

## Best Practice: Bus Rapid Transit (BRT) System

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**CITY:** JAKARTA

**POLICY AREAS:** CLIMATE CHANGE; TRANSPORTATION

### BEST PRACTICE

**TransJakarta** is a bus rapid transit (BRT) system designed to provide the citizens of Jakarta with a fast public transportation system to help reduce rush hour traffic. Launched in February of 2004 by the city administration of Jakarta, TransJakarta represents a breakthrough for Asia as the region's first full BRT system with physically separated bus-only lanes, at-level boarding platforms and pre-paid ticketing.

### ISSUE

Projected to be the fifth-largest city in the world by 2015, Jakarta has faced growing challenges in traffic congestion and harmful pollution that result from the increasing use of cars and motorcycles. The TransJakarta BRT was launched in order to provide a way for Jakarta's citizens to get through the City's notorious congestion and to reduce greenhouse gas (GHG) emissions.

### GOALS AND OBJECTIVES

The environmental objective of the project is to reduce greenhouse gas emissions from urban transportation by improving a bus rapid transit system and its related facilities. The overall objective of this project is to maximize the effectiveness of Jakarta's Bus Rapid Transit system and use it as a catalyst for urban transport reform in Jakarta and other key Indonesian cities. This is accomplished through two sub-goals/objectives:

- Improve performance of the Jakarta BRT and maximize ridership;
- Utilize BRT to build the image of public transport and improve pedestrian facilities, transport demand management, non-motorized transport, and land use options in Jakarta and other Indonesian cities.

### IMPLEMENTATION

Preliminary planning for the Jakarta BRT system commenced in 2001 but was given a major boost in 2003, after the then Governor of Jakarta visited Bogotá and was impressed with their BRT system. Following his visit, the Governor instructed his staff to complete a design and implement the first corridor. In February 2004, the TransJakarta Busway began revenue operations along a 12.9 kilometer (8 mile) corridor from Blok M, South Jakarta to Kota Railway Station, North Jakarta. The corridor passes through Jakarta's city centre and along two of Jakarta's most congested roads. The BRT was constructed in an unprecedented 9 months, at a cost of some \$2 million USD.

Following the success of the BRT in the first corridor, two additional corridors were constructed, which became fully operational in April 2006. Corridors 2 and 3 link Pulogadung in East Jakarta with Harmoni, and Kalideres in West Jakarta with Harmoni, Central Jakarta.



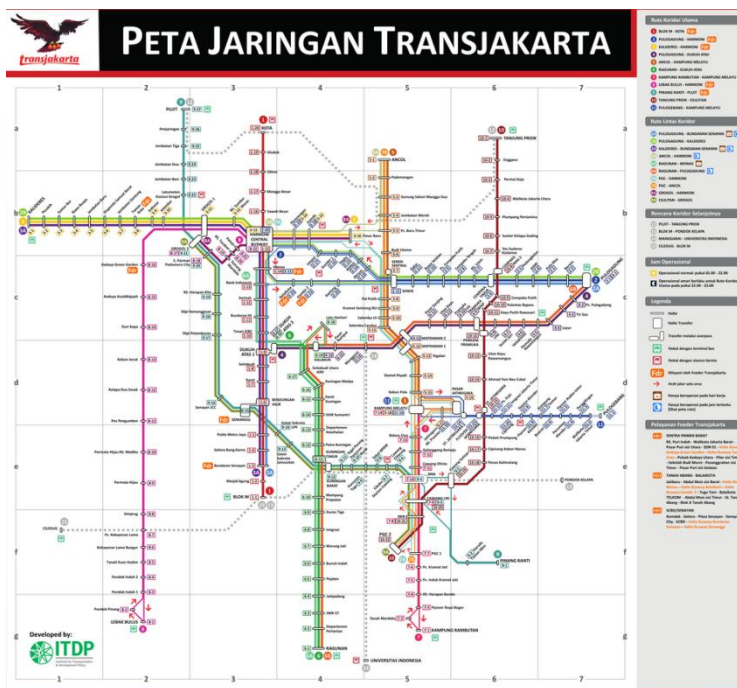
BRT System with physically separated bus-only lanes and boarding platform

By April 2007, four more operational corridors were added to the Busway network. Corridor No. 8, which links Lebak Bulus in South Jakarta with Harmoni, and passes through Pondok Indah, a relatively exclusive suburb of Jakarta, was introduced in

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2008. Two further Corridors, Nos. 9 and 10, were also constructed in 2008 but due to legal constraints and a lack of buses, launched in December 2011.

