2.0 Bangkok transport and commercial vehicle industry

The Bangkok Metropolitan Region (BMR) is centred on the City of Bangkok, the nation's capital but also includes five neighbouring provinces. In 2000, the BMR's population was estimated as 11.4M. Per capita Gross Regional Product (GRP) in the BMR is 240% greater than that for the whole country.

The City of Bangkok is governed by the BMA but the main central agencies described above may undertake projects in Bangkok and neighbouring provinces. Bangkok has grown rapidly from being a small compact city located on the eastern bank of the Chao Praya River to a large sprawling urban area covering over 2,000 sq km. Growth was originally to the north and the east. Since the early 1970s there has been an extensive program of bridge and road building that has accelerated urban development to the west. Development is following the major road corridors and the neighbouring provinces (within the BMR) are rapidly suburbanising.

2.1 Transport network

The road network is characterised by the presence of very wide primary roads and small local side streets roads (known as "soi") that run off them. There are few medium-width distributor roads effectively connecting the primary roads. The primary roads, which are extremely congested thus carry local, medium and long distance traffic.

The first urban expressway, a toll road, the First Stage Expressway (FES) opened in 1981. Since that time an extensive series of major road and expressway projects have been completed or are planned including:

- Second Stage Expressway (SES) – toll road;
- Don Muang Tollway (DMT) – toll road;
- Ramintra-Atnarong Expressway (RAE) – toll road;
- Bangkok-Chonburi Highway (BCH) – toll road;

- Bangna-Bangpakong Expressway – toll road;
- Outer Ring Road (ORR) – completed; and
- Many other bridge and distributor road projects.

At present, there are no firm plans to add to the expressway network although various feasibility studies are being undertaken.

About 43% of all person-trips including walk trips are made by private modes. As a result of reliance on only land transport and Government's repeated failure to deal with the incipient causes of congestion and to control land use, Bangkok is well known for its severe traffic congestion which is now experienced over a wide area.

The rail network serving Bangkok is not extensive. It is primarily comprised of an at-grade railway with double track on most alignments. The railway system serves freight, inter-city (and regional) and urban passenger traffic. Water transport services are operated in the Chao Phraya River and two major canals.

Mass Rapid Transit (MRT) has been recommended as part of a suitable transportation system for many years. A subsequent MRT masterplan update called the "Urban Rail Transportation Master Plan (URMAP)" was completed in early 2001. It provides a framework for subsequent studies and implementation of individual projects and programs particularly for urban rail transit developments in the BMR. URMAP's work on developing an optimum MRT network for Bangkok depends critically on the use of existing rail lines and facilities.

Bangkok's first MRT, the US$ 1.7B Bangkok Transit System (BTS), was officially opened on December 5, 1999 by Thailand's King Bhumibol Adulyadej as part of his majesty's 72nd birthday celebrations. BTS consists of two lines totalling 23.5km, has 23 stations and traverses some of Bangkok's busiest streets and activity centres. Present patronage is around 350,000 passengers a day or about 70% of the original forecast.

The second MRT system – the Blue Line subway - is the 20km underground system is being constructed by a private consortium under a concession to the Mass Rapid Transit Authority (MRTA). The system will be open in the August 2004.

A third system is the failed elevated rail and expressway system promoted by Hopewell of Hong Kong. During 2000, two feasibility studies were undertaken (one for OCMLT, the forerunner to OTP, and one for SRT) to recommend how this project should be progressed. No concrete plans exist.

The Master Plan[1] gives priority to upgrading of the existing rail link connecting between central Bangkok and the new airport development (the Second Bangkok International Airport, SBIA, now known as the Suvarnabhumi Airport) located in Bangkok's eastern suburbs, with a later extension to the North West and South West to form the backbone of the MRT network. These URMAP recommended lines make use of the existing rail lines and are shown in red on Figure 5.2. In early 2004, the government was apparently seriously considering giving a commitment to the eastern rail link to serve the airport – a central city terminal with check-in facilities is planned to be located at Makassan.

In late 2003, the government announced that they plan to build a new capital at Nakhon Naiyoke located approximately 60km to the north east of Bangkok. The government has yet to make any concrete announcements about funding, timing and transport linkages.

