., the special purpose vehicle created for this project, began construction in April 2006 and operations on April 2008.

<sup>50</sup> Source(s): <https://www.waterscarcitysolutions.org/wp-content/uploads/2016/02/A-Innovative-public-private-partnership.pdf> accessed 12 February 2019

<http://www.indiasanitationcoalition.org/resources/Case-Study-Hindustan-Zinc.pdf> accessed 13 February 2019

[https://csrbox.org/India\\_CSR\\_Project\\_Hindustan-Zinc-Ltd-Sewage-Treatment-Plant-Rajasthan\\_7398](https://csrbox.org/India_CSR_Project_Hindustan-Zinc-Ltd-Sewage-Treatment-Plant-Rajasthan_7398), accessed 28 March 2019.

<sup>51</sup> Rubén Mendoza Cabrera ([https://commons.wikimedia.org/wiki/File:IMG\\_9872\\_Saltillo,\\_Coahuila,\\_México.jpg](https://commons.wikimedia.org/wiki/File:IMG_9872_Saltillo,_Coahuila,_México.jpg)), <https://creativecommons.org/licenses/by-sa/4.0/legalcode>

IDEAL assumed the risks related to the design, financing, construction, commissioning, and operation of the project. It also assumed the permitting and licensing risks. Political, demand and inflation risks were retained by the municipality.

The municipality of Saltillo was responsible for establishing a payment guarantee in benefit of IDEAL. To establish the guarantee, the municipality obtained a current-account credit facility through Mexico's National Bank of Public Works and Service. In order to access such a facility, the municipality processed the financial support of Trust (fideicomiso) No. 1902 called infrastructure investment fund (Fondo de Inversión en Infraestructura) by the National Bank of Public Works and Services. This trust is a source of direct and alternative payments for the administration of the resources allocated to the project.

The municipality, as the project's primary source of funding, pays into the Fideicomiso, which in turn pays IDEAL a monthly tariff that comprises three parts: a) investment fixed costs; b) operation fixed costs; and c) operation variable costs. The tariff is contingent on the quantity and quality of water treated at each of the plants.

The estimated investment for the project was MXN 436 million (USD 22 million). Of this amount, 29.4 percent was contributed by the Infrastructure Investment Fund; 50.8 percent was debt; and the remaining 19.8 percent was the private investor's equity contribution.<sup>52</sup>

### Lessons Learned

Reports indicate that in 2016 the wastewater treatment plant started operating a system for electric and thermic energy co-generation, which will allow the plant to stop emitting greenhouse gasses into the atmosphere, and thereby produce the energy needed to run the plant.<sup>53</sup> Furthermore, it is reported that the plant will start selling treated water (between 1 to 6 liters per second) to three companies that have expressed interest by the second half of 2019<sup>54</sup>.

It has also been reported that the project has benefited agricultural works in the region, as it enabled a change from forage crops to vegetables, which have a higher commercial value. The project further increased the commercial value of the previously polluted lands, as the project will help to decrease significantly or eliminate discharges that were resulting in unpleasant odors and harmful environmental impacts.

<sup>52</sup> Case sources: [http://www.cca.org.mx/ps/funcionarios/muniapp/descargas/Documentos\\_de\\_apoyo/informaciontematica/capp/Saneamiento\\_Integral\\_Aguas.pdf](http://www.cca.org.mx/ps/funcionarios/muniapp/descargas/Documentos_de_apoyo/informaciontematica/capp/Saneamiento_Integral_Aguas.pdf) Accessed on April 1, 2019.

[http://www.contraloriadelpoderlegislativo.gob.mx/pdf/Cursos/A\\_P\\_P.pdf](http://www.contraloriadelpoderlegislativo.gob.mx/pdf/Cursos/A_P_P.pdf) Accessed on April 1, 2019.

<sup>53</sup> <http://www.eldiariodecoahuila.com.mx/locales/2016/8/3/arranca-cogeneracion-energia-electrica-termica-planta-tratadora-594631.html>. Accessed on April 1, 2019.

<sup>54</sup> <https://vanguardia.com.mx/articulo/finalmente-sera-util-la-planta-tratadora-de-salttillo-venderan-el-agua-a-empresas-de-ramos-arizpe> Accessed April 5, 2019.

<sup>55</sup> Rahul Bhadane ([https://commons.wikimedia.org/wiki/File:Surat\\_Aerial\\_View.jpg](https://commons.wikimedia.org/wiki/File:Surat_Aerial_View.jpg)), <https://creativecommons.org/licenses/by-sa/4.0/legalcode>

## 26. Industrial Water Supply, Surat Municipal Corporation, India



Photo Credit<sup>55</sup>

### Background

As the economic capital of Gujarat, Surat City was experiencing booming industrial growth, particularly in the textile and diamond industries. To meet the resulting rapid increase in water demand amidst an existing shortage, the city needed to reduce its dependence on groundwater and be more innovative in its approach to water management.

### Project Structure

In 2014, India's Surat Municipal Corporation (SMC) and the Asian Development Bank (ADB) jointly initiated a wastewater recycling project with a total estimated cost of INR 2.8 billion (USD 40 million). The project aimed to deliver infrastructure that could recycle sewage and generate industrial-grade water, including through the construction of new, state-of-the-art tertiary treatment plants (TTPs). The TTPs would be equipped with sand



filtration, ultrafiltration, reverse osmosis, and activated carbon filter technologies and have the capacity to treat 726 million liters per day (MLD) of wastewater and distribute it for reuse by industries located in the city.

Through a competitive bidding process, M/S Enviro Control Associates (I) Pvt. Ltd (with M/S Hyflux from Singapore as their technological partner) won the bid for the EPC (Engineering, Procurement, and Construction) contract. As per customary practice in SMC, the winning bidder for the EPC contract would automatically be awarded the contract to operate and maintain (O&M) the plants under a separate agreement for a period of 10 years. The plants would be handed over to SMC at the end of the concession period. The Government of India, the Government of Gujarat, and SMC contributed INR 415 million (USD 5.83 million), INR 466 million (USD 6.55 million), and INR 378 million (USD 5.3 million), respectively, for the project. SMC also provided the land to build the TTPs and was responsible for supplying the wastewater for recycling by the plants.

The revenue was expected to come primarily from user charges collected from industries that purchased the recycled water. The user charge was set at about INR 19.84 (USD 0.28) per 1,000 liters of water (yearly increment on indexation base). The fee was less than the price SMC charged to industries for freshwater, which was around INR 23 (USD 0.32) per 1,000 liters of water. Revenues received were expected to cover the total annual O&M cost of INR 277 million (USD 4 million).

The TTPs in the Bamroli and Dindoli areas would take in domestic sewerage water and supply the treated, recycled water primarily to textile factories in the Pandesara and Sachin industrial clusters, which house over 400 printing and dyeing units.

<sup>56</sup> Case source(s):  
<https://www.thehindu.com/news/national/other-states/in-managing-water-surat-takes-lead/article24962211.ece>  
 Accessed May 18, 2019.

[http://www.cips.org.in/documents/VC/2014/4th\\_Sept/TTP\\_Surat\\_040914.pdf](http://www.cips.org.in/documents/VC/2014/4th_Sept/TTP_Surat_040914.pdf)  
 Accessed May 18, 2019.

[https://smartnet.niua.org/sites/default/files/webform/abd\\_7\\_dindoli\\_ttp\\_detailed\\_project\\_report.pdf](https://smartnet.niua.org/sites/default/files/webform/abd_7_dindoli_ttp_detailed_project_report.pdf)  
 Accessed May 18, 2019.

[https://smartnet.niua.org/sites/default/files/resources/bamroli\\_ttp\\_16\\_11\\_2017.pdf](https://smartnet.niua.org/sites/default/files/resources/bamroli_ttp_16_11_2017.pdf)  
 Accessed May 18, 2019.

### Lessons Learned

To date, SMC has been converting 57 MLD of sewerage into 40 MLD of treated water distributed to industries in Pandesara. The TTPs output capacity is expected to expand to 115 MLD by March 2019. Total income received from the sale of industrial-grade water through November 2017 was INR 747 million (or USD 10.6 million). SMC is also planning to extend the project's scope by supplying recycled water to other industrial clusters such as Hazira, which is located outside the city.

The project was originally intended to be wholly privately financed, i.e. at no cost to the government and was procured as such in 2011. However, despite successfully awarding the project, it could not be executed and required some restructuring. Subsequently, the project was structured using two contracts, one for EPC and another for O&M, and retendered in 2017. Under this arrangement, the EPC portion would be paid in full by the government, while the ensuing costs of O&M would be recovered from the revenue generated by the project.

The project highlights how developing and preparing a good PPP project can take time. In this case, following the first unsuccessful effort to tender and deliver the project, the government recognized that it needed to be restructured in order to be viable over the long term. In addition, the project's financial sustainability depended on SMC's ability to secure demand for the recycled water from the Pandesara industrial estate, including by agreeing to fix the user charge below what it charged for freshwater.

Ultimately, the project's O&M is self-sustaining, in terms of the cost and revenue received. It has allowed SMC to reduce the strain on water resources in the city, while limiting the public fiscal burden of the project. The project is now considered to be a leading example of successful wastewater treatment projects in India.<sup>56</sup>

## Solid Waste Management

### 27. Municipal Waste Thermal Treatment Plant, Poznań, Poland



Photo Credit<sup>57</sup>

#### Background

In response to new European Union (EU) regulations on waste management, the City of Poznań, Poland started planning the construction of a mixed municipal waste-to-energy power plant, referred to as an energy for waste “EfW” project. The project would be the first PPP in this sector in Poland.

#### Project Structure

In 2010, after lengthy stakeholder and community consultations, the City decided to develop EfW through a PPP due to its lack of experience in developing this type of project and the City's related interest in having a seasoned partner manage the operation of the plant. The private partner, Sita Zielona Energia, was selected through a competitive dialogue process that spanned November 2011 to July 2012. The contract obliged the private partner to design, finance, construct, manage, and maintain the EfW's facilities.

The PPP agreement was signed on 13 April 2013 by Sita Zielona Energia and the City. Sita Zielona is a Special Purpose Vehicle (SPV) formed by SITA Polska (50 percent stake) and Marguerite Waste Polska (50 percent stake). SITA Polska is a subsidiary of Suez Environment, a global leader in environmental solutions, and Marguerite Waste Polska belongs to the European investment fund Marguerite. The contract included a construction term of 43 months and an operation period of 25 years, extending from completion of construction. Construction, maintenance, operation, and availability risk were allocated to the private sector, and the City assumed demand risk.

The waste-to-energy plant is in the northern part of Poznan, close to the main heat and power plant of the city, which is the main recipient of the energy produced by the facility. The project's capital investment cost was estimated at PLN 725 million (USD 192 million). The project is funded in part by a EUR 84 million (USD 96 million) subsidy from the EU Cohesion Fund, with the remainder financed by equity contributed by SITA Zielona Energia and a non-recourse loan provided by a consortium of three commercial banks.

The City pays the private partner based on its estimated operation costs, disaggregated into fixed and variable costs; debt service requirements, in the form of principal installments and financing costs; and the planned profit of the private partner. The payment amount is computed from a settlement of accounts submitted by the Private Partner to the City, which is due each month. The amount payable by the City is then reduced by revenues generated by the private partner through the sale of electric and thermal energy and certificates.

#### Lessons Learned

The waste-to-energy plant officially started operations in 2017, producing both electrical power and heat. At present, 30 percent of the City's domestic electricity consumption is generated by the new facility. Also, the plant has reduced the City's expenses for treating urban solid waste by 20 percent, resulting in estimated annual cost savings of EUR 34 million (USD 38 million).<sup>58</sup>

<sup>57</sup> Photo in the public domain published by Prylarer <https://pixabay.com/photos/landfill-waste-management-waste-879437/>

<sup>58</sup> Source(s): [http://www.centrum-ppp.pl/templates/images/crido\\_odpady.pdf](http://www.centrum-ppp.pl/templates/images/crido_odpady.pdf) accessed 7 February 2019

[http://www.academia.edu/25410148/PUBLIC\\_PRIVATE\\_PARTNERSHIP\\_CASE\\_OF\\_POLAND](http://www.academia.edu/25410148/PUBLIC_PRIVATE_PARTNERSHIP_CASE_OF_POLAND) accessed 7 February 2019

<https://www.suez.com/en/our-offering/Success-stories/Our-references/Poznan-energy-from-waste> accessed 7 February 2019

## 28. Municipal Solid Waste Treatment Project, Wenzhou, China



Photo Credit<sup>59</sup>

### Background

The City of Wenzhou was generating approximately 400,000 tons in household waste each year, with a growth rate of 8-10 percent annually. Household waste was collected and disposed in two existing landfills that were approaching maximum capacity. In 2002, the local government decided to pursue a PPP to address the issue.