The latest project from the Jakarta administration – the Transjakarta Corridor 11, which was officially launched in January 2012, connects Kampung Melayu to Pulogebang in East Jakarta. The 11.76 kilometer (7 mile) route stops at 16 stations with a five-minute headway. Some of the stops are connected to residential areas and key municipal infrastructure features such as Jatinegara and Klender stations and the East Jakarta Municipality office. Another corridor is due to open in 2013, with three more routes planned.



Map of Bus Rapid Transit System

With a total of 11 routes, crisscrossing the capital and covering more than 172 kilometers (107 miles), Transjakarta is now the longest and most extensive bus rapid transit system in the world.

### Buses

Transjakarta has a total of 545 buses in its fleet, serving more than eight million passengers every month. During 2011, the buses carried more than 100 million passengers.

Most of the buses on Corridor 1, the original Busway corridor, are diesel powered but almost all of the remaining buses are Compressed Natural Gas (CNG) powered, the environmentally preferred option. Currently, the busway fleet includes some 456 CNG buses, where 71 are articulated buses. The single buses have a capacity of roughly 85 persons and the articulated buses 160 persons. Approximately 90 percent are operational.

### Ticketing and Fares

The Busway stations provide elevated platforms to ensure quick boarding and alighting. In most cases, the stations are connected to the sidewalks, by a pedestrian bridge and ramps, providing relatively easy access to stations. The interconnectivity system enables commuters to change buses to travel throughout the network by only paying Rp 3,500 (less than US 40 cents) for a single ticket.

### BRT Time Schedule

Buses are operated at intervals of 2-3 minutes during rush hours and 3-4 minutes during the off peak period. The service starts at 5:00 AM and ends at 11:00 PM daily.

### Organizational Structure

In the organization structure of Transjakarta, the implementation body is the Jakarta Municipal Government while the operation body is BLU Transjakarta, which is a public authority under the transportation Agency of the Jakarta Municipal Government. BLU Transjakarta manages the whole operation of the Transjakarta system, including overseeing the bus operation which is run by nine different bus companies. Some of the bus operators were formed from existing bus companies whose routes overlapped with Transjakarta corridors, while the others were individual operators selected from a competitive tendering process. Typically, buses are purchased and owned by the bus operators. Operators are paid per bus kilometer travelled throughout their seven years operating contract period thus passing the financial and revenue risks to the municipality.

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### COST

The Governor of Jakarta has sustainable control over the budget allocation required for the project. Jakarta allocated increasing funds of some 140 billion Indonesian rupiah (\$14 million USD) in 2004 as compared to 510 billion Indonesian rupiah (\$51 million USD) in 2005, and the Governor had proposed 876.70 billion Indonesian rupiah (\$87 million USD) for the four new busway corridor projects in 2006. Since its first year of operation until 2012, it is estimated that the city has invested over 5 trillion Indonesian rupiah (\$450 million USD) for busway infrastructure and to cover the Transjakarta operation. Now, nearly 4 trillion Indonesian rupiah (\$436 million USD) is currently allocated for ground transportation each year.

### RESULTS AND EVALUATION

In 2011, the Transjakarta Busway was used by some 360,000 people per day, a 32 percent increase from the previous year. This resulted in a saving of more than 54,000 tonnes of CO<sub>2</sub> emissions, the equivalent of taking 10,000 cars off the road. The estimated fuel savings by busway users amounts to 117 billion Indonesian rupiahs (about \$120 million USD). Based on the success of Transjakarta in reducing greenhouse gas emissions, the United Nations Environment Program selected Institute for Transportation and Development Policy (ITDP) to work with the Government of Jakarta on strengthening the system further. Enhancements are also being made to the system's design, operation, and fare collection, as well as efforts to improve the routing of non-BRT buses, pedestrian and bike facilities, and managing traffic demand with road pricing and other measures.

Year	Passengers (million people)
2004	15.94
2005	20.79
2006	38.83
2007	61.45
2008	74.62
2009	83.2
2010	86.9
2011	114.1

Number of Transjakarta Passengers  
from 2004-2011

### TIMELINE

**2001** — Preliminary planning for the Jakarta BRT System commences

**2003** — Governor of Jakarta visits Bogota to learn about BRT system  
Jakarta City Administration designs and implements the first corridor

**February 2004** — Transjakarta Busway begins revenue operations along the first corridor

**April 2006** — Corridors 2 and 3 launch

**April 2007** — Four more operational corridors launch in the Busway network

**2008** — Corridor 8, 9 and 10 are constructed but only corridor 8 launches due to financial constraints

**2011** — Corridors 9 and 10 launch

**February 2012** — Corridor 11 launches

**February 23, 2012** — Transjakarta offers free bus tickets for rapid transit service to encourage more people to use public transportation

