

SECTOR OVERVIEW

A. Background

1. **Sector overview.** Thailand's overall transport sector is significantly more developed than those of its Southeast Asian neighbors. This advanced development mainly encompasses the infrastructure and operational development of three of the major transport subsectors: road, maritime, and air transport. Road transport is the dominant subsector in terms of investment, traffic flow, national coverage, and economic impact, accounting for 98% of passenger traffic and 95% of the country's freight traffic.

2. Thailand's railway subsector, and in particular urban rail, is significantly less developed than its road, air, and maritime subsectors. Government budgets since 2005 have recognized this underdevelopment and have begun to significantly stress the development and modernization of the rail network. These budget increases have targeted investments in rail mass rapid transit (MRT) in metropolitan Bangkok and other urbanized cities in the country. The primary strategic target for MRT is Bangkok, the capital of Thailand and the largest urbanized city in the country with a population of about 14 million that is expected to grow at a rate of about 1% per annum.¹

3. No other major Thai city presently offers rail MRT services, but this will change in the near future with the planning and implementation of light rail projects in four key cities: Phuket, Chiang Mai, Khon Kaen, and Nakhon Ratchasima. The initial priority will be the 60-kilometer (km) Phuket Light Rail project, with 23 stations linking Tha Nun in Phangnga province with Phuket International Airport, and Phuket (inner) city, with a budgeted cost of about \$4.8 billion.

4. The Office of Transport and Traffic Policy and Planning, established in 2002 under the Ministry of Transport, is the country's central transport planning authority responsible for submitting national policies, formulating and coordinating transport and traffic plans, and establishing transport safety measures that are consistent with master plans. The Office of Transport and Traffic Policy and Planning is tasked to insure a coordinated, consistent, and effective national transport and traffic policy.

5. **Mass rapid transit plans in Bangkok.** The lack of capacity and poor efficiency of urban transport in Bangkok is a major strategic economic issue of national importance.² Since the early 1990s, rail-based MRT has been seen as a high priority of all national governments. During this 25-year period of high priority (1991–2016), 108.0 km of rail MRT and 16.5 km of bus rapid transit have been developed. These include the Bangkok Mass Transit System's (BTS's) Dark Green Line (Sukhumvit Road) and Light Green Line (Silom Road), which commenced operation in 1999, and the bus rapid transit system connecting Sathorn Road to Ratchaphruek Road, which has been in operation since 2011.

6. While these existing lines are the outcome of past planning, Bangkok urban rail master planning has undergone major revisions and reiterations. The present plan is the Urban Rail Mass Transit Master Plan (URMTMP), approved in 2010, which proposes to deliver 14 new urban rail MRT lines and/or extensions in Bangkok totaling 274 km. The overall system framework of this MRT plan is still being followed by the current government, and the implementation of the

¹ The 14 million population includes both registered and nonregistered people. Government of Thailand, Office of Transport and Traffic Policy and Planning. 2016. *Bangkok Transport Information*. Bangkok.

² Asian Development Bank (ADB). 2012. *Thailand Country Governance Risk Assessment and Risk Management Plan*. Manila (TA-7277).

URMTMP progresses satisfactorily. At present, one new line of 23 km has been in operation since 2016, and four lines totaling 121 km are under construction with public sector funding and are expected to be operational by 2020. Tendering of implementation contracts through public–private partnership (PPP) for another two lines—the Pink and Yellow Lines—with a total length of 65 km has been recently completed. However, the availability of long-term financing to match the long-term economic life of the assets remains a key challenge for private sector MRT projects. The remaining five lines (totaling 75 km) are now under preparation and development. The Asian Development Bank (ADB) is currently preparing sovereign financing for the Purple Line (south section), one of the five lines programmed for implementation.³

7. Bangkok’s 108 km of existing rail MRT presently carry more than 1.1 million passengers per day as follows: the Green Lines approximately 660,000; the Blue Line about 360,000; the Purple Line (north section) about 50,000; and the Airport Link an estimated 50,000.

8. **Government institutions.** The three government entities involved in the preparation, implementation, and operation of MRT projects are the Mass Rapid Transit Authority of Thailand (MRTA), the State Railway of Thailand, and the Bangkok Metropolitan Administration.⁴ The MRTA is considered the lead MRT agency in Thailand. It was established in 1992 as a new state-owned enterprise⁵ dedicated to (i) operating MRT in Bangkok and its vicinity; (ii) studying, analyzing, and formulating MRT projects; and (iii) undertaking the business of MRT. Although it is designated as the operator of some of the MRT lines, actual operations of the lines have been tendered out to private sector concessionaires under various PPP schemes. These lines include heavy rail lines from Bang Sue to Hua Lamphong (the Blue Line),⁶ the 1.1 km connection between the Blue and Purple Lines, and the north section of the Purple Line from Bang Yai to Bang Sue.⁷

9. The high level of road congestion in Bangkok has resulted in severely increased and unpredictable trip times, excessive fuel consumption and vehicle operating costs, and widespread environmental degradation, all resulting in reduced productivity and high economic cost. The demand for extension of MRT services is high. Yet, there are serious and widespread problems affecting efficient and sustainable urban transport, including ever increasing traffic congestion and pollution, poor urban road safety, insufficient MRT capacity, and lack of MRT coverage within Bangkok. Specific contributing factors to this MRT inefficiency and unsustainability include insufficient capacity and inadequate rail MRT corridors.

10. The Government of Thailand is well aware of the impact of an inefficient urban transport system on economic growth. Failure to invest in urban transport infrastructure to support a major modal shift away from private transport in cities will constrain economic growth and accelerate degradation of the urban environment. The government aims to accelerate the building of efficient and sustainable urban rail MRT in urbanized cities.