### Project Structure

The local government entered into a PPP with a local private company, Wei Ming Environmental Protection Engineering, to build and operate a new municipal solid waste (MSW)-to-energy incinerator plant. The incinerator plant was designed with a capacity to handle 320 tons of MSW per day and generate electrical power of up to 25 million kWh annually. The project was broken into two phases. In the first phase, the plant would be expected to treat 160 tons of MSW per day. This would enable the plant to produce 9 million kWh per year, of which 7 million kWh would be available for sale. The second phase would then add another 160 tons per day in MSW treatment capacity to the facility.

The private contractor agreed to invest a total of CNY 90 million (USD 13 million) to build the plant and then operate, manage, and maintain it for 25 years, excluding a two-year construction period. The private partner will transfer the plant to the government without any additional compensation at the end of the 25-year concession. It was forecast that the project would break even after 12 years of operation.

The private contractor is entitled to the following support from the public partner: (i) a service or tipping fee for the disposal of MSW assessed at a rate of CNY 73.8 (USD 11) per ton; (ii) an exemption from paying corporate income taxes for the first five years of operation; and (iii) permitting the private partner to receive an immediate refund of VAT. The private partner generates revenue through sales of the electricity generated by the plant and the waste disposal service fee paid by the City.

The project was facilitated by (i) China's 2005 Renewable Energy Law, which required electrical power network operators to purchase electricity generated using renewable sources; and (ii) China's Regulation on the Price of Electricity from Renewable Energy and Fee Sharing, which raised the electricity tariff for electrical power generated by MSW-to-Energy facilities from CNY 0.54 (USD 0.08) per kWh to CNY 0.66 (USD 0.10) per kWh.

The plant has been in operation since 2003.<sup>60</sup>

### Lessons Learned

The project was made feasible due to government support as it improved the project's financial viability and attractiveness for the private investors. In this case, the government support came in the form of supporting legal framework, government funding (tipping fee), and tax incentives.

<sup>59</sup> Pascal3012 ([https://commons.wikimedia.org/wiki/File:Vue\\_générale\\_de\\_Wenzhou.JPG](https://commons.wikimedia.org/wiki/File:Vue_générale_de_Wenzhou.JPG)), „Vue générale de Wenzhou“, <https://creativecommons.org/licenses/by-sa/3.0/legalcode>

<sup>60</sup> Source(s)<https://www.adb.org/sites/default/files/publication/27864/urbandev-prc-nov2010-waste.pdf> accessed 11 February 2019

## 29. Keppel Seghers Waste-to-Energy Plant, Singapore



Photo Credit<sup>61</sup>

### Background

Between 1970 and 2000, Singapore experienced significant growth and urbanization. As a result, the city-state's solid waste grew at 8 to 10 percent every year from an estimated 1,200 tons/day in the 1970's to 7,700 tons/day at the turn of the century. After considering a variety of technologies, including composting, baling, and others, the government decided on mass-burn incineration to dispose of solid waste.

The decision to invest in mass-burn incineration was driven primarily by four characteristics of this technology: (1) up to 90 percent waste volume reduction, (2) electricity generation capacity, (3) bottom-ash and fly-ash recycling, and (4) scrap metal recovery.

Following the 1979 construction of Singapore's first Waste-To-Energy (WTE) plant, the Singapore government would go on to construct three more WTE plants for the country under Design-Build (DB) contracts with the private-sector. This left the government responsible for the financing and operational risk, which was also capital intensive in construction and operation.

### Project Structure

With the lifecycle of the first WTE plant winding down, the Singapore government decided to develop a fifth site for its waste management system. However, instead of using the DB-method as with the previous four, the country opted to pursue a different PPP-model in the hopes of injecting more competition in the waste incineration sector. In 2001, the government tendered development of the new plant with a focus on having the private sector partner undertake the financial, design and demand risk associated with the project. It was not well-received by the market and only one, non-compliant bid was received. The lack of interest was seen as stemming from developers being unwilling to bear the demand risk due to the uncertainty of

waste growth and the lack of guarantees around the facility's waste streaming.

The Singapore government commissioned a study to investigate the waste incineration industry, in light of the failed tender. The outcome of the research yielded the following recommendations:

- Adopt a DBOO (Design, Build, Own, Operate) scheme with full 'take-or-pay' approach;
- Government should enter into 'take-or-pay' agreement with the developer to buy 100 percent of incineration capacity at a price determined through the tender;
- Government should bear demand risks by giving the operator full capacity payment, regardless of the actual utilization rate of the plant.

The Singapore government reopened the call for proposals, this time electing to use a 25-year concession contract with 'take-or-pay' approach. This not only led to more market engagement but also to Keppel Seghers being awarded the tender in late 2005 and opening the site for commercial operations in 2009. To date, the company has been operating the facility with no major incidents or concerns.

### Lessons Learned

The country now has four WTE plants in operation (the first plant was decommissioned in 2009), which handle all incinerable waste collected. Two of the plants are owned and operated by Keppel Seghers, which handles about 50 percent of the daily collection. The others are operated by Singapore's National Environment Agency (NEA).

The case underscores that municipal governments should respond to failed tenders with a careful examination of the proposed PPP-structure. Commissioning a study on the industry and likely explanations for an unsuccessful tender may help identify changes that will strike the right balance of risk and incentives for successful delivery of the PPP.

<sup>61</sup> Maksym Kozlenko ([https://commons.wikimedia.org/wiki/File:Keppel\\_Viaduct,\\_Singapore.jpg](https://commons.wikimedia.org/wiki/File:Keppel_Viaduct,_Singapore.jpg)), <https://creativecommons.org/licenses/by-sa/4.0/legalcode>

### 30. Solid Waste Management, West Bank and Gaza



Photo Credit<sup>62</sup>

#### Background

Decades of conflict have led to underinvestment in infrastructure and the provision of public services in the West Bank and Gaza, especially in solid waste management. This is true in the case of Hebron and Bethlehem, which house nearly 1 million people and are the poorest governorates in the West Bank. Of the 500 tons of waste generated daily in Hebron and Bethlehem, most was abandoned, illegally dumped, or deposited in unsanitary dumps. The amount of solid waste was predicted to grow, yet the governorates were lacking in a sanitary landfill space and funding – presenting health and environmental risks to the residents of the West Bank. To address the existing unsanitary dumpsites, the Palestinian Authority established the Joint Services Council for Hebron and Bethlehem (JSC-H&B) to oversee the solid waste management system. It also sought help from the World Bank Group and other donor partners to finance a sanitary and modern landfill equipped with access roads and transfer stations at Al Minya.

The Palestinian Authority invited IFC to help design a PPP for the operation and management of the landfill and related facilities tailored for the region. The Palestinian Authority also requested IFC's help to secure a qualified private partner willing to manage the facility.

#### Project Structure

The project was structured using mixed financing, as follows.

- i. USD 28 million was raised from the authority and local governments as well as from donors such as the World Bank, European Union, United States Agency for International Development (USAID), and Islamic Development Bank, among others; and
- ii. USD 8.3 million would come from the Global Partnership on Output-Based Aid (GPOBA) (now known as Global Partnership for Results-Based Approaches (GPRBA)). The USD 8.3 million would be disbursed based on specific service

improvements, including adequate waste gathering and transferring solid waste to the landfill, and financial sustainability targets as set by local stakeholders.

The GPOBA's involvement reassured the private sector bidders, as it supported JSC-H&B's ability to pay the private operator. The GPOBA also incentivized the performance of the selected private company and at the same time encouraged local governments to use the landfill.

Seven international and regional private sector operators expressed interest in the project. Of the seven, three private operators were pre-qualified and submitted bids, namely Hera Holding (Spain), WATT S.A.-MESOGEOS SA & EPEM SA (Greece), and Entag-Ecaru-Comeback (Egypt-Palestine). Through a two-stage selection process involving a technical evaluation and a financial bid, the Greek consortium was awarded the project in 2013. The concession has a flexible term with a minimum of five years and a possible extension of up to two years. The continuation is contingent on the outstanding volume in the landfill cells.

The private operator is responsible for the operation and maintenance of two transfer stations at Tarqoumiya and Hebron and the Al-Minya landfill, including the long-haul transfer of waste from the transfer stations to the landfill. JSC-H&B is responsible for paying charges per ton of waste managed at the Al-Minya landfill and the two transfer stations, as well as providing a minimum waste guarantee of 500 tons per day to the operator. Meanwhile, waste and user fee collection was the responsibility of the local governments.

As a result of this project, greenhouse gas emissions are expected to be reduced by 13,400 tons over seven years, or 3.2 million tons of carbon dioxide equivalents (CO<sub>2</sub>e) within 20 years of the project's economic life.

<sup>62</sup> World Bank

### Lessons Learned

Approximately 840,000 people in Hebron and Bethlehem have directly benefitted from the improved quality of solid waste management services. In return, customers are now more willing to pay for the service as evident from the steadily improved fee collection rates and billing-to-cost ratio for services in Hebron and Bethlehem since implementation.

A report showed that both governorates had recovered around 82 percent of billed fees, 42 percentage points higher than at the start of the project. It was also reported that JSC-H&B now covers 84 percent of its operating costs from its revenues – indicating improved financial sustainability of the project. The project has also expedited the closure 17 unsanitary dumpsites.

In the future, JSC-H&B is planning to set up centers for the customers to pay service fees and file quality-related complaints. It also plans to bundle waste management fees with other public services fees that citizens regularly pay.

The following lessons can be learned from this project.

- i. There is value in adaptability and flexibility. As it was difficult to attract private companies willing to invest in a fragile and conflict-afflicted area, considerable effort was made to improve the project scope and structure during the bidding and tendering phase. Consequently, the project had to be redesigned to attract smaller firms, which may have more incentive to invest in a

challenging operating environment. Flexibility was also key in successfully implementing the project across different local authorities. For instance, the type of instrument used to collect waste charges was permitted to vary from one locality to another.

- ii. Assistance is available from experienced IFIs, such as the World Bank and IFC. The JSC-H&B acknowledged their weakness in not having sufficient expertise to unilaterally deliver a solid waste PPP. Accordingly, they sought help from experienced IFIs to overcome this gap in internal capacity. The World Bank helped with funding the landfill and building institutional capacity, while IFC helped with structuring the PPP and securing GPOBA funding.
- iii. Engage with stakeholders early and often. The JSC-H&B communicated directly with local government participants and encouraged them to proactively contribute to the project, especially in setting the project's target. It conducted several focus group meetings at the initial stages of the project to understand the concerns of stakeholders and ensure their early and continuous engagement.
- iv. Performance-based payments help to align incentives. GPOBA's performance-based disbursements helped to enforce the private operator's compliance with the KPIs set by JSC-H&B, as this was necessary to safeguard its revenue stream and return on investment. GPOBA funding also made the project more bankable and incentivized local governments to improve fee collection rates.<sup>63</sup>

<sup>63</sup> Case source(s):  
<https://www.worldbank.org/en/about/partners/brief/west-bank-and-gaza-cleaner-cities-ppps-and-innovative-financing-approaches>  
 Accessed May 31, 2019

<https://library.pppknowledgelab.org/both/documents/2028>  
 Accessed May 31, 2019

<http://documents.worldbank.org/curated/en/330331546546200432/pdf/icr00004568-final-12282018-636818041626273401.pdf>  
 Accessed August 8, 2019

# Information and Communication Technologies (ICT)

## 31. IT Network Integration, Barcelona, Spain



Photo Credit<sup>64</sup>

### Background

The Barcelona City Council wanted to accelerate the integration and expansion of its existing information technology (IT) network (fiber optic and Wi-Fi), which was divided into five different IT networks and managed by six different companies, while also procuring a better, safer, and customized IT service for its use. To this end, Barcelona City, through its Municipal Institute of Information Technology (IMI), decided to pursue a PPP to integrate the management of its active and passive networks<sup>65</sup> to leverage efficiencies in investment, management, and monitoring. The PPP involved bundling a number of activities that were isolated previously, to improve efficiency and finance investments in new equipment.

