TRIP REPORT

INTERNATIONAL STUDY TOUR ON SUSTAINABLE URBAN TRANSPORT IN LONDON, BOGOTA AND MEXICO CITY

26TH SEPTEMBER – 6TH OCTOBER 2010

AN INITIATIVE OF THE SUSTAINABLE URBAN TRANSPORTATION PROJECT - CITY PEERING PROGRAM

A PARTNERSHIP BETWEEN
GOVERNMENT OF INDIA (MOUD)
GLOBAL ENVIRONMENT FACILITY
WORLD BANK
UNITED NATIONS DEVELOPMENT PROGRAM

ORGANISED BY
EMBARQ: THE WORLD RESOURCES INSTITUTE (WRI) CENTRE FOR SUSTAINABLE TRANSPORT INDIA (EMBARQ INDIA)

EMBARQ
The WRI Center for Sustainable Transport

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1 INTRODUCTION

An International Study Tour on Sustainable Urban Transport was organised in September – October 2010, for government officials involved in the transport development of various Indian cities. The delegation visited three international cities, namely London in United Kingdom, Bogota in Columbia, and Mexico City in Mexico. The following report provides an overview of this study tour.

The study tour is a component of the Sustainable Urban Transportation Project (SUTP) city peering program, which is a partnership between the Government of India (GoI), Global Environment Facility (GEF), the World Bank and the United Nations Development Program (UNDP). The project supports the implementation of the National Urban Transport Policy, which was issued by GoI's Ministry of Urban Development (MoUD) in April 2006.

The study tour was organised by EMBARQ: The World Resources Institute (WRI) Centre for Sustainable Transport India (EMBARQ India). EMBARQ is a global network of five Centres for Sustainable Transport, located in Mexico, Brazil, India, Turkey and the Andean Region. It seeks to catalyse environmentally sustainable transport solutions for emerging cities.

The key objective of the study tour was to experience, learn and understand the transport systems and mechanisms adopted by London, Bogota and Mexico City. The selected cities for the study tour have been at the forefront of many innovations in sustainable transport, where emphasis was placed on the creation of efficient mass transit systems, pedestrian and cycling infrastructure and systems integration.

The delegation for this study tour consisted of senior government officials from different Urban Local Governments, State Governments, as well as representatives from the Ministry of Urban Development, Government of India. The delegation was led, in Columbia and Mexico, by Prof. Saugata Roy, Minister of State for Urban Development, Government of India.

2 LIST OF DELEGATES

The following is the list of delegates that participated in the study tour.

No	Name	Designation	Organization	Cities visited
1	Shri Saugata Roy	Minister of State for Urban Development	Ministry of Urban Development	Columbia, Mexico City
2	Shri Sanjeev Kumar Lohia	Officer on Special Duty (Urban Transport) & ex-officio Joint Secretary	Ministry of Urban Development	London, Columbia, Mexico City
3	Shri Rajesh Kumar	Private Secretary to Minister of State	Ministry of Urban Development	Columbia, Mexico City
4	Shri Sumit Chatterjee	Deputy Secretary (MRTS)	Ministry of Urban Development	London, Columbia, Mexico City
5	Shri Kamlesh Kumar Mahawar	Deputy Secretary (Finance)	Ministry of Urban Development	London, Columbia, Mexico City
6	Shri Anirudh Kumar Jain	National Project Manager	GEF SUTP Project Management Unit	London, Columbia, Mexico City
7	Smt Nupur Gupta	Transport Specialist and Task Team Leader, SUTP	The World Bank	London, Columbia, Mexico City
8	Shri Chaturbhuj Singh	Municipal Commissioner	Indore Municipal Corporation	Columbia, Mexico City
9	Shri Chandra Mauli Shukla	Chief Executive Officer	Indore Development Authority	Columbia, Mexico City
10	Shri Vivek Shrotriya	Chief Executive Officer	Atal Indore City Bus Services Limited	London, Columbia, Mexico City
11	Shri Kamal Chandra Nagar	Officer on Special Duty (Transport)	Urban Administration and Development Department, Govt. of Madhya Pradesh	Columbia, Mexico City
12	Shri Jawahar Shrivastava	Secretary	Urban Administration & Development Department, Govt. of Chhattisgarh	London, Columbia, Mexico City
13	Shri Shyam Sunder Bajaj	Chief Executive Officer	Naya Raipur Development Authority	London, Columbia, Mexico City
14	Shri Lalit Kumar Panigrahi	Chief Engineer & Project Manager PIU (SUTP)	Naya Raipur Development Authority	Columbia, Mexico City
15	Shri Salil Rai Shrivastava	Chief Engineer (Engineering)	Naya Raipur Development Authority	Columbia, Mexico City