2.1 Public Transport

Buses are the backbone of the passenger transportation system in Bangkok, accounting for more than 50% of all passenger trips, and 75% of trips during the peak period. Urban bus services are managed by Bangkok Mass Transit Authority (BMTA) which operates a fleet of 3,650 of its own buses and controls the operation of a further 3,400 buses run by sub-contractors as shown in Table 2.1. The BMTA operates a fleet of non-air-conditioned and air-conditioned buses. BMTA has been reducing the number of its own buses that it owns – in 1999 it operated 4,200 of its own buses. There is no evidence that the number of sub-contractor buses are increasing to fill the void. In fact, they may be decreasing. In 1999, BMTA private sub-contractors represented 3,428 buses but data provided by the BMTA Private Bus Association and Club suggests that private buses subcontracted to BMTA represented 2,530 buses in 2003 of which 339 were A/C.

Since the 1997 financial crisis, there has been a growth in the use of air-conditioned vans for point to point commuter services – at first they functioned illegally but now are regulated by the BMTA. In July 2002, there were 5,330 of these vans.

[1] In 2003, the URMAP masterplan was slightly modified and is now called the Development Plan for Bangkok Mass Transit. (BMRT). There are proposals to develop some of BMRT's suburban MRT links as busway instead of rail.

Table 2.1: Composition of BMTA Bus Fleet, January 2004

Type	Engine Make	Non A/C	A/C	Fare
Non A/C – white-green, non-emission controlled "hot bus" (BMTA maintained)	Hino Benz Daewoo	1 80 4		5
Non A/C – cream-red, non-emission controlled "hot bus" (Contractor maintained)	Hino Mitsubishi (Fuso) Isuzu	537 510 538		5
A/C – Blue, Non-emission controlled (Contractor maintained)	Benz Isuzu Hino		295 100 80	6 to 16
Articulated A/C, Non-emission controlled. (Contractor maintained)	Benz		52	6 to 16
Euro 2, A/C - orange (Contractor maintained)	Isuzu Hino Benz		200 200 397	6 to 16
Euro 2, A/C - orange (Contractor maintained)	Isuzu Hino Daewoo		125 125 250	6 to 16
CNG A/C, green-white (BMTA maintained)	Benz MAN (non operational)		38 44	6 to 16
Articulated A/C, Non-emission controlled. (BMTA maintained)	Ecarus		43	6 to 16
A/C, (BMTA maintained), Euro 1?	Benz		30	6 to 16
Sub-total		1670	1979	
Total		**3649**		

Source: BMTA for Jan 2004. GTZ (2003) data for January 2003 show that BMTA own fleet had declined to 3,654.

Table 2.2: Composition of Bangkok Private Bus Fleet

Category	Bus Colour	Number of Buses	Fare (Baht)
Private Subcontractors to BMTA, 1999			
Non-emission controlled A/C	Blue/Cream	446	6 to 16
Non-emission controlled non A/C	Red/Cream	1,550	4.0
Minibus non A/C (to be phased out by 2006)	Green	1,432	3.5
Sub-total BMTA Subcontractor		3,428	
Separately Licensed by LTD, 2004 est.			
Bangkok Microbus Euro I A/C	Purple	863 (around 50% not operating)	20
Songtaew (2 row truck)	Varies	1,550	3.5
Sub-total Separate License		2,413	
Total private		**5,800 operational approx.**	

Source: World Bank and BMTA, 2004

Source: BMTA, 1999 as reported by Parsons (2000) as part of the Bangkok Air Quality Management Project Final Report. Other data provided by the BMTA Private Bus Association and Club suggests that private buses subcontracted to BMTA represented 2,530 buses in 2003 of which 339 were A/C.

Private operators run bus services on most routes under contract to BMTA. Tickets are issued by on-board conductors who are part of a powerful union. Since 1990, there have been various suggestions made that the BMA should take over the operations of BMTA and Cabinet has agreed, but to date no progress has been made on this issue although resistance by BMTA's powerful labour union seems to be the major obstacle.

BMTA is not permitted to operate buses older than 10 years[2]. These are sold on to the private sector. Much of BMTA's maintenance is handled by bus manufacturers – there are a variety of contract types whereby the manufacturers supply buses, operate them and maintain them with maintenance being paid on daily rate per bus.