### Project Structure

The resulting PPP entailed the financing, operation, management, and transfer of IMI's active and passive IT networks, in addition to the construction of some small works. The project's design resulted from a competitive dialogue process, which was initiated by the City inviting private operators (future bidders) to design the IT infrastructure according to the guidelines of the City Council. Once the design work was completed, IMI, as the entity in charge of IT provision for the City Council, began the tender process. The same two private operators that participated at the design stage submitted bids. Tradia Telecom S.A. won the contract in January 2014, and began operations in March of the same year, with a contract duration of ten years total. In this case, due to the comparatively small size of the project compared with Tradia's assets, no special purpose vehicle was used.

The project uses a creative business model under which the concessionaire provides corporate services to the City and IMI allows the concessionaire to sell the spare capacity of the infrastructure created by the PPP, which is owned by the City, on the wholesale market. Tradia assumed the construction, financing, inflation, demand, operation, and equipment supply risks, while IMI undertook the risks related to land and space acquisition and availability, as well as the political risks. Both partners shared the design risk.

Under this scheme, the private operator finances the investment in upgraded IT infrastructure and, in return, receives availability payments plus the right to sell excess network capacity to telecommunications operators. Tradia would pay an estimated EUR 7,562,500 (USD 8,550,730) for the initial investment cost of purchasing and installing new equipment (NXM and Wi-Fi), while IMI would pay EUR 1,150,000 (USD 1,300,300) per year, VAT included, for Tradia's IT operation service. IMI also receives a yearly fee of EUR 220,000 (USD 250,000) from the private operator for the use of the infrastructure that the operator then sells to other operators on the wholesale market. The internal rate of return (IRR) was forecast at 11.3 percent over the 10-year period. However, on 9 May 2014, three months after the contract went into effect, the Spanish parliament passed Law 9/2014 – General Law on Telecommunications, which affected the forecasted IRR.

<sup>64</sup> Harvey Barrison from Massapequa, NY, USA ([https://commons.wikimedia.org/wiki/File:Barcelona\\_2015\\_10\\_10\\_0488\(22749913489\).jpg](https://commons.wikimedia.org/wiki/File:Barcelona_2015_10_10_0488(22749913489).jpg)), "Barcelona 2015 10 10 0488 (22749913489)",

<https://creativecommons.org/licenses/by-sa/2.0/legalcode>

<sup>65</sup> Active networks involve commuting and routing equipment and passive networks involve fiber-optic cables, poles, and boxes that will be relayed to the operator. This is: Nodes of the municipal and urban corporate network, Citizen Wi-Fi network hot spots, Urban Wi-Fi, Corporate fiber-optic network, Urban mobility control network and urban tunnel tele-control network, Dark fiber network of the 22@ district, Urban tunnel tele-control network items of equipment, and radio links. Due to the complexity of the networks, the measurements of each of them could vary, which concessionaire would have to accept.

The network-sharing model at the core of this project allowed the private firm to make an up-front investment in new and improved IT infrastructure, providing Wi-Fi throughout the City Council's buildings and at access points in the outdoor network, among other benefits. At the same time, it created a new revenue stream for the City. In addition, it has been reported that the operating costs for the City's IT administration increased by no more than EUR 7,400 per year.

From 2011 to 2015, the number of City Council buildings with fiber optic connections grew by 26.2 percent, the number of kilometers of fiber optic cable laid increased by 116.8 percent, and the number of Wi-Fi hot spots increased by 119.39 percent. Despite a change of government, the contract was not affected, though the previous smart city strategy was reevaluated.

### Lessons Learned

The project yielded benefits for both Barcelona's public administration and its residents. This is because the upgrade in the network resulted in better services in the city council offices and the expansion of Wi-Fi service throughout the city led to better connectivity. These improvements were needed for Barcelona to realize its strategic aim of becoming a smart city and to enable future telecommunications network deployments.<sup>66</sup> It is also reported, however, that Tradia has had difficulties selling the spare capacity due to the regulatory changes.

The project provides the following lessons.

- Innovative commercial structures, such as bundling several IT services/contracts that were previously separated, can enable better and more efficient management and control. At the same time, it helps to guarantee the same standard quality across all the bundled services.
- IT projects have the shared and sometimes disadvantageous characteristic of rapid and constant evolution of technology. It was reported that, in this case, it may have been desirable to include more clarity in the contract as to how to deal with technological changes and developments.
- The positive outcomes of this project are tied to the City's clear and consistent identification of its needs and development strategy, which facilitated the cooperative design of the project with prospective private operators in advance of the tender
- Permitting the sale of the new infrastructure's spare capacity was a creative funding source that made the project more commercially viable and appealing to the private sector.
- Municipal PPPs may be subject to unforeseeable impacts resulting from decisions made by other levels of government, which make difficult to contractually allocate and manage the risk of changes in law and regulation.

## 32. Next Generation Nationwide Broadband Network, Singapore



Photo Credit<sup>67</sup>

### Background

To enhance Singapore's global competitiveness and meet its future economic and social needs, the Singapore Government decided to develop a new Next Generation Nationwide Broadband Network (NBN). The NBN involved a Fibre-to-Anywhere network project offering open access, competitively-priced ultra-high-speed broadband

access from 1Mbps to 1Gbps for consumers and businesses. To this end, the Singapore Government decided to pursue a PPP to leverage the private sector's innovation and competencies and to optimally allocate the risks, rewards, and responsibilities between public and private sector.

<sup>66</sup> Source: <https://media.iiese.edu/research/pdfs/ST-0445-E.pdf> accessed 26 January 2019

<sup>67</sup> Someformofhuman ([https://commons.wikimedia.org/wiki/File:Singapore\\_Skyline\\_Panorama.jpg](https://commons.wikimedia.org/wiki/File:Singapore_Skyline_Panorama.jpg)), „Singapore Skyline Panorama“, <https://creativecommons.org/licenses/by-sa/3.0/legalcode>



### Project Structure

Using a two-stage competitive bidding process, the Government selected the OpenNet Consortium as the Network Company (NetCo) responsible for the passive infrastructure of the Next Gen NBN (e.g., the fiber optic cable) and, in 2009, Nucleus Connect as the Operating Company (OpCo) responsible for the active infrastructure of the Next Gen NBN (e.g., routers, switches, and network access equipment). NetCo would receive financial support from the Government of up to SD 750 million (USD 550 million), while OpCo would receive financial support of up to SD 250 million (USD 184 million). The private partners would need to cooperate to design, build, and operate the all-fiber optic network, to connect every home, office, and institution in Singapore.

Under this PPP scheme, the Government is responsible for facilitating timely disbursements of public funds and establishing an appropriate regulatory framework for the Next Gen NBN to support market investments. The private partners are responsible for implementing a sustainable business model for the Next Gen NBN over the longer term, deploying technological solutions and technical expertise, and understanding and meeting the needs of end-users.

<sup>68</sup> Source(s): [http://www.itu.int/wsis/stocktaking/docs/activities/1291981845/Towards%20a%20Next%20Generation%20Connected%20Nation\\_Singapore.pdf](http://www.itu.int/wsis/stocktaking/docs/activities/1291981845/Towards%20a%20Next%20Generation%20Connected%20Nation_Singapore.pdf) accessed 17 February 2019

<https://www.imda.gov.sg/industry-development/infrastructure/next-gen-national-infocomm-infrastructure/wired/next-gen-nbn/what-is-next-gen-nbn/industry-structure> accessed 17 February 2019

<http://www.analysismason.com/Consulting/Client-Presentations/Regulatory-and-policy-development-in-NGA/Case-Study-Singapore-Next-Generation-Nationwide-Broadband-Network-Harin-Grewal/> accessed 17 February 2019

[https://www.huawei.com/en/about-huawei/publications/winwin-magazine/07/hw\\_072403](https://www.huawei.com/en/about-huawei/publications/winwin-magazine/07/hw_072403) accessed 17 February 2019

<sup>69</sup> Paul Sableman ([https://commons.wikimedia.org/wiki/File:KC\\_Streetcar\\_\(31551392370\).jpg](https://commons.wikimedia.org/wiki/File:KC_Streetcar_(31551392370).jpg)), „KC Streetcar (31551392370)“, <https://creativecommons.org/licenses/by/2.0/legalcode>

### Lessons Learned

The Next Gen NBN began commercial operations in August 2010. Since then, the competitively-priced fiber broadband services have become available for businesses and private consumers through more than 12 different service providers and over 40 fiber-optic based broadband access plans. The project benefits not only individual consumers and businesses but also info communications (infocomm) companies. In particular, individuals benefit from richer mobile and wireless services, businesses benefit from ready access to a robust network that supports data-intensive transactions, and the infocomm companies benefit through the expanded infocomm market. The expanded market can open up new revenue streams and business opportunities.<sup>68</sup>

With the government's commitment to an open, transparent, and competitive procurement process and having a well-prepared study, the project was able to be delivered at a low cost without compromising the efficiency and effectiveness of the infrastructure. Key efforts in this respect included conducting studies of overseas deployments and engaging and consulting with the private sector closely and early in the process to better understand the project's impact and implication and, at the same time, to understand the type of government support required to incentivize the industry.

## 33. Free Public Wi-Fi and Interactive Kiosks Project, Kansas City, United States



Photo Credit<sup>69</sup>

### Background

Cisco and Sprint, two major IT companies in the United States, proposed an unsolicited project to the Kansas City Government to install free public Wi-Fi and interactive kiosks. These facilities would provide internet access to residents and visitors

through their mobile devices. The project further promised to streamline the city's operations, stimulate economic development, and improve the quality of life of the city's residents. The free public Wi-Fi and interactive kiosk project would utilize the existing Sprint Wi-Fi network, which was already serving as the backbone of Kansas City's Smart City framework. The Kansas City Government accepted the proposal.

### Project Structure

After carefully negotiating the security and contract terms, an agreement between the Kansas City Government and Sprint+Cisco was executed in June 2015. Under this agreement, the private companies would install devices that provide free public Wi-Fi along the 2.2-mile Kansas City streetcar line. They would further install a series of 25 interactive digital kiosks for smart lighting and video surveillance along the streetcar line, which would utilize Sensity's NetSense platform. This is an intelligent Internet of Things (IoT) platform that can transform each lighting fixture into a sensory node, thereby saving money and energy, while the video

sensors can collect real-time data for the smart city, ensuring public safety along Kansas City's downtown streetcar line.

The capital cost of the project totaled USD 16 million, of which the local government agreed to contribute about USD 3.7 million. The local government earns revenue from collecting advertising fees from the kiosks, which it shares equally with its advertising manager, Smart City Media. Once the local government has recouped its capital costs, which is estimated to take around four to five years, the revenue sharing proportions will be adjusted to 25 percent for the City and 75 percent for Smart City Media.

Cisco and Sprint supplied the remaining USD 12.3 million in capital investment cost. While the private investors do not receive any direct financial returns from the project, they receive exclusive

rights to access and use the data collected by the kiosks. The data collected on Wi-Fi use can be used to understand the viability of expanding Wi-Fi coverage to other areas of the City.

### Lessons Learned

In early 2016, the 25 kiosks were installed. They can be used by the citizens to access the Internet through their connected mobile devices freely, as well as to find information about city services, current events, transportation, local business information, local history, and entertainment. The kiosks can also be used as an emergency alert system, which in turn enhances public safety.<sup>70</sup>

The case demonstrates that an unsolicited project proposal can be successful, provided it is accompanied by due diligence on the part of the municipality, especially on the contract terms.

## 34. Establishment of High Capacity Wireless Infrastructure, Pimpri-Chinchwad, Maharashtra, India



Photo Credit<sup>71</sup>

### Background

Pimpri-Chinchwad is the industrial hub of the Indian state of Maharashtra, with a population that has grown at a rate of 100 percent over each of the last two decades. The Pimpri-Chinchwad Municipal Corporation (PCMC) wanted to create better wireless infrastructure for the city and for its public entities and was also looking to manage that infrastructure on a revenue-sharing basis. Thus, and with the objective of e-transforming its operations with high capacity wireless infrastructure, the City decided to pursue a PPP. Through the PPP, PCMC hoped to identify a private partner that would finance the entire cost of the e-infrastructure and bandwidth expansion for the municipality, in addition to providing management, human resources, e maintenance, and revenue collection services. PCMC sought to be provided with the infrastructure needed to operate daily and extend online services to its citizens, such as e-governance, e-education, and e-health.