³ ADB. 2017. *Country Operations Business Plan: Thailand, 2018–2020*. Manila.

⁴ Another key provider of mass transit services in Bangkok is the Bangkok Mass Transit Authority, a fully state-owned enterprise operating under the control of the Ministry of Transport. It was created in 1976, operates as a de facto monopoly, and is the largest urban bus system in the country.

⁵ The MRTA, originally under authority of the Office of the Prime Minister, was transferred to the Ministry of Transport in 2002.

⁶ The Blue Line includes 15 stations, with four of these connecting to the BTS—the Dark Green (Sukhumvit Road) and Light Green (Silom Road) Lines.

⁷ The north section of the Purple Line includes 16 stations, one depot, and four park-and-ride facilities.

B. Opportunities

11. **Public-private partnership schemes.** The government applies different PPP schemes with varying degree of private sector participation for developing each MRT line under the URMTMP. Selection of the scheme is made based on the project cost and expected fare revenue.

12. The first scheme is the PPP net cost scheme, under which the concessionaire of the project is responsible for the costs of civil works, mechanical electrical works, and operation and maintenance, and will be entitled to receive the fare revenue and other revenues such as advertising and leasing space in the stations during the concession period, which is normally 25–30 years. If the fare and other revenues are not expected to be sufficient to cover the costs, the government commits at the time of the award of the concession to fill the gap by way of subsidies. The Pink and Yellow Lines, as well as the existing Green Lines, are examples of the PPP net cost scheme. Concessionaires under the PPP net cost scheme are selected through a competitive tender process and, in the case of the Pink and Yellow Lines, the key parameter of the tender was the amount of the government subsidies that each bidder needs. Since the private sector concessionaire should fund the project cost by themselves, competitive long-term financing is another key factor for winning the bid and ensuring efficiency. There are some variations within the PPP net cost scheme. For instance, in the case of the existing Blue Line, mechanical electrical works, operation and maintenance, as well as the rights to the revenue collection were with the private sector concessionaire, while the civil works were funded by the government.

13. Another scheme is the PPP gross cost scheme. Under this scheme, the government receives fare and other revenues while the private sector operator receives predefined remuneration by typically investing in mechanical electrical works and rolling stock and operating the line for the concession period. This way the concessionaire is not exposed to the ridership risk, while better efficiency is expected from the procurement and operation by the private sector. The Purple Line is an example of the application of this type of scheme. The PPP gross cost scheme was selected for the Purple Line because the ridership estimates and resulting financial return were expected to be lower than the other lines for which the PPP net cost scheme has been applied. Concessionaires under the PPP gross cost scheme are selected competitively, with the amount of remuneration as the key parameter. Funding needs for the private sector are limited under the PPP gross cost scheme since the concessionaire only has to invest in a proportion of the total project cost. The government will have to raise funds for the majority of the construction cost, although its total funding needs will be smaller than for traditional public sector projects because of private sector participation.

14. **Private sector players.** There are two major private sector players in MRT in Thailand—BTS Group, and Bangkok Expressway and Metro (BEM). BTS Group is the leading MRT developer and operator, is the leading sponsor of this project, and operates the MRT Green Lines.⁸ BEM was incorporated in 2015 from the merger between Bangkok Expressway Public Company Limited and Bangkok Metro Public Company Limited. BEM's main businesses comprise constructing and operating expressways, providing MRT service, and engaging in commercial development related to its expressway and MRT networks. BEM is the concessionaire for the MRT Blue Line under the PPP net cost scheme and the Purple Line under the PPP gross cost scheme. BEM is listed on the Stock Exchange of Thailand, and its major shareholders are CH. Karnchang Public Company Limited (29.98%) and the MRTA (8.22%). Other shareholders are institutional and public investors (61.80%).

⁸ See Client Information (Linked Document 2).

15. This background presents appropriate opportunities for ADB to partner with the private sector and/or support government so as to accelerate the development and implementation of rail MRT because of (i) ADB's ability to efficiently mobilize and package financial and technical resources; and (ii) the experience and leverage that ADB has available to attract private sector investment and participation, in conjunction with the newly approved Thailand PPP framework that was developed with ADB assistance.

C. Government's Transport Sector Policy

16. Thai government has just completed its Eleventh National Economic and Social Development Plan (2012–2016) which prioritized MRT development guidelines. The present Twelfth National Economic and Social Development Plan (2017–2021) will constitute the initial 5 years of the implementation of the 20-year National Strategy (2017–2036). A key target of the 12th plan is to “raise the proportion of passengers using public transportation systems in urban areas,” with the indicator being as follows: the proportion of passengers in the Bangkok Metropolitan Region using mass rapid transit system increases from 5% to 15% by 2021.⁹

17. In parallel with the Twelfth National Economic and Social Development Plan, the Ministry of Transport is implementing the Transport and Traffic Development Master Plan 2011–2020, based on the vision of Toward Sustainable Transport. One of the pillars of this plan is a shift in transport mode from road traffic to public transport and nonmotorized transport. The strategies include (i) upgrading the capability of agencies and personnel for the development of environmentally sustainable transport, (ii) establishing plans and mechanisms for interfacing and monitoring transport and traffic work plans, measures, and projects, (iii) establishing comprehensive and interconnected transport infrastructure, (iv) improving transport management for sustainability and greenhouse gas reduction, (v) promoting transport research and development, and (vi) promoting public awareness of the environment.¹⁰

⁹ National Economic and Social Development Board. 2015. *Transport Infrastructure Development Master Plan (2015–2022)*. Bangkok.

¹⁰ Office of Transport and Traffic Policy and Planning, Ministry of Transport. 2013. *Thailand's Experience on Emission Measurement and Mitigation Policies*. Bangkok.