No	Name	Designation	Organization	Cities visited
16	Shri Anant Ram Gupta	Executive Engineer & Procurement Officer, PIU (SUTP)	Naya Raipur Development Authority	Columbia, Mexico City
17	Shri Manu Kumar Srivastava	Secretary	Urban Development Department, Govt. of Maharashtra	London
18	Shri Dilip Band	CMD & Divisional Commissioner	Pune Mahanagar Parivahan Mahamandal Ltd	London, Columbia, Mexico City
19	Shri Mahavir Thalyappa Kamble	Procurement Manager for BRTS Project cum Joint City Engineer	Pimpri Chinchwad Municipal Corporation	London, Columbia, Mexico City
20	Shri Shambhu Dayal Meena	Secretary to Government	Urban Development Department, Govt. of Karnataka	London, Columbia, Mexico City
21	Shri M.K.S Gowda	Secretary to Government	Transport Department, Govt. of Karnataka	London, Columbia, Mexico City
22	Shri Gaurav Gupta	Managing Director	Karnataka State Road Transport Corporation	London, Columbia, Mexico City
23	Shri C.G. Ananda	Chief Mechanical Engineer	Karnataka State Road Transport Corporation	London, Columbia, Mexico City
24	Shri M.N. Srinivas	Divisional Controller	Mysore City Transport Division	London, Columbia, Mexico City
25	Shri K.S. Vishwanath	Chief Traffic Manager (Operations)	Bangalore Metropolitan Transport Corporation	London, Columbia, Mexico City
26	Shri Vijay Kovvali	Manager, Traffic & Transportation	Mott MacDonald Private Limited	London, Columbia, Mexico City
27	Shri Amit Bhatt	Senior Transport Specialist	EMBARQ: The WRI Centre for Sustainable Transport	London, Columbia, Mexico City
28	Smt Prajna Rao	Urban Transport Planner	EMBARQ: The WRI Centre for Sustainable Transport	London, Columbia, Mexico City
29	Shri Binoy Mascarenhas	Urban Planner / Economist	EMBARQ: The WRI Centre for Sustainable Transport	London, Columbia, Mexico City

3 STUDY TOUR ITINERARY

City	Date	Item	Agenda
London, United Kingdom	27 Sep 10	Presentation by Transport for London (TfL)	• Transport scheme development in London • Congestion charging • Integrated ticketing system (Oyster cards) • Interchange management and design
		System visits of London Underground and Docklands Light Rail (DLR)	• Experience stations, trains, line and modal interchanges, station peripheral urban design
		Presentation by Mr. Philipp Rode, LSE Cities / Urban Age Programme, LSE	• Topic for presentation was "Integrated Transport the case of London, Berlin and New York"
	28 Sep 10	Ride in the London Buses	• Experience the buses, bus-stop design, dedicated lane, ticketing system
		Visit to Paddington Station and ride in the Heathrow Express	• Experience London Underground integration with National Rail • Experience the shuttle service directly connecting with the airport
		Presentation and system visit of the PRT system at Heathrow Airport	• Experience the Personal Rapid Transit (PRT) system, which will connect various parking lots to each airport terminal
Bogota, Columbia	30 Sep 10	Study walk in central Bogota	• Experience pedestrian and cycling infrastructure
		Presentation by Ministry of Transport, Columbia	• Vision and objectives for urban public transport in Columbia, with focus on BRT
	01 Oct 10	Presentation by TransMilenio	• Overview of the TransMilenio BRT system
		Visit to the TransMilenio control room	• Understand the Intelligent Transport System (ITS) used by TransMilenio
		Ride in the TransMilenio buses	• Experience the buses, bus-stations, dedicated lanes, pedestrian infrastructure
		Visit to the TransMilenio bus depot and presentation by Operator	• Experience the bus depot infrastructure • Understand the operation system
	02 Oct 10	Visit to BRT in central Bogota	• Experience the BRT system in the heritage area of Bogota, where only BRT buses are permitted, and rest of the road is pedestrainized.