### Project Structure

Following an open, competitive tender initiated in December 2007 by PCMC, the bid offers were evaluated by an independent party. PCMC awarded a 10-year concession to IL&FS, along with its joint venture partners Software Technology parks of India, Fujitsu India Ltd, and Lifestyle Networks Ltd., to design, finance, install, manage, and maintain ISP services for PCMC offices, businesses and citizens in the PCMC area; wireless infrastructure; extending services to citizens including internet and value added services such as e-governance over the proposed infrastructure; and commercial transactions with revenue sharing with PCMC. The municipality would provide the land needed for setting up the infrastructure, on a rental basis.

During the contract period, the annual amount to be paid to PCMC by the joint venture was fixed at 2.5 percent of the first INR 25 crore (USD 3.5 million) of revenue, plus 4 percent of any additional revenue

<sup>70</sup> Source(s): <https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Public-Sector/gx-ps-public-private-partnerships-smart-cities-funding-finance.pdf> accessed 11 February 2019.

<https://newsroom.sprint.com/sprint-launches-free-wi-fi-service-as-part-of-kansas-city-smart-city-initiative.htm> accessed 12 February 2019.

<sup>71</sup> Nimoclick ([https://commons.wikimedia.org/wiki/File:Street\\_scape.jpg](https://commons.wikimedia.org/wiki/File:Street_scape.jpg)), <https://creativecommons.org/licenses/by-sa/4.0/legalcode>

above that amount. In addition, the contract provided an alternative, minimum revenue share to be paid to PCMC, which increases annually. For example, the required minimum payment in year

three is INR 6,400,000 (around USD 90,000). By year ten, this amount increases to INR 21,400,000 (USD 300,700). The estimated project cost is INR 428,400,000 (USD 6.02 million).<sup>72</sup>

### 35. Municipal Geographic Information System (GIS), Surat Municipality, India



Photo Credit<sup>73</sup>

#### Background

In India, many municipalities and urban local bodies (ULBs) have adopted a "Municipal Geographic Information System (GIS)." The Municipal GIS aims to create, store, maintain, and facilitate retrieval of property data in digital format along with geo-coordinates. This is particularly helpful for the municipalities and ULBs when facing increased population growth and urbanization. There are many advantages associated with Municipal GIS, including:

- Enhancing tax collection and thereby increasing revenues;
- Improving the city's information system for urban planning, monitoring, administration, licenses and approval, and community development; and
- Better monitoring and maintenance of infrastructure such as roads, street lights, electric poles, footpaths, and maintenance holes.

Surat Municipal Corporation (SMC) is one of the municipalities in India which has designed, developed, and implemented a Web-based GIS application with GIS database.

#### Project Structure

SMC awarded the GIS project to Antrix corporation, Gol, and its partner Scanpoint Geomatics Ltd. The project was structured in six phases, with the

first five phases to be completed in 18 months. The phases are: 1) Project design; 2) Preparation of base map with geo-corrected coordinates; 3) Data collection (primary and secondary); 4) GIS project development – the Web GIS application was customized for public use and SMC departments; 5) Testing, installation, and commissioning of GIS project and training; and 6) Maintenance – three years of post-implementation support to SMC by the private partner.

#### Lessons Learned

The project provides an excellent example of how incorporating a GIS system into the e-governance system through PPP can be valuable to a municipality. SMC's GIS system launched in January 2015 and has helped with improving asset management, increasing revenue realization, efficient planning, and general decision-making processes. SMC recently added new services for the public through the GIS system, namely health monitoring using dynamic health heat maps, information on permission issuance for citizens, and details on building usage certificate (BUC) issued. In the future, SMC plans to expand its GIS services to integrate water supply connections with property map data and to map and track container pickups for a solid waste management system.<sup>74</sup>

<sup>72</sup> Source(s): [http://smartcities.gov.in/upload/uploadfiles/files/Compendium\\_of\\_PPP\\_CasesMoUDs.pdf](http://smartcities.gov.in/upload/uploadfiles/files/Compendium_of_PPP_CasesMoUDs.pdf) accessed 24 January 2019

<sup>73</sup> Photo Credit: Rahul Bhadane ([https://commons.wikimedia.org/wiki/File:Aerial\\_view\\_of\\_Surat,\\_Adajan\\_Side.jpg](https://commons.wikimedia.org/wiki/File:Aerial_view_of_Surat,_Adajan_Side.jpg)), <https://creativecommons.org/licenses/by-sa/4.0/legalcode>

<sup>74</sup> Case source(s): <https://www.ceinsys.com/success-stories/government-success-story/technology-advancement-municipal-gis/> Accessed on May 20, 2019.

[https://darpg.gov.in/sites/default/files/SMC%20GIS%20Project%20Implementation%20%281%29-min\\_0.pdf](https://darpg.gov.in/sites/default/files/SMC%20GIS%20Project%20Implementation%20%281%29-min_0.pdf) Accessed on May 20, 2019.

### 36. Smart Poles and Streetlights, Bhopal, Madhya Pradesh, India



Photo Credit<sup>75</sup>

<sup>75</sup> Photo in the public domain published by Nitinwork [https://commons.wikimedia.org/wiki/File:Bhopal\\_road.JPG](https://commons.wikimedia.org/wiki/File:Bhopal_road.JPG)

<sup>76</sup> Case source(s): [https://smartnet.niua.org/sites/default/files/resources/3\\_0.pdf](https://smartnet.niua.org/sites/default/files/resources/3_0.pdf) Accessed on May 17, 2019.

<https://telecom.economictimes.indiatimes.com/news/ericsson-bharti-infratel-bag-smart-city-deal-for-bhopal-city-to-deploy-400-smart-poles-with-wifi-service/58161194> Accessed on May 17, 2019.

[https://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/SiteAssets/Pages/Events/2018/CoESmartcityoct2018/IOT\\_SmartCity/BSCDCL%201-Nov-18.pdf](https://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/SiteAssets/Pages/Events/2018/CoESmartcityoct2018/IOT_SmartCity/BSCDCL%201-Nov-18.pdf) Accessed on May 17, 2019.

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<https://smartbhopal.city/smart-pole-and-intelligent-street-light-project> Accessed on May 17, 2019.

[http://smartcities.gov.in/upload/tender/582d4607ab71fbhopalSmartCity\\_Part1.pdf](http://smartcities.gov.in/upload/tender/582d4607ab71fbhopalSmartCity_Part1.pdf) Accessed on August 12, 2019.

<http://www.districtenergyinitiative.org/sites/default/files/Bhopal%20Rapid%20Assessment%20Report%20Version%201.0.pdf> Accessed on August 12, 2019.

#### Background

Bhopal, the capital city of Madhya Pradesh with a population of 2.4 million, is the economic center of the state and one of the greenest cities in India. As it embraces a transition into a more global city, it is currently pursuing a number of smart city projects under India's "Smart Cities Mission." Two such projects, namely smart poles and intelligent streetlights, were bundled into one PPP project.

#### Project Structure

In 2017, the Bhopal Smart City Development Corp. Ltd. (BSCDCL) awarded the project to Swedish telecom gear maker Ericsson and telecom tower company Bharti Infratel. The project cost was estimated at INR 6.9 billion (USD 98 million), including INR 3.9 billion (USD 55 million) in capital expenditures and INR 3 billion (USD 43 million) in operational expenditures for 15 years under a DFBOOT (Design-Finance-Build-Own-Operate-Transfer) model. The project requires no investment from the City.

The two components of the PPP were:

- Smart poles: Installation of 400 smart poles across the City, which will work as, among others, energy-efficient and remotely controllable LED streetlights, surveillance cameras, environmental sensors, Wi-Fi hotspots services, and electric vehicle charging points.
- Intelligent Street Lights: Installation of 20,000 LED streetlights to replace the conventional sodium lamps and mercury lamps. The new lights offer features such as remote operation and control of the streetlight system, SMS reporting in the event of failures, and power theft control detection.

The Intelligent Traffic Management System hub in the Smart City's office will track these smart poles and streetlights, as well as traffic cameras. The Smart Pole Command Control Center was inaugurated on 8 May 2018.

Funding will be derived from the energy savings realized (a minimum of 35 percent guaranteed savings is required), advertisement on the poles, and the 180-km of fiber optic cable laid beneath these poles. The revenue is to be shared between the BSCDCL and the private operator.

#### Lessons Learned

In June 2018, a report stated that there was no coordination among BSCDCL, Bhopal Municipal Corporation (BMC) and traffic police on the smart poles installation. As a result, there are too many poles installed in the City. BMC installed poles for the gantry, while traffic police installed poles for signals and CCTV. The installation of these poles indirectly affected the traffic as the reflection of lights on these poles has diverted people's attention from driving. This highlights the importance of ensuring good coordination among municipality authorities when it comes to PPP delivery, in order to maximize the effectiveness of service delivery to the citizenry.

Nonetheless, the project is innovatively structured as it bundled many smart services into one contract, thereby increasing value for money for BMC. In December 2018, BSCDCL was planning to equip 100 smart poles with sensors to track and kill mosquitoes and collect information about mosquito breed, due to the rise in vector-borne ailments like zika, dengue, and Chikungunya.<sup>76</sup>

### 37. Bangalore One, Government of Karnataka, India



Photo Credit<sup>77</sup>

#### Background

Citizens of Bangalore were suffering from uncomfortable conditions when visiting government offices. Long waiting times, limited visit times and dates, no flexibility in payment methods, strict compliance of service provision with citizens' residential locations, and different services of one government department being provided at different office locations were among just a few of the obstacles that made the process of obtaining government services more convoluted than it needed to be.

To improve governance and service delivery, and in line with comparable initiatives around India, the Government of Karnataka decided to implement a PPP e-Governance project dubbed Bangalore One to provide information and government services using the concept of one-stop-shop facilities.

#### Project Structure

Following a competitive selection process, a consortium consisting of CMS Computers Ltd and Ram Informatics Ltd was selected as the implementing partner for the Bangalore One project. The consortium and the Directorate of Electronic Delivery of Citizen Services entered into a service level agreement to ensure the delivery of the project and the quality of the service standards. Following the signing of the agreement, the consortium developed an application software (single application interface for all services) and initially implemented it in 15 citizen service centers in different parts of Bangalore city. The public partner provided furnished centers, information technology hardware, and a data center. At the same time, the participating government departments in the city made their essential data available. The 2,000 square feet citizen service centers are uniformly designed citizen headquarters

with 15-20 non-government staff offering services from 8 am to 7 pm in two shifts (from 8:00 - 1:30 pm and 2:00 – 7:00 pm), 365 days each year, excluding national holidays, with installed hardware and networking equipment.

The government departments are not required to make nay upfront investment, but they are obliged to to pay service charges for services rendered on a transaction basis. The private partner and the Directorate receive a share of the transaction charges. The public partner retains the responsibility for ensuring the service provision to the citizens.

Axis Bank is the official financier for the project, using a one day float. The cash collected at the centers is picked up by the Bank at the end of each day (day 1); day 2 is the reconciliation/float period, and on day 3 the funds are transferred to the government departments and can be tracked online. It is not clear if the bank is a partner in this public-private partnership, but it is reported that through the one-day float it bears part of the operating expenses of the project.

The objective of Bangalore One is to offer all the central, state and local government services through these facilities so that citizens and businesses need only go to government offices for complex requests. Initially, the activities carried out in the service centers include: payment of water, electricity and telephone bills; payment of property taxes; filing of grievances; issuing khatha, birth/death certificates; issuing and renewing driver's licenses; booking railway and airline tickets; provision of application forms for new passports; and collecting of taxes. The project aims, inter alia, to increase official government offices' productivity by handling the most time-consuming and routine activities outside these premises.

<sup>77</sup> Victorgrigas ([https://commons.wikimedia.org/wiki/File:Bangalore\\_guy\\_on\\_phone\\_crossing\\_street\\_2\\_November\\_2011\\_-7-3.jpg](https://commons.wikimedia.org/wiki/File:Bangalore_guy_on_phone_crossing_street_2_November_2011_-7-3.jpg)), „Bangalore guy on phone crossing street 2 November 2011 -7-3“, <https://creativecommons.org/licenses/by-sa/3.0/legalcode>

E-governance access will also be possible through other channels beyond the citizen services center, including through Electronic Kiosks, mobile phones, and online. Citizens and business entities will have the option to pay for the services in cash, online, via card, or by cheque or demand drafts.