**2013** — Corridor 12 launches

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### LEGISLATION

- Undang-undang Republik Indonesia No.19 tahun 2003 tentang Badan Usaha Milik Negara (SoE Law)
- Undang-undang Republik Indonesia No.25 tahun 2009 tentang Pelayanan Publik (public services law)
- Undang-undang Republik Indonesia No.22 tahun 2009 tentang Lalu Lintas dan Angkutan Jalan (traffic and transport law)
- Undang-undang Republik Indonesia No.1 tahun 2004 tentang Perbendaharaan Negara (national treasury law)
- Undang-undang Republik Indonesia No.17 tahun 2003 tentang Keuangan Negara (national financial management law)
- Undang-undang Republik Indonesia No. 29 Tahun 2007 tentang Pemerintahan Provinsi Daerah Khusus Ibukota Jakarta (national capital law)
- Peraturan Pemerintah Republik Indonesia No.44 tahun 1993 tentang Kendaraan dan Pengemudi (Government Regulation on vehicles and drivers)
- Peraturan Pemerintah Republik Indonesia No.43 tahun 1993 tentang Prasarana dan Lalu Lintas Jalan (Government Regulation on road infrastructure and traffic)
- Peraturan Pemerintah Republik Indonesia No.41 tahun 1993 tentang Angkutan Jalan (Government Regulation on road transportation)
- Peraturan Pemerintah Republik Indonesia No.23 tahun 2005 tentang Pengelolaan Keuangan Badan Layanan Umum (Government Regulation 23/2005 on financial management of service enterprises)
- Keputusan Presiden Republik Indonesia No. 80 tahun 2003 tentang Pedoman Pelaksanaan Pengadaan Barang/Jasa Pemerintah (procurement regulation)
- Direktorat Pembinaan PK BLU, Direktorat Jenderal Perbendaharaan. Himpunan Peraturan Menteri Keuangan Republik Indonesia mengenai Pengelolaan Keuangan Badan Layanan Umum. (Collection of ministerial regulations on financial management of service enterprises). August 2009
- Direktorat Pembinaan PK BLU, Direktorat Jenderal Perbendaharaan. Himpunan Peraturan dan Surat mengenai Pengelolaan Keuangan Badan Layanan Umum (collection of regulations and letters on financial management of service enterprises). August 2009
- Peraturan Gubernur Provinsi Daerah Khusus Ibukota Jakarta Nomor 123 tahun 2006 (Pergub 123) tentang Petunjuk Pelaksanaan Penetapan Operator Bus Busway Di Provinsi Daerah Khusus Ibukota Jakarta (on appointment of Busway bus operators in DKI).
- Peraturan Gubernur Provinsi Daerah Khusus Ibukota Jakarta no 103 tahun 2007 (Pergub 103) tentang Pola Transportasi Makro (macro policy on transportation).

### LESSONS LEARNED

- High capacity buses with more than two doors are necessary for a BRT system. The main reasons why TransJakarta's capacity is much less than that of other BRT systems in the world are its bus capacity limitations and the slow boarding and alighting movements caused by the limited number of doors. High capacity buses with separated doors for boarding and alighting are essential to increase the capacity of a corridor through a BRT project.
- Technical training for bus operators is essential to introduce BRT systems in a developing country that does not have experience with modern bus operation systems. In the beginning, Bus Operator Jakarta Express Transit (PT JET) had difficulties with scheduling, estimating the cost and labor required, and managing the business. Training and technical support should have been provided to the operators before the opening of the BRT.
- Bus lane introduction without regulatory measures in a corridor increases traffic congestion in mixed lanes. To reduce traffic congestion on both bus lanes and mixed lanes through BRT projects, regulatory measures such as prohibition of bus operation in mixed lanes parallel to the bus lane, as well as increasing capacity in the bus lane, are important.

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- Since the BRT system is managed by BLU TransJakarta, which is essentially a government unit under Jakarta Municipal Government, there are some limitations due to Government procedures' excessive bureaucracy, which sometimes slows down the operation of such a complex system.

### TRANSFERABILITY

A dozen cities in Indonesia have launched bus improvement projects that are based on Jakarta's Bus Rapid Transit system, although none have been able to provide capacity as high as TransJakarta without a dedicated bus lane. Modern and cost effective bus systems have transformed cities into more livable environments. BRTs can be constructed within the budget of most municipalities and within relatively short time.

### CONTACTS

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