City	Date	Item	Agenda
Mexico City, Mexico	04 Oct 10	International Congress on Sustainable Transport	• Attend presentations by international experts on sustainable transport • Interact with transport operators, manufactures, etc
	05 Oct 10	System visit to Metrobus	• Experience the buses, bus-stations, dedicated lanes, bus depot
		Presentation by Metrobus	• Overview of the Metrobus BRT system
		Ride on the Metro	• Experience the Mexico City metro system
		Ride on the Trolley Bus	• Experience the Trolley bus system
		Study walk of central Mexico City heritage area	• Experience pedestrian infrastructure

4 STUDY TOUR DETAILS

This section provides details on the presentations and system visits that took place during this study tour. The softcopies of the presentations are enclosed with this report.

4.1 London

Presentation by Transport for London (TfL):

Transport for London (TfL) is the Unified Transport Authority, responsible for all transport systems in Greater London. Its role is to implement the transport strategy and to manage transport services across Greater London. TfL is controlled by a board whose members are appointed by the Mayor of London. The Commissioner of TfL reports to the Board and leads a management team with individual functional responsibilities. Some of the areas handled by TfL include:

- Underground (metro rail), Overground, Docklands Light Rail
- Buses, Dial-a-Ride
- Streets, Congestion charges, traffic enforcement, road safety.

There were four presentations made to the delegation by TfL. They were as follows:

Topic	Speaker	Main Sub-topics covered
Transport scheme development in London	Mr. Rhodri Ball, Transport Planner	Integrated Strategy Development; Bus services; TfL Business Plan; Spatial development and transport; cycle hire scheme; proposed cycle superhighways; improved pedestrian infrastructure
Congestion charging	Ms. Samantha Kennedy, Head of Strategy & Stakeholder Partnerships, Congestion Charging & Traffic Enforcement, Surface Transport	Congestion charging is a scheme adopted in London, (managed by TfL), whereby private vehicles entering the delineated city central zone have to pay a congestion charge. The presentation covered issues like zone delineation; operation and enforcement; payment mechanisms; monitoring mechanisms; before-after scenario and scheme impact.
Integrated ticketing system (Oyster cards)	Mr. Shashi Verma, Director of Fares & Ticketing	This was a verbal presentation on integrated ticketing system adopted by TfL, with focus on the Oyster Card system.
Interchange management and design	Mr. John McNulty, Head of Interchange	The presentation covered i the Mayor's transport strategy for interchanges; best-practices; challenges; examples. Mr. McNulty also shared a TfL Report on "Managing schemes at interchanges", the softcopy of which is enclosed with this Report.

System visits of London Underground and Docklands Light Rail (DLR)

On the first day, the delegation used the London Underground (metro rail) and the Docklands Light Rail system. The visit began at Wembley Park station. The delegation then proceeded to Canary Wharf station by the Jubilee Line. The focus was on experiencing the rail, train and station infrastructure, including softer aspects like furniture, signage, lighting, etc.

Picture 1: London Underground Trains and Stations. The London Underground is a metro rail system that serves most areas in Greater London. While primarily located underground, the system also runs aboveground in some areas.

The delegation then exited Canary Wharf station to board the Docklands Light Rail. Here, the focus was on studying the peripheral urban design around the station, with emphasis on the pedestrian avenues.

Picture 2: London has made tremendous strides in improving its pedestrian infrastructure. The left panel shows a Signalised Pedestrian Crossing. The right panel shows the Piccadilly Circus area which has been converted into a pedestrian plaza.

The delegation then used the Docklands Light Rail, which is an elevated, automated light rail system running through the redeveloped dockland area of London. The key learning here was the important role that the new mass transit system has played in reviving the old areas of the city that had suffered for many years from urban decay.

Picture 3: The left panel shows the DLR that crosses over the Canary Wharf. The right panel shows the pedestrian plaza surrounded by office complexes in the same area. The creation of the DLR has provided a development impetus to the old dockland areas that were suffering from urban decay.

Presentation by Mr. Philipp Rode, LSE Cities / Urban Age Programme, LSE

A presentation was made to the delegation by Mr. Philipp Rode, LSE Cities / Urban Age Programme, at the London School of Economics campus. The topic for the presentation was "Integrated Transport the case of London, Berlin and New York". The presentation compared the measures taken by each of these three cities, towards achieving an integrated transport network.