### Lessons Learned

The Bangalore One project was launched in April 2005 with 14 centers offering 13 services from 10 government departments and six private operators. As of March 2016, more than 100 centers were operational, with more than 400 counters per shift; more than 100 services from 24 government departments and 12 private companies, serving more than two million of citizens every month. The project was replicated in other cities in Karnataka and has expanded beyond the service centers. For instance, Bangalore One is now available on mini buses with built-in infrastructure to provide services in uncovered areas of the city; through mobile applications, and commercial complexes.

The project has also won several awards, such as the 2005-06 CSI-Nihilent e-Governance Award for the "Best in-service orientation" and CSI Nihilent Award 2012 as Best project for sustainability.

The project highlights that having a political will accompanied by a strong urgency to address a real need will have a positive impact on the sustainability of the project.<sup>78</sup>

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<sup>78</sup> Case source: <https://www.nisg.org/project/74>  
Accessed on May 28, 2019.

[https://www.aphrdi.ap.gov.in/documents/Trainings@APHRDI/2017/1\\_jan/Best%20Practices/kumudavalli.pdf](https://www.aphrdi.ap.gov.in/documents/Trainings@APHRDI/2017/1_jan/Best%20Practices/kumudavalli.pdf),  
Accessed August 5, 2019.

# Public Markets

## 38. Mandaluyong City Market, Manila, Philippines



Photo Credit<sup>79</sup>

### Background

Mandaluyong City's primary market in Metro Manila, Philippines, located along Kalentong Road, was destroyed by a fire in 1991. The government then allowed about 500 traders to set up stalls along sidewalks as a temporary measure. However, this led to both traffic congestion and sanitation problems. The City Government did not have sufficient public capital to build a new market nor the fiscal space to take on the additional debt that the construction of a new market would have required. Thus, the City decided to rebuild the market using a PPP, based on a newly adopted Build-Operate-Transfer (BOT) Law.

### Project Structure

Following a competitive tender of the project, the City Government awarded the contract to build the market to Macro Founders and Developers, Inc. (MFD). The project was structured as a 40-year concession to build, operate, and manage the market, after which the property would be handed back to the local government. A seven-story commercial center, named "The Marketplace" was designed to include a public market, street-front stores, a parking garage, commercial shops, department stores, a bowling alley, and a movie theatre.

The Asian Financing and Investment Corporation (AFIC), a subsidiary of the Asian Development Bank, provided a 10-year concessional loan to finance the project. The project was funded with the following mix: 25 percent private equity, 25 percent advances from shops, and 50 percent debt. The

concessionaire assumed most of the project's risks (e.g., technical, financial).

The City is responsible for operating the public market and collecting fees from stalls. MFD is accountable for maintenance and security for the public market and operating and maintaining the commercial complex. The City retained the ownership of the land used in the project, but did not require lease payments from MFD for its use. MFD collects revenues from the commercial complex to recoup its capital and operating costs. At the end of the 40-year contract, MFD will transfer the operation and maintenance of the commercial complex to the City.

The City also receives revenues from business and entertainment taxes assessed on activities at the market. These taxes generate additional income for the City of PHP 10 to 20 million (USD 191,000 to 382,000) per year. Also, as part of the construction of the public market, MFD constructed a box culvert from the main road to the San Juan River. This box culvert has helped address the frequent flooding in the area.

### Lessons Learned

Not only has the construction of a new public market and shopping mall benefited the community as a whole by providing around 600 long-term jobs, but it has also helped to improve the living standards of the people due to the construction of the box culvert that addressed the frequent flooding problem. Due to its success, this project is being replicated widely in the Philippines.<sup>80</sup>

<sup>79</sup> Photo published in the public domain by Judgefloro [https://commons.wikimedia.org/wiki/File:04009jfGeneral\\_Kalentong\\_Street\\_MarketPlace\\_Landmarks\\_Mandaluyong\\_Cityfvf\\_19.jpg](https://commons.wikimedia.org/wiki/File:04009jfGeneral_Kalentong_Street_MarketPlace_Landmarks_Mandaluyong_Cityfvf_19.jpg)

<sup>80</sup> Source(s) accessed on January 25, 2019

<https://tcdc2.undp.org/GSSDAcademy/SIE/Docs/Vol15/6Philippines.pdf>

[https://www.unece.org/fileadmin/DAM/ceci/documents/2014/PPP\\_Materclass/Day1\\_Art\\_Smith.pdf](https://www.unece.org/fileadmin/DAM/ceci/documents/2014/PPP_Materclass/Day1_Art_Smith.pdf)

[https://www.unescap.org/ttdw/ppp/ppp\\_primer/96\\_the\\_mandaluyong\\_market\\_philippines.html](https://www.unescap.org/ttdw/ppp/ppp_primer/96_the_mandaluyong_market_philippines.html)

<https://ppp.worldbank.org/public-private-partnership/library/summary-mandaluyong-city-market-rebuilding-bot-basis-undp>

[https://www.esc-pau.fr/ppp/documents/featured\\_projects/philippines\\_mandaluyong\\_city.pdf](https://www.esc-pau.fr/ppp/documents/featured_projects/philippines_mandaluyong_city.pdf)

The case is a good example of innovative financing for municipal PPP project. It obtained a mixture of financing from concessional loan from a subsidiary of the ADB, private equity, advances from shop-owners, and commercial borrowing. It

is also innovative in terms of generating revenue as it generates revenue from various resources, including from its commercial shops, parking lots, bowling alley, and a movie theatre which are then used to subsidize the low-cost vendor facilities.

### 39. Pike Place Market, Seattle, United States



Photo Credit<sup>81</sup>

#### Background

In the late 1960's, the citizen head of urban renewal plans aimed to modernize the Pike Place Market in Seattle. To this end, a group called Friends of the Market initiated a vote on the plan in 1971 to save the market, leading to the establishment of the Pike Place Market Preservation and Development Authority (PDA) in 1973.

#### Project Structure

PDA is a non-profit, public company chartered by Seattle City in 1973 with a mandate to manage 80 percent of the properties in the nine-acre Market Historic District. PDA also acts as an oversight body responsible for the long-term development of the market, with the aim of ensuring that the market would remain a place that welcomed everyone, residents and visitors, regardless of their background. The PDA council members are appointed by the Mayor, while a separate non-profit, Pike Place Market Foundation, was established to provide funding and community organizing, coordination and support. While PDA acts as a public steward responsible for all operational funds, the Market Foundation is responsible for devising fundraising strategies and actually fundraising for the project.

The project includes a nine-acre complex comprising a public market, more than 500 units of rental housing - mostly for low- and moderate-income residents, luxury condos, a boutique hotel, a bed-and-breakfast, a children's day-care and

preschool, a community health clinic, a food bank, and a neighborhood senior center.

The project derives its core revenues from the tenants of the market through rents, utility fees, and other property management activities including parking fees (approximately 60 percent of the total revenue), as well as other investments and bonds (around 40 percent of the total revenue). The market's operation and maintenance costs (including security, insurance, property management, and marketing) are sourced from the revenues obtained from the rental income. Any revenue surplus and revenues coming from bonds are utilized for new developments – making the project sustainable in the long-run.

#### Lessons Learned

The project serves not only as a small business incubator, but also helps connect local farmers to consumers, provides social services and affordable housing, preserves historic buildings, is a popular tourist destination, and enhances community cohesion and economic development in general. The project received the Rudy Bruner gold medal for Urban Excellence in 1987.

The project faced challenges in its initial phase, including with generating support from the community for a 40-year development scheme, securing funding, and managing the incremental renovation and rehabilitation of properties. The project was considered a success due to its long-

<sup>81</sup> Mtaylor444 ([https://commons.wikimedia.org/wiki/File:Pike\\_Place\\_Market\\_Entrance.JPG](https://commons.wikimedia.org/wiki/File:Pike_Place_Market_Entrance.JPG)), „Pike Place Market Entrance“, <https://creativecommons.org/licenses/by-sa/3.0/legalcode>



term property ownership structure, clear vision and goals, advanced financing mechanisms, and innovations in community involvement.

Recently, the project has been expanded to include a public plaza connecting the market with the central

waterfront, a food hall with four new producer-based businesses, 40-units of very low-income senior housing, a community center, and 300 additional parking spaces. The expansion was fully financed by issuing USD 26 million in bonds, a portion of which was used to pay down existing debt.<sup>82</sup>

#### 40. Challenging Case: Bocaue Public Market, Bocaue, Bulacan, Philippines



Photo Credit<sup>83</sup>

##### Background

As part of its broader development plan, the municipality of Bocaue, Bulacan decided to pursue the delivery of a public market through a PPP.

##### Project Structure

The project consisted of two parts: (1) the public market, with an investment cost of around USD 1.2 million; and (2) a commercial center, with an investment cost of around USD 3.8 million. It was intended that the revenue generated from the commercial center would be sufficient to subsidize the low-cost tenants of the public market. The municipal government received assistance from the USAID-funded Build-Operate-Transfer (BOT) III Project for the preparation of tender documents, conducting the bidding, and finalizing the contract. After a competitive bidding process, the municipality entered into a build-transfer contract with Meditech on 24 March 1998 to complete the first part of the project, the public market.

Construction of the public market began in November 1998 and was completed in July 1999. However, local vendors refused to occupy the new

market building, citing the following objections:

- i. High rental fees;
- ii. Small stall spaces, particularly in the wet market;
- iii. Lack of ventilation inside the building resulting in high temperatures; and
- iv. Suspicions that the building was structurally unsafe.

Consequently, the municipality and Meditech were dissuaded from pursuing the project's second phase, construction of the commercial center, in large part due to the numerous problems encountered in the public market component.

##### Lessons Learned

This case highlights the importance of involving and assuring stakeholder buy-in as early as possible in the project development process, as this is essential for the sustainability of the project. In this case, neither the municipality nor Meditech engaged with the prospective tenants during the project development process, which contributed to a number of misconceptions and objections by the prospective tenants after the market was completed.<sup>84</sup>

<sup>82</sup> Case source(s): <https://cidco-smartcity.niua.org/the-economy-of-public-markets-case-study-of-pike-place-market-seattle/> Accessed on June 24, 2019

<http://www.rudybruneraward.org/blog/building-equity-pike-place-market/> Accessed on June 24, 2019

<https://www.brookings.edu/blog/metropolitan-revolution/2016/03/29/qa-with-john-turnbull-what-pike-place-teaches-us-about-place-governance/> Accessed on June 24, 2019

<sup>83</sup> Ramon FVelasquez ([https://commons.wikimedia.org/wiki/File:Bocaue\\_Public\\_Market\\_in\\_Bulacan.jpg](https://commons.wikimedia.org/wiki/File:Bocaue_Public_Market_in_Bulacan.jpg)), „Bocaue Public Market in Bulacan“, <https://creativecommons.org/licenses/by-sa/3.0/legalcode>

<sup>84</sup> Case source: <https://think-asia.org/bitstream/handle/11540/6806/philippines-ppp-igus.pdf?sequence=1> accessed on June 24, 2019.

# Food Infrastructure

## 41. Slaughterhouse Redevelopment, Cagayan de Oro City, Philippines



Photo Credit<sup>85</sup>

### Background

The livestock industry, particularly poultry, is at the heart of the economy of Cagayan de Oro City. In 1995, livestock production reached 158,000 heads, of which 135,000 were chickens. The only slaughterhouse in the city, however, was inadequate to cater to the needs of the growing industry and demand from the population, as it also served neighboring towns. In 2000, the local government of Cagayan de Oro identified the need to upgrade and modernize the slaughterhouse. It then conducted a pre-feasibility study in 2003 to prepare the project as a PPP.

### Project Structure

The project was awarded to Mega Integrated Agro-Livestock Farm Corporation (MEGA FARM) in 2004, through a competitive bidding process, in the form of a 25-year Build-Operate-Transfer contract with a total investment value of USD 3 million. The project entailed converting the old slaughterhouse into a 2.45-hectare modern Abattoir Complex that would contain, inter alia, a slaughterhouse for small and large animals as well as supporting facilities, such as water treatment, a livestock auction market, a deep well water source, and meat delivery vans.