Various studies have looked at reforms to make the bus system more efficient. The 1999 World Bank study recommended the phased privatisation of the system around BMTA's various zones and associated depots and the introduction of modern, more commercial management practices. The recent 2003 study by the German Agency for Technical Cooperation (GTZ) made similar recommendations. GTZ is presently proposing major bus lanes and /

[2] However, in 2001 BMTA renewed the maintenance contract for an additional three years on 300 10 year old (pre-Euro) Mercedes Benz buses supplied and maintained by Thonburi Automotive Assembly Plant Co Ltd. It is reported that BMTA recently approached Thonburi Automotive Assembly Plant Co Ltd to open discussions with a view to extend them for a further two yearsie to 15 years in total.

or busway development in Bangkok to provide a more economical way of satisfying some of Bangkok's mass transit needs in future.

Inter-city buses operate from three terminals in suburban Bangkok:

- A terminal in the north of Bangkok at Bang Su serving the northern and north-eastern regions of Thailand;
- A terminal in the west serving the southern and western regions; and
- A terminal located in the east at Soi Ekkamai, Sukhumvit Road, serving the eastern region.

Inter-city bus operations are controlled by a State-enterprise, The Transport Co, Ltd. It directly operates 770 buses, most air-conditioned, on the premium routes connecting to Bangkok to the main regional cities. Private sub-contractors operate a further 5,600 buses.

2.2 Urban passenger transport task

The most recent source of comprehensive travel data for Bangkok is the 1995 home interview survey (HIS) conducted by the Urban Transport Data-Base and Model Development (UTDM) Project by consultants, MVA Asia for OCMLT (then OCMRT). This HIS is the source of much of the data presented in this section.

Table 2.3 shows the estimated distribution of daily person trips by mode in Bangkok in 1995. About 2.5 trips per person per day were made including walk trips. The many available public transport modes in Bangkok are shown in the table. Assuming half of the trips made by motorcycle are for private purposes (as opposed to for-hire, taxi-like) and including walk trips about 49% of all trips are made by private modes.

In 1995 it was estimated that despite the very high growth rates in vehicles in Bangkok it is estimated that 44.5% of all households have no vehicle (ie car or motorcycle). A more up to date estimate of the number of trips made by public modes based on published statistics and estimates is shown in Table 2.4 (excluding Bangkok Transit System[3] was not operational at the time). This table shown a similar level of trip making (ie unlinked trips) as shown in Table 2.4

[3] In December 2003, average daily ridership of Bangkok Transit System was 350,000 passengers/ day.

Table 2.3 – Daily Person (Unlinked[4]) Trips by Mode in Bangkok, 1995

Mode	Person Trips x 1000	%
Car Driver	3,821,543	17.7
Car Passenger	1,321,675	6.1
Motorcycle Driver	2,868,278	13.3
Motorcycle Passenger	533,720	2.5
Pickup, Van	1,092,484	5.1
Truck	157,716	0.7
Sub-total, private motorised transport	**9,796,416**	**45.4**
Micro Bus	72,876	0.3
Air Conditioned Bus	521,221	2.4
Red Bus	4,251,209	19.7
Blue Bus /Green Minibus	505,134	2.3
Express Bus	97,349	0.5
Motorcycle Taxi	783,669	3.6
Taxi	174,781	0.8
Tuk-Tuk	342,014	1.6
School Bus	528,422	2.4
Soi Bus	620,364	2.9
Employers Bus	467,299	2.2
Water Transport	295,229	1.4
Train	117,243	0.5
Sub-total, public transport	**8,776,810**	**40.6**
Walk	2,370,041	11.0
Other	668,870	3.1
Total	**21,611,532**	**100.0**

Source: UTDM data base (MVA et al 1996)

[4] Unlinked trips are the trips for individual stages of a journey between origin and destination. Hence, data on ticket sales for each mode are also the equivalent of unlinked trips.