Ride in the London Buses

On the second day, the delegation rode a London Bus from Chancery Lane to King's Cross St. Pancras. The delegates were exposed to various features of the bus system, like low-floor buses, dedicated bus lanes, bus-stop design, signage, ticketing system, etc.

Picture 4: Clockwise from top-left: (a) Articulated London bus; (b) Double-decker London bus; (c) Bus Terminal at Stratford; (d) Demarcated bus lanes

Visit to Paddington Station and ride in the Heathrow Express

The delegation then visited Paddington Station, where the London Underground (metro rail) meets the National Rail system. Here, the focus was on the seamless integration between the local and national rail system.

The delegation then rode the Heathrow Express, which is a shuttle fast train service that directly connects Paddington station to Heathrow Airport. This train is a faster alternative to reach the airport, as compared to using road or the London Underground. Like the underground, the Heathrow Express also connects directly with the airport building, though unlike the Underground, this is a shuttle service. The Heathrow Express is, accordingly, designed for express services, and includes space for storing luggage in each compartment.

Picture 5: Left Panel: Paddington National Rail Station. Right Panel: Heathrow Express train

Presentation and system visit of the PRT system at Heathrow Airport

The day ended with a presentation and system visit of the Personal Rapid Transit (PRT) system that will shortly begin operations at Heathrow Airport. The system consists of automated cars, known as pods that move along a segregated guide-way, which connects various parking lots to the airport terminals. The delegates were given a first-hand experience of the system, where they were taken on test-runs along a section of the system. The key learning from this visit was the applicability of a PRT system in closed transit networks that have a few, spread-out trip origin and destination points, which make a mass transit system inadequate or infeasible.

Picture 6: Personal Rapid Transit System: This will shortly begin operations at Heathrow Airport, where it will connect various parking lots to the airport terminals

4.2 Columbia

Study walk in central Bogota

On the first day in Bogota, the delegates took a walking tour around a central node of the city. The focus was on the pedestrian and cycling infrastructure created in Bogota.

Picture 7: Pedestrian and cycling infrastructure. Bogota has a large continuous network of cycle lanes and pedestrian paths, with foot over bridges at intermittent distances.

Presentation by Ministry of Transport, Columbia

A presentation was made to the delegates by Mr. Juan Gonzalo Jaramillo, Senior Engineer, and Ms. Maria del Pilar Granados, Transport Specialist, Mass Transit Special Unit; hosted by Mr. Andres Chaves, Chief Advisor to the Minister of Transport. This presentation covered the transport vision set out by the Government of Columbia for its major cities, including Bogota. This included a comprehensive Bus Rapid Transit programme for each of these cities.

Presentation by TransMilenio

A presentation on TransMilenio, which is the Bus Rapid Transit system in Bogota, was made to the delegates by Mr. Carlos Acosta, Senior Engineer; hosted by Mr. Fernando Rojas, Deputy General Manager, Mr. Mario Valbuena, Operations Director, and Ms. Martha Rodriguez, Commercial Director. The presentation provided an overview on TransMilenio, its operation numbers, organisation structure, design elements, etc.

Visit to the TransMilenio control room

The presentation was followed by a visit to the TransMilenio control room, where the delegates were explained the central control and monitoring that takes place of the TransMilenio network. The Intelligent Transport Systems (ITS) used here was also explained.

Picture 8: TransMilenio Control Room

Ride in the TransMilenio buses

The delegates then took a guided ride in a TransMilenio articulated bus, where they drove from one end of the network to the TransMilenio Depot. Various elements of the BRT were explained, including articulated bus features, median bus-stops, segregated bus lanes, feeder bus services, ticketing system, etc. The key learning was how a BRT system, with frequent articulated buses and dedicated lanes, can cater to similar passenger volumes as a Metro Rail, at a fraction of the cost.

Picture 9: Clockwise from Top-left: (a) TransMilenio buses at bus station; (b) Pedestrian infrastructure at bus station; (c) Tunnel connecting different platforms at a major bus station; (d) TransMilenio articulated bus

Visit to the TransMilenio bus depot and presentation by Operator

The TransMilenio ride terminated at the bus depot, where the delegates got to experience the scale of the depot. A presentation was also made by one of the private bus operators, Ciudad Movil; hosted by Mr. Gustavo Gómez, General Manager.