Under the PPP agreement, the private operator pays the city a monthly facility usage fee in exchange for the right to operate the expanded facility. Revenue to pay this fee and recover the private partner's investment is derived from the slaughter and delivery fees it collects from users of the facility. These fees can be increased by not more than 10 percent, provided that they

are: (i) justified by increases in the actual cost of operations, and; (ii) no higher than the average fees charged by three comparable private slaughterhouses in Visayas and Mindanao. The government also exempted the private operator from real property and business taxes, but not from regulatory fees.

### Lessons Learned

Although agriculture PPP projects are often considered unattractive and un-bankable, this project was able to appeal to private investors due in part to the following.

- The prime location of the facility, as the abattoir is located near to both livestock sources and the market, which helps limit transportation costs; and
- The incentives provided by the local government, namely the property and business tax exemptions.

The project was selected to be featured on the Philippines' PPP website as one of the country's successful PPP projects.<sup>86</sup>

<sup>85</sup> Chicco111 ([https://commons.wikimedia.org/wiki/File:CAG\\_Skyline\\_2017.jpg](https://commons.wikimedia.org/wiki/File:CAG_Skyline_2017.jpg)), <https://creativecommons.org/licenses/by-sa/4.0/legalcode>

<sup>86</sup> Case source(s): [https://ppp.gov.ph/press\\_releases/redevelopment-of-the-cdo-city-slaughterhouse-project/](https://ppp.gov.ph/press_releases/redevelopment-of-the-cdo-city-slaughterhouse-project/) Accessed on May 27, 2019.

[https://www.ruaf.org/sites/default/files/Cagayan\\_1\\_1.PDF](https://www.ruaf.org/sites/default/files/Cagayan_1_1.PDF) Accessed on May 27, 2019.

<https://www.adb.org/sites/default/files/publication/213606/philippines-ppp-lgus.pdf> Accessed on May 27, 2019.

## 42. Grain Silos Project in Punjab, India



Photo Credit<sup>87</sup>

<sup>87</sup> Thagadooran (<https://commons.wikimedia.org/wiki/File:Dhaniyangal.jpg>), „Dhaniyangal“, <https://creativecommons.org/licenses/by-sa/3.0/legalcode>

<sup>88</sup> Case source(s): <https://openknowledge.worldbank.org/bitstream/handle/10986/21060/932560WP0B0x380ds0in0small0projects.pdf?sequence=1> Accessed on June 2, 2019.

<https://library.pppknowledgelab.org/both/documents/1979> Accessed on June 2, 2019.

<https://economictimes.indiatimes.com/news/economy/agriculture/government-expects-to-create-15-lakh-tonnes-silo-capacity-under-ppp-by-2019/articleshow/65907877.cms?from=mdr> Accessed on June 2, 2019.

<http://www.fnbnews.com/Top-News/Foods-processing-co-LT-Foods-sets-up-silo-for-wheat-storage-in-Punjab> Accessed on June 2, 2019.

<https://www.thehindubusinessline.com/economy/agri-business/silo-storage-of-foodgrain-gathers-momentum/article24873035.ece> Accessed on June 2, 2019.

<http://documents.worldbank.org/curated/en/388561506353678403/pdf/119986-WP-PUBLIC-60p-PIQ-GrainStoragePPPsONLINE.pdf> Accessed on August 18, 2019.

### Background

A country known for its agriculture production, much of India's food grain is nonetheless stored in old warehouses. These outdated facilities use open-air cover and plinth (CAP) facilities, which are prone to damage and vulnerable to changing weather conditions. As a result, some USD 14 billion in food grain production is damaged annually, according to the Food and Agriculture Organization (FAO).

The storage problem is particularly acute in Punjab, known as the “breadbasket” of India. Punjab produces around 22 percent of India's total food production, yet it has a shortage in storage capacity of seven million tons. To help address this problem, the state government decided to pursue a pilot PPP with help from IFC as transaction advisor. The PPP aimed to procure a private firm to build, own, and operate 50,000 metric (MT) tons of storage using silos, vertical sheet-metal structures equipped with automated operation, and real-time monitoring for grain temperature and infestation. The silos were expected to facilitate bulk preservation and ensure the quality of stored grains for three years to avoid waste.

### Project Structure

In 2010, the Punjab State Grain Procurement Corporation (PUNGRAIN), acting as the contracting agency, awarded a 30-year concession to LT Foods Limited, a Delhi-based food processing company with 40 years of experience in processing, storing, and marketing Basmati rice globally. The private partner was selected through a competitive bidding process based on a technical evaluation and lowest level of fixed tariff.

Under the contract, LT Foods is responsible for financing, designing, constructing, operating, and maintaining four silos of 12,500 MT each (for a total capacity of 50,000 MT) in Amritsar, Punjab. These silos are to be used for storage of grain procured by

the government for its food subsidy schemes and under its support-price operations. LT Foods was obliged to purchase the necessary land, build the facility, and prepare the silos for operation before the concession agreement became effective. At the end of the concession, the facility will remain with the private operator for private use. The total project cost was estimated at about USD 7 million. The project received debt financing from YES BANK and Rabobank.

PUNGRAIN maintains responsibility for: (i) procuring and delivering the grain in bags to the concessionaire for storage in the silos; (ii) making payments for guaranteed fixed storage service charges and variable service charges; (iii) setting standards and specifications; and (iv) monitoring and verifying the private partner's performance. Although PUNGRAIN retains the payment and demand risks, the financing, construction, commissioning, operating, and performance risks are transferred to the concessionaire. The fixed payments are meant to reduce the operating risks of the concessionaire.

The initial tariff for a fixed charge for the agreed tonnage (irrespective of the capacity used) was around INR 1,400/MT (USD 20/MT), and the variable reception and dispatch service costs were 7.5 percent of the fixed service charge. However, these rates were later deemed too high, resulting in the fixed fee being reduced to INR 1,100/MT (USD 16/MT) after a renegotiation process. It has been estimated that the government will save approximately USD 6 million over the concession period as a result of the renegotiated fee.

### Lessons Learned

The 50,000 MT silos, which opened in April 2011, received a Gold recognition award from IFC, based on the role the project played in helping to reduce problems related to the conventional CAP

storage model and system of commission agents. The “Amritsar model of silos” project has become the role model for the Food Corporation of India (FCI) and other state governments in erecting silos across India.

There were at least three factors that helped to make this project successful, namely:

- i. The transparent and competitive bidding process, which led to the selection of a qualified, reliable partner on a least-cost basis to the contracting agency;
- ii. Clear delineation of the roles and risks allocated between PUNGRAIN and the private partner, with objective standards and specifications and monitoring mechanisms;
- iii. Strong commitment to the project on the part of PUNGRAIN, as evidenced by its willingness to assume the payment and demand risk; and
- iv. The parties' willingness and ability to renegotiate the fixed storage fee to ensure the project's viability over the long term.<sup>88</sup>

<sup>88</sup> Case source(s): <https://openknowledge.worldbank.org/bitstream/handle/10986/21060/932560WP0Box380ds0in0small0projects.pdf?sequence=1> Accessed on June 2, 2019.

<https://library.pppknowledge.org/both/documents/1979> Accessed on June 2, 2019.

<https://economictimes.indiatimes.com/news/economy/agriculture/government-expects-to-create-15-lakh-tonnes-silo-capacity-under-ppp-by-2019/articleshow/65907877.cms?from=mdr> Accessed on June 2, 2019.

<http://www.fnbnews.com/Top-News/Foods-processing-co-LT-Foods-sets-up-silo-for-wheat-storage-in-Punjab> Accessed on June 2, 2019.

<https://www.thehindubusinessline.com/economy/agri-business/silo-storage-of-foodgrain-gathers-momentum/article24873035.ece> Accessed on June 2, 2019.

<http://documents.worldbank.org/curated/en/388561506353678403/pdf/119986-WP-PUBLIC-60p-PIQ-GrainStoragePPPsONLINE.pdf> Accessed on August 18, 2019.

<sup>89</sup> By WorldIslandInfo. com ([https://commons.wikimedia.org/wiki/File:Egrets\\_and\\_hut,\\_Bugala\\_Island.jpg](https://commons.wikimedia.org/wiki/File:Egrets_and_hut,_Bugala_Island.jpg)), „Egrets and hut, Bugala Island“, <https://creativecommons.org/licenses/by/3.0/legalcode>

### 43. Kalangala Integrated Infrastructure Programme, Bugala Island, Uganda



Photo Credit<sup>89</sup>

#### Background

Bugala Island, with a population of 60,000 located in Lake Victoria, Kalangala District, was one of Uganda's most deprived districts. Two-thirds of the economically active population of the Island were engaged in fisheries and agriculture. However, they lacked adequate infrastructure along the agricultural supply chain, such as safe, regular access to the mainland, reliable electricity and clean water, which are vital for growing and promoting agriculture and fishing activities. The complexity of developing multi-sector, small-scale island infrastructure had deterred the private sector from investing in the Island. In 2005, Bugala Island residents sought InfraCo Africa's help to restore and expand their infrastructure. In response, InfraCo Africa partnered with the Ugandan government to establish a special purpose vehicle (SPV) called Kalangala Infrastructure Services (KIS) to oversee the provision of four infrastructure services, namely ferry boat connection, electricity, clean water, and roads, on Bugala Island.

#### Project Structure

KIS is a private, mixed-utility company created to own, finance, construct, operate and maintain four infrastructure projects, namely:

- Two roll-on/roll-off commercial ferries, each with a capacity of 18 vehicles and 109 seated passengers;
- A 1.6 MW hybrid solar and thermal power plant;
- A series of the solar-powered pump-based water supply systems to replace the existing one; and
- Upgrading the 66 km main island road on Bugala Island from an unpaved dirt road to a Class B gravel road.

The Government of Uganda offered political risk protection in the form of a sovereign guarantee under the SPV agreement. In the event of an adverse political event, the government will purchase all components of the project with a termination amount sufficient to repay all equity and outstanding debt held by KIS.

The USD 44 million in capital costs are being financed through a combination of equity, debt, and grants. Equity capital was provided by the Industrial Development Corporation of South Africa, Uganda

Development Corporation, InfraCo Africa, and Emerging Infrastructure Fund. Commercial debt is provided by Nedbank Capital Ltd., which benefited from a credit guarantee issued by USAID and GuarantCo Ltd. The grants were provided by the Private Infrastructure Development Group (PIDG) and the Netherlands' entrepreneurial development bank, FMO.

The operational costs will be recovered through:

- KIS' revenues deriving from user fees collected for ferry transportation, electricity, and water services;
- A consumption-based subsidy (for water and electricity) offered by the Global Partnership on Output-Based Aid (GPOBA) (now known as the Global Partnership for Results-Based Approaches (GPRBA)), to be disbursed during the first four years of operations; and
- A shadow toll (subsidy) for road usage.

### Lessons Learned

KIS began in 2005, but the project only began to show progress in 2013, due to the limited funds available early on and the lengthy bureaucratic processes for obtaining the necessary legal approvals from various government agencies. Once the four components of the project became fully operational, Bugala Island began to thrive and has contributed to making Kalangala one

of Uganda's wealthiest region. As a result of the improved connectivity, the fishing community now has improved beach management units, speedier access to fish processing facilities and refrigeration, access to more information and markets, and access to clean water for local fish processing.

In addition, Bidco Oil Palm Ltd. acquired 10,000 hectares on Bugala Island, of which 3,500 hectares were provided for 1,700 small-hold local farmers for oil palm plantation and related mill facilities. The KIS also creates jobs for Bugala Island residents, ensuring a transfer of knowledge and technology. Currently, negotiations are underway between the KIS and the Government of Uganda to scale-up the solar power, refurbish and operate the Kalangala Town Council electrical grid and further upgrade of the main road.

The project was made possible due to bundling four infrastructure projects together, which allowed for multiple revenue streams, diversification, and economies of scale, while increasing the investment size to an amount attractive to both equity investors and commercial lenders. The multiple revenue streams help mitigate unpredictability in demand risk and may generate sufficient revenue to support the construction and maintenance of other infrastructure projects.<sup>90</sup>

<sup>90</sup> Case source(s):  
<http://www.fao.org/3/i0465e/i0465e00.pdf>  
 Accessed on June 3, 2019.

<http://www.infracoafrica.com/project/kalangala-infrastructure-services/>  
 Accessed on June 3, 2019.

<https://www.pidg.org/project/kalangala-infrastructure-services/>  
 Accessed on June 3, 2019.