Table 2.4 – Transport Task By Motorised Public Transport Mode in 1998(1)

Mode	Average Speed (km/hr)	Fleet Number	Fare (Baht)	Approx. Daily Passengers
Regular Buses (Blue /Red)	12-13	5,400	2.5-3.5	3,654,000
Air-conditioned Buses	12-13	1,200	6.0-16(2)	521,000
Minibuses	12-3	2,000	2.5	1,200,000
Micro Buses	12-13	850	30.0	73,000
Tuk-Tuks	12-13	7,400	min. 30-60	342,000
Four Wheels (Silor)	12-13	8,500	30-60 negotiated	360,000
Motorcycle Taxis	40	24,000	10 soi, 20+ street, negotiated	784,000
Taxis	12-13	49,000	min. 35(3)	980,000
Chao Phraya River Ferries	13 – 24	152	min 4 - 15	360,000
Canal Ferries	13-24	151	5.0-15.0	43,000
SRT Trains (provincial within BMR)	15-20	NA	2-6	100,000
TOTAL		**98,350**	**NA**	**8,417,000**

(1) By definition, trips on each mode as represented by ticket sales are unlinked trips. Fares are in 1998 Baht. Bus fares have since been revised.
(2) Baht 6.0 for the first 4 km plus approximately 1.0 Baht for every km after that up to a maximum of Baht 16.0.
(3) Taxi fares: minimum 35 Baht, plus 4.5 Baht/km for 2-12 km; plus 5 Baht/km for 12-20 km; and 5.5 Baht/km for greater than 21 km.
Source: Various sources and estimated.

Table 2.5 shows the average trip distances (km) by mode in 1995 – a striking feature of the table is the long trip distances for express bus, microbus and air-conditioned bus services. Most express bus, and all microbuses, are air-conditioned. Thus, these services which are faster and/or relatively comfortable and which have moderate fares (per km) are attractive for wealthier commuters for the longer trips.

Table 2.5 – Trips Distances by Mode of Travel, Bangkok, 1995

Mode of Travel	Average Trip Distance (km)
Car Driver	11.9
Car Passenger	9.9
Motorcycle Driver	7.3
Motorcycle Passenger	5.9
Micro Bus	18.2
Air-conditioned Bus Passenger	17.1
Regular Bus (red)	9.2
Regular Bus (blue or mini)	10.3
Express Bus	21.0
Motorcycle Taxi	2.5
Taxi	8.8

Mode of Travel	Average Trip Distance (km)
Tuk tuk	4.5
Pick-up/van	12.6
School Bus	6.2
Soi Bus	4.9
Employee Bus	17.3

Source: OCMRT (now OTP), Data-Base and Model Development Project.

2.3 Truck ban

Heavy trucks with 10 wheels or more (including three axle vehicles and trucks with trailers) have been restricted from operating in Central Bangkok, the area mainly defined as being within the Middle Ring Road (MRR) for over 20 years as shown in Figure 2.1. They are banned from entering the city between 6am and 9pm every day except public holidays. They are however restricted to certain defined main roads such as expressways and the major highways. The main exceptions to this restriction are concrete trucks and trucks carrying easily damaged farm goods which are permitted to operate on some routes and in sone time periods (mainly between 10am and 3pm). Trucks operated by the State-enterprise truck operator, The Express Transit Organisation, are free from all restrictions.
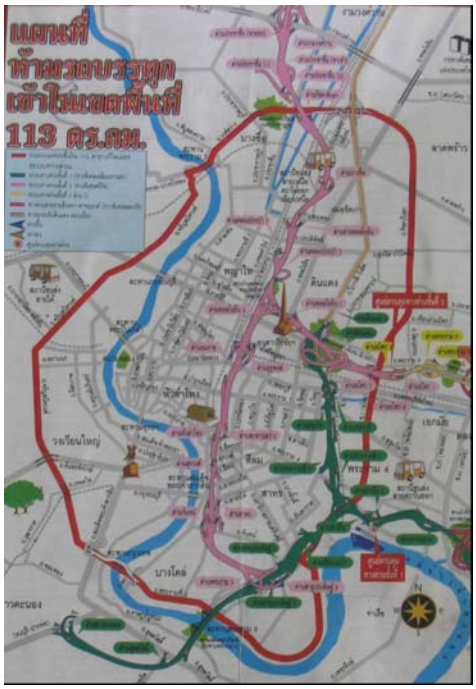
Figure 2.1 – Truck Ban Map