

Transportation

Integrated Multi-Modal Transportation

1. Moncloa Transportation Exchanger, Madrid, Spain



Photo Credit¹

Background

Madrid's metropolitan area has a population of about six million people, with most of them located in the center of the city. To help mobilize residents and visitors, 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 better integrate the different transportation modes, urban and metropolitan.

This led to the introduction of a 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 to travelers of transfers during transport. They are equipped with air-conditioning, commercial areas, and other facilities that make travelers more comfortable. This type of infrastructure provides an optimal mode of transfer from regional and inter-regional buses or railway services to metro networks and urban buses.

The Moncloa transportation exchanger was initially constructed in 1995 using 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. In addition, according to the city's urban development plans, demand was expected to continue to grow over subsequent years, further intensifying the need to expand and improve the exchanger.

Project Structure

In light of budget limitations and the country's general economic situation, the public authority invited the private sector to participate 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 comprising Itínere Infraestructuras, Sacyr, and Castromil y Transportes la Unión and the concession agreement was signed on 1 March 2006.

The project was structured so that the concessionaire receives revenue from three different sources. First, for interurban bus passengers, the concession company receives: (i) a fixed payment from CRTM, guaranteeing a minimum demand, and (ii) a sum paid by bus operators corresponding to actual demand. Second, it receives a tariff paid by long-distance transit passengers. Third, the concession company is entitled to leverage opportunities for commercial revenues, such as commercial and office space leases, vending, ATM spaces, and advertisement sales at the facility. Transit operators collect the transportation exchanger tariff as part of the ticket price paid by passengers embarking or disembarking at the exchanger and then pass these monies on to the concessionaire.

Under the original project structure, the private partner assumed all financial and demand risks. At that time the investment cost was estimated to be EUR 112.78 million (USD 127.5 million²) 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 contractually fixed at EUR 0.1476 (USD 0.17) (VAT included) per user. The contract also included a clause that established a variable concession term/duration, depending on the real yields obtained by the concessionaire. The variable term mechanism would permit the concessionaire to finish the concession five years earlier (maximum) should the traffic be higher than expected, or five years later (maximum), if actual traffic proved to be lower than expected. Thus, the concession term would also act as a cushion against demand risk.

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

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

In 2007, however, 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. Rather than passing the tariff increase on to end-users, CRTM and the bus operators agreed to jointly absorb the additional cost, meaning they did not increase their fares to reflect the increase in the tariff payable to the transport exchanger concessionaire.

In addition, due to significant discrepancies between forecasted and actual traffic through the exchanger, the demand risk was modified so that the concessionaire assumed the demand risk only for 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 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 facility more than 46,000 m² in size with 1,000 linear 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 opened in February 2008 and the number of metro users transiting the exchanger rose from 44,000 in 1995 to 110,000 by 2011.³

Lessons Learned

The Moncloa exchanger helped to improve Madrid's mobility by making it easier and more pleasant for passengers to use multiple public transit options. Through this PPP, Madrid was able to develop quality infrastructure within a relatively short period of time and with less direct pressure on the public budget.

This project highlights the following:

- The importance of robust demand studies permeates all aspects of a PPP project. Municipalities need to take care to avoid making or accepting overly optimistic demand assumptions and should consider technical options that can deliver the same level of service at a reduced capacity, and thus with lower construction, maintenance and operation costs.
- Contractual mechanisms such as minimum fixed payments and variable contract term clauses can be used to reduce the amount of demand risk borne by the private partner and so increase the project's commercial viability. However, the PPP agreement must plainly delineate the conditions and processes that determine if, when, and how the private partner becomes entitled to a variation or fixed payment, to manage the contingent liabilities of the municipality and limit the likelihood of disputes. In addition, particular consideration must be given to fixed payments, as these can represent significant disbursements for the municipality over the life of the PPP.

Railways

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



Photo Credit⁴

Background

Hong Kong is a very densely populated city, with more than seven million people occupying a land area of only 1,104 km². Every day, over 11 million commuter trips are made using Hong Kong's public transportation system, which includes railways, trams, buses, minibuses, taxis, and ferries. This public transport system requires significant public investment, especially for Hong Kong's railways, which serve as its primary public transport modality.

Project Structure

In 1975, Hong Kong's public administration established the Hong Kong Mass Transit Railway Corporation (MTRC), a publicly owned corporation responsible for providing metro services.

³ Margo, Vassallo, and José Manuel. 2015. "Asociación Público Privada en América Latina. Aprendiendo de la experiencia". CAF. Accessed February 8, 2019. <http://scioteca.caf.com/handle/123456789/758>.

⁴ Exploring life (https://commons.wikimedia.org/wiki/File:Mass_Transit_Railway.jpg), <https://creativecommons.org/licenses/by-sa/4.0/legalcode>