Visit to BRT in central Bogota

The final study visit was to central Bogota, where there are many heritage buildings. Here, most roads are narrow with no scope for expansion. Private vehicles have been removed from entire road stretches. These roads have been paved and pedestranised, with only two lanes left in the middle for the BRT buses. The key learning here was the priority given to the pedestrian over the car. This has helped revive the area. Commercial establishments on the pedestrainised roads are thriving, even without direct car access.

Picture 10: Pedestrianised sections of the heritage areas of Bogota. TransMilenio buses are the only vehicles permitted in these areas

4.3 Mexico City

International Congress on Sustainable Transport

The study visit to Mexico City began with the International Congress on Sustainable Transport. The Congress is an annual event organized by CTS Mexico that brings together leading minds in academia, government and the private sector, with the purpose of exchanging knowledge on sustainable transport. The main objective is to foster high-level discussions and a continuous exchange of innovative concepts. Over the years, the Congress has become internationally recognized as a benchmark on sustainable transportation.

The delegates got the opportunity to attend presentations on sustainable transport by key international experts. Prof. Saugata Roy, Minister of State for Urban Development, Government of India, was also one of the key speakers at the Congress, where he spoke upon the initiatives made by the Central, State and Local Governments in India in spearheading the urban development of the country.

Picture 11: Prof. Saugata Roy, Minister of State for Urban Development, Government of India, addressing the audience at the International Congress on Sustainable Transport

System visit to Metrobus

The delegation was taken on a guided tour of the Metrobus system, which is the Bus Rapid Transit system in Mexico City. They were ridden along the network on an articulated Metrobus, whereby they got to experience different aspects of the system, like bus stop design, median bus lanes, articulated buses, bus depot, etc. The delegates were shown how the Metrobus BRT corridors were built even on narrow roads in the heart of the city.

Picture 12: Clockwise from top-left: (a) Metrobus articulated bus; (b) View of bus-station from outside; (c) Inside terminal bus-station; (4) Traffic congestion outside the bus lane

Presentation by Metrobus

The system visit was followed by a presentation by Mr. David Escalante, Transport Engineer, Metrobus. The presentation covered infrastructure specifications, operation numbers, organisation structure, passenger growth, ticketing system, bus design, emission reduction, urban renewal schemes, user feedback, etc.

Ride on the Metro

The delegation also took a ride on the Mexico City Metro Rail, where they got to experience a rubber-tyre based rail system.

Ride on the Trolley Bus

The delegation also rode on the Mexico City Trolley Buses. This is a bus system that is powered by overhead electric cables. The advantage of this system is reduced emissions of pollutants within the city limits.

Picture 13: Left Panel – Mexico City Metro. Right Panel – Mexico City Trolley Bus

Study walk of central Mexico City heritage area

The delegation was also taken on a study walk around downtown Mexico City, where they were able to witness the broad pathways and street furniture created for the benefit of the walking public.

Picture 14: Broad pedestrian walkways and street furniture in downtown Mexico City encourage walking

5 LIST OF ENCLOSURES

Please find enclosed with this Report, softcopies of the following:

A) Presentations & Reports

London:

- Transport scheme development in London: by Mr. Rhodri Ball, Transport Planner, TfL
- Congestion Charging: by Ms. Samantha Kennedy, Head of Strategy & Stakeholder Partnerships, Congestion Charging & Traffic Enforcement, Surface Transport, TfL
- Interchange management and design: by Mr. John McNulty, Head of Interchange, TfL
- Managing schemes at interchanges: TfL Report
- Integrated Transport the case of London, Berlin and New York: by Mr. Philipp Rode, LSE Cities / Urban Age Programme, LSE
- PRT system at Heathrow Airport: by ULTra

Columbia

- Presentation by Ministry of Transport, Columbia: by Mr. Juan Gonzalo Jaramillo, Senior Engineer, and Ms. Maria del Pilar Granados, Transport Specialist, Mass Transit Special Unit
- Overview on TransMilenio: by Mr. Carlos Acosta, Senior Engineer, TransMilenio
- Presentation by Operator, Ciudad Movil at the TransMilenio Bus Depot

Mexico

- Metrobus: by Mr. David Escalante, Transport Engineer, Metrobus

B) Photographs from the Study Trip

- London
- Bogota
- Mexico City

THANK YOU

Picture 15: Some of the delegation members with representatives from Metrobus