<https://www.theeastafrican.co.ke/business/USD50m-Kalangala-infrastructure-project-takes-off-/2560-1920710-ed5mejz/index.html> Accessed on June 3, 2019.

<https://eleqtra.com/projects/kalangala-infrastructure/> Accessed on June 3, 2019.

# Public Parking

## 44. Challenging Case: Automated Multi-level Car Park, Connaught Place, New Delhi, India



Photo Credit<sup>91</sup>

### Background

Connaught Place, located in the heart of New Delhi, India, is one of the busiest markets in New Delhi. The increasing number of vehicles visiting Connaught Place, however, was straining the existing road due to unauthorized parking and causing congestion. To ease the congestion, the New Delhi Municipal Council (NDMC) decided to construct automated multi-level parking lots in Connaught Place using a PPP.

### Project Structure

NDMC awarded the project to DLF, one of India's real estate giants. DLF undertook to design, finance, construct, and operate the automated multi-level car parks, called "CAPITOL POINT," under a 30-year concession, at the end of which the car parks would be transferred to NDMC. The "CAPITOL POINT" would be an 11 floor, state-of-the-art automated car parking system, equipped with technology like car lifts, pallets, and computerized control systems that operate 24/7 and with a capacity of 1,408 vehicles. The building would also have commercial units and office space on its first two floors. The project cost was estimated at INR 1.2 billion (USD 17.1 million).

NDMC assumed responsibility for site-related risks, including acquiring permission for the installation of enabling infrastructure, providing space, and undertaking civil repair works and resurfacing works, if required. The private concessionaire accepted most other risks, including financing, demand, operation, and maintenance risks.

DLF would pay NDMC about INR 2.2 million (USD 31,325) per year as a lease payment for the space provided. DLF would derive its revenue from the car park user fees collected, as set by the municipality (about INR 10 (USD 0.14) per hour, per car), and rental fees for the commercial units and office spaces.

### Lessons Learned

The multi-level car park was inaugurated in June 2012. As of 2017, the parking lots were significantly under-utilized, with less than 15-20 percent of the space being used. This seems largely due to customers preferring to park on the roads. Reports indicated that the facility was not very user-friendly, noting that it took more than 20 minutes to get to the parking lot and retrieve a car.

News reports indicate that DLF was let to decide on its own how to attempt to recover the cost. To this end, NDMC suggested using the traffic police to enforce regulations against illegal parking on the streets, to direct more people to use the parking lot.

The case shows that being "user-friendly" can be a critical aspect of any public facility. This may take shape in the design of the asset, accessibility of the location, affordability of fees, and cost-benefits as compared to other options. In this case, a key problem was the time it took to retrieve a car, which inconvenienced customers as compared to parking on the street.

<sup>91</sup> Klaus Nahr from Germany ([https://commons.wikimedia.org/wiki/File:0285\\_New\\_Delhi\\_-\\_Connaught\\_Place\\_2006-02-10\\_15-20-35\\_\(10542560745\).jpg](https://commons.wikimedia.org/wiki/File:0285_New_Delhi_-_Connaught_Place_2006-02-10_15-20-35_(10542560745).jpg)), „0285 New Delhi - Connaught Place 2006-02-10 15-20-35 (10542560745)“

<https://creativecommons.org/licenses/by-sa/2.0/legalcode>

In addition, this case shows how the public authority cannot expect to shift all of the operational risk to the private partner under a PPP, as it is ultimately the public authority's responsibility to ensure that the public receives the necessary service. Where obstacles to effective

implementation arise, the public partner should be actively involved and provide needed support to the private partner to ensure the project's success. In this case, that may have meant mobilizing traffic police to curtail illegal street parking, instead of deferring entirely to the private operator.<sup>92</sup>

#### 45. Underground Parking and Commercial Services Center, San Borja, Peru

<sup>92</sup> Case source(s): <https://www.dnaindia.com/india/report-delhi-s-hi-tech-ghost-parking-lots-2294616>, Accessed on May 19, 2019.

<http://www.parking-net.com/parking-news/dlf-ndmc-launch-capitol-point-multi-level-car-park-at-c-p>, Accessed on May 19, 2019.

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<https://www.indiatoday.in/india/north/story/connaught-place-delhi-first-automatic-multi-level-parking-compl-ex-105505-2012-06-13>, Accessed on May 19, 2019.

<https://www.hindustantimes.com/delhi-news/at-rs-10-per-hour-connaught-place-gets-its-first-multi-level-parking-lot/story-sXqIMhPjCOyWizvhKgTh6M.html>, Accessed on May 19, 2019.

<http://smartcities.gov.in/upload/tender/58a1a9148b320RFP-SMART-PARKING.pdf> Accessed on August 13, 2019.

<sup>93</sup> Photo in the public domain published by Roger Haro

[https://en.wikipedia.org/wiki/File:San\\_Borja\\_Sur\\_1.JPG](https://en.wikipedia.org/wiki/File:San_Borja_Sur_1.JPG)

<sup>93</sup> Source(s) accessed on January 15, 2019 <http://www.munisanborja.gob.pe/index.php/component/search/?searchword=ecopark&%20ordering=&searchphrase=all>,



Photo Credit<sup>93</sup>

##### Background

The District of San Borja, a vibrant center for commercial activity in Lima, Peru, suffered a high deficit of public parking. To help alleviate this problem, the District elected to pursue a PPP to deliver much-needed underground parking.

##### Project Structure

The project emerged from an unsolicited proposal that would be self-financed by the private partner, meaning the project was expected to generate its own revenue sufficient to recover costs and provide a suitable rate of return without any public financing or guarantees. The proposed contract covers a period of 32 years and the project has an estimated investment value of USD 13,479,600.

Under the project agreement, the private partner would undertake to design, finance, build, operate, maintain, and transfer a facility comprising 14,320 square meters of underground space that would function as a three-story parking and service center. The space is located below a public park and the completed facility would include 353 parking spaces (9160 m<sup>3</sup>) and commercial enterprises such as banks and pharmacies (5180 m<sup>3</sup>). It is estimated that 2800 vehicles would use the parking center on a daily basis. It is also

estimated that the construction phase will create 600 to 800 jobs and that, thereafter, the project operations will produce about 40 permanent jobs.

The proposed contract would entitle the municipality to an 8 percent share of the gross income, before sales tax, from the parking fees and rental income from commercial space. The private party would have the exclusive right to set and negotiate prices on both the parking and commercial rental operations.

##### Lessons Learned

Two concession agreements concerning the construction of the parking and service center and concerning the usufruct and surface rights were approved by the municipal parliament for signature on 18 December 2018, but the contract signing is yet to be confirmed.<sup>94</sup> Nonetheless, this project highlights the possibility of optimizing limited space in dense, urban areas by considering underground development projects.

## 46. Parking Area under Rivera Navarrete Avenue in San Isidro, Peru



Photo Credit<sup>95</sup>

### Background

San Isidro is Peru's financial center and has an estimated deficit of 10,600 parking spaces, which led to widespread illegal parking on streets that contributed to high levels of congestion. Accordingly, the municipality was willing to consider an unsolicited proposal from a private developer that planned to build an underground parking facility beneath a major thoroughfare.

### Project Structure

The unsolicited proposal was structured as a 30-year concession for the design, financing, construction, operation, and maintenance of a three-story underground parking area that could accommodate 822 vehicles. The facility would be built along four blocks of Rivera Navarrete Avenue,

the main corridor of the San Isidro area, and had an investment value of approximately USD 25 million. The project company would assume all of the technical and financial risks and recoup its investment from parking fees collected over the concession period.

The project was planned with four main access points, two of which were specially prepared to be accessible by people with disabilities. In addition, the parking facility would include ATMs, bicycle docks, carbon dioxide detectors, a guided system to find available spots, automatic entrance and exit gates, and security cameras. In parallel, the main avenue was renovated with eight-meter wide sidewalks, state-of-the-art street lighting, and additional urban furnishings, such as benches and traffic signals.

### Lessons Learned

The project was inaugurated in September 2016 and the parking tariff is charged by the minute, rather than by the hour. The municipality is entitled to receive 10 percent of the monthly gross revenue generated by the parking area.<sup>96</sup> The project is an example of a successful PPP that benefits both partners and, most notably, helps alleviate congestion in a densely populated city by developing space belowground.

## 47. Challenging Case: Queen Elizabeth II Medical Center Car Parking Project, Western Australia, Australia



Photo Credit<sup>97</sup>

### Background

In 2009, the Queen Elizabeth II Medical Centre Trust (the Trust) and the State of Western Australia (the State) began detailed planning to enhance the parking facilities at the Queen Elizabeth II

Medical Centre (the Site). The improvement aimed at existing and future users (patients, visitors, and staff) with good, efficient, and secure access to health services. The new car park would consolidate the parking infrastructure and so free up other parts of the Site for other important health-related projects and initiatives, including the New Children's Hospital Project (NCH).

### Project Structure

The Trust made land within the Site available to enable the State to enter into a PPP agreement with a private developer. Following a competitive and transparent tendering process, the project was awarded to Capella Parking Pty Ltd (Capella). The contract term was fixed at 26 years, and the estimated project cost totaled AUD 140 million (USD 100 million). Under the contract, Capella is accountable for designing, financing, constructing,

<sup>95</sup> Miguel Angel Chong ([https://commons.wikimedia.org/wiki/File:Rivera\\_Navarrete\\_Ave\\_Lima\\_PE.jpg](https://commons.wikimedia.org/wiki/File:Rivera_Navarrete_Ave_Lima_PE.jpg)), „Rivera Navarrete Ave Lima PE“, <https://creativecommons.org/licenses/by/3.0/legalcode>

<sup>96</sup> Source(s) <http://msi.gob.pe/portal/> accessed 15 January 2019.

<sup>97</sup> Ché Lydia Xyang ([https://commons.wikimedia.org/wiki/File:Queen\\_Elizabeth\\_II\\_Medical\\_Centre\\_helipad\\_-\\_panoramio.jpg](https://commons.wikimedia.org/wiki/File:Queen_Elizabeth_II_Medical_Centre_helipad_-_panoramio.jpg)), „Queen Elizabeth II Medical Centre helipad - panoramio“, cropped by AT, <https://creativecommons.org/licenses/by-sa/3.0/legalcode>



operating, and maintaining a new multi-deck car parking facility at the Site. In addition, Capella is responsible for operating and maintaining other car parking facilities at the Site over the contract term, including street-level parking spaces and the NCH car park. Capella is also responsible for constructing a child-care center on the roof of the multi-deck car park and three retail outlets along Hospital Avenue.

The project was financed by Capella through a mixture of debt and equity. It was ultimately delivered without any significant capital contribution by the State or the Trust. The State and the Trust are not entitled to share in any losses that may occur upon refinancing of the debt but are entitled to 50 percent of the benefit of any refinancing gains.

At the same time, the State assumed responsibility for financing and constructing the new NCH's car park and for ongoing maintenance at this parking site. Capella undertook responsibility for operating this car park and would be entitled to collect and retain all revenues generated from this car park.

Over the operating phase of the project, Capella derives its revenue from the receipt of staff and visitor parking charges and commercial rental income from the retail outlets. Capella bears the full car demand risk. Capella is also required to pay a license fee to the Trust of approximately AUD 2 million (USD 1.4 million) per annum, payable in quarterly installments.

<sup>98</sup> Source(s) accessed on January 25, 2019

<https://capellacapital.com.au/projects/qeii-medical-centre-car-parking-project/>

[http://www.treasury.wa.gov.au/uploadedFiles/Treasury/Infrastructure\\_Strategy/120105%20-%20QEII%20Car%20Park%20-%20Project%20Summary.pdf](http://www.treasury.wa.gov.au/uploadedFiles/Treasury/Infrastructure_Strategy/120105%20-%20QEII%20Car%20Park%20-%20Project%20Summary.pdf)

[https://publicsector.wa.gov.au/sites/default/files/documents/special\\_inquiry\\_into\\_government\\_programs\\_and\\_projects\\_volume\\_2.pdf](https://publicsector.wa.gov.au/sites/default/files/documents/special_inquiry_into_government_programs_and_projects_volume_2.pdf)

<sup>99</sup> User: (WT-shared Shoestring at wts wikivoyage ([https://commons.wikimedia.org/wiki/File:Downtown,\\_Thimphu,\\_Bhutan.JPG](https://commons.wikimedia.org/wiki/File:Downtown,_Thimphu,_Bhutan.JPG)), <https://creativecommons.org/licenses/by-sa/4.0/legalcode>

### Lessons Learned

Construction of the car park began in September 2011 and was completed in November 2013, eight months ahead of schedule. The completed facility increased the total number of available parking bays from 3,000 to over 5,000. However, due to a decision by the previous government to cap staff parking fees at a rate below that specified in the agreement with Capella, as well as delays in the opening of the NCH that negatively impacted Capella's revenues, the State has had to pay compensation to Capella totaling about AUD 15.89 million (US\$11.38 million) through the end of August 2017. In February 2018, a Special Inquiry was initiated to review and amend the contract with Capella concerning policy changes that may trigger compensation under the contract.<sup>98</sup>

PPP projects are prone to changes, especially during the implementation period given the typically long duration of the PPP agreement. If a problem is detected, it is best for the parties to proactively engage to address the issue immediately rather than deferring the decision, as any delay can prove expensive for one or both parties party (in this case, the public authority). The case also shows the importance of identifying and addressing potential future challenges in the PPP contract to the fullest extent possible, as that is the foundation of the partnership if and when problems arise.

## 48. Challenging Case: Multi-level Car Parks in Thimphu City, Bhutan



Photo Credit<sup>99</sup>

### Background

To help address traffic congestion in Thimphu City, the capital of the Kingdom of Bhutan, the Royal Government of Bhutan (RGoB), through Thimphu Thromde (City), planned the construction of both on- and off-street parking facilities in the city center, to be delivered through a PPP.

### Project Structure

With help from the IFC as the City's transaction advisor, the City executed a 22-year PPP concession contract with KCR Private Limited. KCR Private Limited is an SPV set up by the winning consortium following a competitive tender of the project. The SPV comprises CE Construction Private Limited (Nepal), KNG Private Limited (Bhutan), and Rinson Construction Private Limited (Bhutan).

Under the PPP agreement, KCR is responsible for designing, developing, financing, operating, and maintaining two multi-level car parks (MLCPs) located at either extremity of the city's main road. The two facilities are required to contain at least 550 parking spaces. Commercial facilities are allowed to occupy 20 percent of the total MLCP area. In addition, KCR is responsible for refurbishing, operating, and maintaining about 1,000 existing, off- and on-street public parking spaces in the city center.

KCR is responsible for financing the full cost of the project and will earn revenue to recoup its investment entirely from parking fees and commercial rental income. KCR further agreed to pay the City an annual concession fee of USD 230,000. Most risks especially finance, design, construction, and demand are transferred to KCR.

### Lessons Learned

The two MLCPs in Thimphu, which were expected to be completed by 5 November 2017 and 1 July 2018, respectively, were still under construction as of January 2019. Recent reports indicated that both MLCPs were expected to open in the first half of the calendar year 2019. KCR requested an extension of both the construction completion date and the concession period due to changes in the project design, an increase in the scope of work, and an unexpected need to relocate utility cables. These changes led to a rise in the project cost from Nu 450 million (USD 4 million) to almost Nu 800 million (USD 7 million). The extension request is still pending with the Bhutan Ministry of Finance.<sup>100</sup>

Keeping the construction cost-efficient and on-schedule under changing circumstances can be a significant challenge for a PPP project. Due diligence during the planning and project preparatory phases are vital to preventing cost overruns. At the same time, the contract should explicitly account for any changes to the project scope, design or works that increase the project cost and provide a clear framework for adapting to such a change, with due regard to the allocation of risk among the parties and the viability of the project.

<sup>100</sup> Source(s)  
[http://www.ifc.org/wps/wcm/connect/35283f80467153999a9abb9916182e35/PPP+Stories\\_Bhutan\\_Thimphu+Parking.pdf?MOD=AJPERES/](http://www.ifc.org/wps/wcm/connect/35283f80467153999a9abb9916182e35/PPP+Stories_Bhutan_Thimphu+Parking.pdf?MOD=AJPERES/)  
 accessed on January 26, 2019

<https://thebhanese.bt/thimphu-thromde-to-give-parking-space-with-one-hand-but-takes-with-another/>  
 accessed on January 26, 2019

<http://www.kuenselonline.com/multi-level-car-parking-to-be-completed-by-the-end-of-this-year/>  
 accessed 5 February 2019

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 accessed 10 February 2019

# Government and Judicial Facilities

## 49. Administrative Center, Tlajomulco Municipality, Jalisco, Mexico



Photo Credit<sup>101</sup>

### Background

The municipality of Tlajomulco of Zuñiga in Guadalajara, Mexico needed a way to relieve the problems stemming from the sprawl of its public offices, which were in a state of disrepair, as well as to adapt to population growth that was outpacing the capacity of the authorities to provide adequate administrative services. To this end, the municipality chose to pursue a PPP to deliver a new, central facility for the performance of its public administrative functions.

### Project Structure

The municipality solicited bids for a PPP under which the private partner would design, finance, build, operate, and transfer the new Tlajomulco Administrative Center (CAT). Four bidders participated in the national competitive tender and Operadora Audaz S.A. was selected as the winning bidder. A 30-year PPP agreement was signed on 24 February 2011 between the municipality of Tlajomulco and Desarrolladora Centro Administrativo Tlajomulco S.A.P.I. de C.V., the project company created for the delivery of the project.

The project risks were allocated as follows. The contracting authority would be responsible for risks related to permitting, land rights and acquisition, archeological findings, demand, furniture and equipment replacement, and inflation. The private party would assume the design, cost overrun,

construction, operation and maintenance, latent defects, and interest rate and financing risks. The municipality, as well as Desarrolladora Centro Administrativo, would share risks related to force majeure and change of law.

The project entailed the delivery of: (i) an administrative building with an area larger than 6,200 m<sup>2</sup> - sufficient to accommodate more than 630 public servants and with a capacity to serve more than 2,000 daily visitors – to include closed-circuit television, access controls, alarms, and automatization systems; (ii) a multiple-use gymnasium with a capacity for 700 sitting or 1500 standing visitors for cultural, sporting, social, and political events, to include a high fidelity sound system, air conditioning, and multiple-use courts; (iii) external facilities, such as soccer and skate courts, and a 390-space parking area; and (iv) a road project involving the renovation of 7 km of main roads, bike routes, a modern water and sanitation system, and installation of traffic lights around the new administrative center.

The agreement provided for an initial up-front investment of nearly MXN 250 million (USD 13 million) by the private partner. In return, the municipality agreed to make monthly payments to the private partner of MXN 4.4 million plus VAT (USD 230,000). This payment consists of a monthly payment for the investment in facility construction, a payment for the building management services

<sup>101</sup> Photo in the public domain published by Alejandro Hernández Osuna <https://www.flickr.com/photos/155674394@N06/45098016025/in/photostream/>

(to be provided effectively), and a payment for any variation in services. The monthly payments are limited to a maximum of 349 months and represent less than 5 percent of the municipality's revenues and approximately ten percent of its current expenditure, as allowed by law. To enhance its creditworthiness, the municipality incorporated a fideicomiso (trust account) and opened a contingent line of credit, guaranteed by federal funds, to back the monthly installment payments.

### Lessons Learned

The project was successfully delivered on 17 January 2012.<sup>102</sup>

The regulatory framework within which this project was carried out involves three regulatory issuances: i) the city council's internal regulation; ii) the municipality's governance and public administration regulation; and iii) the municipality's investment and service provision projects regulation. A regulation that specifically addressed the possibility of entering into a PP did not originally exist but one was enacted to make the project a reality.

In addition, the municipality's regulations did not contemplate mechanisms or institutions for the representation of opposition political parties or civil society in the project's development. However, for

this project, the project initiative was signed and approved by all political parties' representatives, which reflects good practice for PPP projects.

While many of the public servants involved had professional education and experience in project management and finance, the project structuring and technical preparation required the participation of external experts and advisors. As this shows, even well-staffed and experienced municipalities may benefit from qualified, outside technical assistance in preparing and delivering PPP projects.

A final key attribute of this project was the level of detail with which the municipality identified and understood its needs and objectives and reflected these aims in the tender documents. This provided a reliable basis for private participants to enter and deliver the administrative center in accordance with clear objectives and standards.

## 50. Bundled Courts Project, Ireland



Photo Credit<sup>103</sup>

### Background

As part of the Government of Ireland's EUR 2¼ billion Infrastructure Stimulus Package and Public Private Partnership Program, a bundled court PPP project was announced in July 2012. The project involved the construction of new courthouse buildings in 4 locations and refurbishment and expansion work on existing courthouses in 3 locations.

These 7 priority projects were in poor condition and in urgent need of improvement, as identified by the Courts Service. The project aimed to help reduce waiting times and the costs of litigation. In addition, it was hoped that improvements in court buildings in locations around the country would increase judicial service delivery through the use of improved facilities and technology.

### Project Structure

The National Development Finance Agency (NDFA) published a contract notice and five expressions of interest were received for pre-qualification by June 2014. After careful analysis, four consortiums were shortlisted and, in October that year, NDFA issued

<sup>102</sup> Source(s) accessed on February 6, 2019

[http://www.cca.org.mx/ps/funcionarios/muniapp/descargas/Documentos\\_de\\_apoyo/informaciontematica/capp/Caso\\_APP\\_Tlajomulco.pdf](http://www.cca.org.mx/ps/funcionarios/muniapp/descargas/Documentos_de_apoyo/informaciontematica/capp/Caso_APP_Tlajomulco.pdf)

<sup>103</sup> J.-H. Janßen ([https://commons.wikimedia.org/wiki/File:Dublin\\_Castle\\_Gates\\_of\\_Fortitude\\_and\\_Justice\\_05.JPG](https://commons.wikimedia.org/wiki/File:Dublin_Castle_Gates_of_Fortitude_and_Justice_05.JPG)), „Dublin Castle Gates of Fortitude and Justice 05“, <https://creativecommons.org/licenses/by-sa/3.0/legalcode>

Photo Credit: [https://commons.wikimedia.org/wiki/File:Dublin\\_Castle\\_Gates\\_of\\_Fortitude\\_and\\_Justice\\_05.JPG](https://commons.wikimedia.org/wiki/File:Dublin_Castle_Gates_of_Fortitude_and_Justice_05.JPG)

an invitation to submit bids. Following the receipt of the bids and after a detailed evaluation process, in June 2015 the Agency selected as the preferred bidder BAM PPP PGGM.

The NDFA, as procuring agent on behalf of the Courts Service, awarded the concession contract to BAM PPP PGGM to design, finance, build, and maintain the seven courthouse facilities for a 25-year period. Under the contract, BAM Courts Bundle Limited, the project company created to deliver this project, would also be responsible for providing services such as: cleaning, building and asset maintenance, waste management, pest control, passive security, energy management, grounds maintenance, life cycle replacement (fixtures, fittings, building), and IT cabling and infrastructure.

The facilities range in size from 1,354 m<sup>2</sup> to 8,490 m<sup>2</sup> and total 36,872 m<sup>2</sup>. Construction works reportedly cost EUR 154.5 million (USD 173.29 million) and began in early 2016. The financing structure is a fully funded solution structured and arranged by the Bank of Tokyo-Mitsubishi UFJ. Ltd that included senior debt provided by Mitsubishi UFJ, a private placement solution by Talanx Asset Management GmbH, and an equity contribution by BAM PPP PGGM.

The private partner is paid a monthly, unitary charge by the Courts Service. The construction and availability risks were allocated to the private partner, with no payment of the monthly charge due until construction was completed and services commenced. These regular payments are also subject to availability-based and service performance deductions.

Some of the courts are new facilities, while others required only refurbishment and extension works. Several of the latter courts are protected structures that required intensive preservation work for their historical conservation. Furthermore, the courts are located in areas with possible archaeological remains, such that the private partner needed to obtain archaeological licenses for all seven sites prior to the financial close.

### Lessons Learned

The courthouses were delivered throughout 2017 and 2018 and have entered into service. This has been reported to be a highly successful PPP arrangement.<sup>104</sup>

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<sup>104</sup> Sources:

<https://www.bamppp.com/en/our-projects/irish-courts> Accessed on August 11, 2019.

<https://www.enterpriseireland.com/en/events/ourevents/meet-the-buyer-courts-bundle-ppp/market-launch-day-presentation.pdf> Accessed on August 11, 2019.

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