

A decorative background consisting of a grid of squares in various shades of brown and red, with some squares missing or faded, creating a mosaic effect.

Thailand

Transport Sector Assessment, Strategy, and Road Map



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Transport Sector Assessment, Strategy, and Road Map

Asian Development Bank

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Currency Equivalents

(as of 21 November 2011)

Currency unit	=	baht (B)
\$1.00	=	B31.00
B1.00	=	\$0.0322581

Abbreviations

ADB	-	Asian Development Bank
AFD	-	Agence Française de Développement
ASR	-	assessment, strategy, and road map
BMA	-	Bangkok Metropolitan Administration
BMR	-	Bangkok Metropolitan Region
BMTA	-	Bangkok Mass Transit Authority
BTS	-	Bangkok Transit System
CPS	-	country partnership strategy
DOH	-	Department of Highways
EXAT	-	Expressway Authority of Thailand
GDP	-	gross domestic product
GMS	-	Greater Mekong Subregion
JICA	-	Japan International Cooperation Agency
km	-	kilometer
MOT	-	Ministry of Transport and Communications
MRT	-	mass rapid transit
MRTA	-	Mass Rapid Transit Authority
NESDB	-	National Economic and Social Development Board
OTP	-	Office of Transport and Traffic Policy and Planning
PPP	-	public-private partnership
PRC	-	People's Republic of China
SRT	-	State Railway of Thailand

Acknowledgments

This report was prepared by a team led by Antoine Kunth (infrastructure specialist, SERD), and team members Robert Anderson (consultant), Oranuch Jewattana (senior project officer, Thailand Resident Mission [TRM]), Poramintr Kingphakorn (consultant), Soo Nam Oh (principal country economist, TRM), and Craig Steffensen (country director, TRM). Guidance and support was provided by Kunio Senga (director general, SERD), James Lynch (director, transport and communications division, SERD), Richard Bolt (advisor, office of the director general, SERD), and Munawar Alam (unit head, project administration, SERD). The team thanks Department of External Relations and the following staff for their support in preparing and editing the report—Elizabeth Alimurung (project analyst, SERD) and Ann Mushayt Alemania (operations assistant, SERD).

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This sector assessment, strategy, and road map (ASR) represents the current assessment and strategic investment priorities of the Government of Thailand and the Asian Development Bank (ADB) in Thailand's transport sector. It highlights sector performance, needs, constraints, and present government plans and strategies. The ASR will be linked to the ADB country partnership strategy (CPS) for Thailand, 2012–2016. It is also aligned with the vision and strategies of the country's draft 11th National Economic and Social Development Plan, 2012–2016.¹ This ASR may need to be updated in accordance with any changes in government policy during the finalization of the 11th Plan.²

This ASR focuses on three transport subsectors: (i) roads, (ii) rail, and (iii) urban transport. It is a working paper that reflects ADB's experiences and was developed through consultations with government agencies³ and development partners. Key extracts of the ASR will be included in the next CPS for Thailand.

¹ Government of Thailand, National Economic and Social Development Board (NESDB). 2011. *Summary of the Direction of the 11th National Economic and Social Development Plan, 2012–2016*. Bangkok. January.

² National parliamentary elections occurred in July 2011; thus, the 11th Plan may need to be refined to be in accordance with the policies and strategies of the new government.

³ In early May 2011, a draft ASR was presented to a high-level group of government officials at a meeting for their review and comments. The officials represented NESDB, Office of the Prime Minister; Public Debt Management Office, Ministry of Finance; and Office of Transport and Traffic Policy and Planning (OTP), Department of Highways (DOH), State Railway of Thailand (SRT), and Marine Department, all under the Ministry of Transport and Communications (MOT).

A. Context and Strategic Issues

1. Transport Sector Context

Thailand's economy is heavily dependent on external trade, with exports representing over 60% of gross domestic product (GDP) in 2007 (footnote 1). Although economic growth has declined in recent years, from 4.8% in 2007 to -2.7% in 2009,⁴ the current global economic recovery has significantly strengthened export trade volumes. The export-dependent nature of Thailand's economy, with recent structural changes toward a higher share of value-added manufactured goods and level of global trading, requires a strong supportive and integrated transport and trade facilitation system.⁵

Thailand's transport sector contributes 7.1% to the country's economy.⁶ Exports contributed over 60% to Thailand's GDP in 2007,⁷ and the transport sector underpins this notable export performance. The road subsector dominated the transport sector with an estimated 95%⁸ of the freight and 98% of passengers. In terms of physical development, the road network also dominates, with an estimated total length of 202,000 kilometers (km).⁹ The length of the rail network is 4,043 km.¹⁰ The length of coastline is 2,614 km, and navigable inland waterways represent only about 1,750 km. Thus, the road network is the most developed, with about 98% of roads, including village access roads, being paved.¹¹

Passenger transport in Thailand is dominated by personal vehicles (primarily cars and pickup trucks) and motorcycles. National personal vehicle ownership (expressed as in-use vehicles per thousand population) was growing at an average of 8%–10% per year from 1999 to 2007, and this trend is expected to continue. In Bangkok, cars and pickup trucks are the most prevalent, with 388 vehicles per 1,000 population, compared to 220 motorcycles per 1,000 persons. Motorcycles are dominant in areas outside of Bangkok, with 159 motorcycles and 112 cars or pickup trucks per 1,000 population. With the continuing per capita income growth, it is expected that ownership of four-wheel vehicles will grow faster than motorcycle ownership.¹²

⁴ World Bank. 2009. *Thailand Economic Monitor*. Washington, DC. April–June.

⁵ Government of Thailand, National Economic and Social Development Board (NESDB). 2006. *Thailand's Logistic Development Master Plan, 2006–2010*. Bangkok.

⁶ Government of Thailand, NESDB. National Income of Thailand 2009. http://www.nesdb.go.th/econSocial/macro/gdp_data/mainaccount.htm

⁷ World Bank. 2008. *Thailand Economic Monitor*. Washington, DC. December.

⁸ The remaining 5% of the freight task is accounted for by coastal shipping (2.1%), railways (1.8%), and inland waterways (1.1%).

⁹ About 51,500 km are classified as highways, 150,000 km as rural roads, and only about 450 km are controlled-access expressways and motorways, according to the Department of Highways (DOH).

¹⁰ Government of Thailand, NESDB. 2007. *National Logistics Strategy, 2006–2010*. Bangkok.

¹¹ International Road Federation. 2006. *World Road Statistics*. Geneva.

¹² World Bank and Government of Thailand, NESDB. 2009. *Thailand: Making Transport More Energy Efficient*. Washington, DC.

Rail transport. The State Railway of Thailand (SRT) is the sole operator of railway services in Thailand.¹³ Of the total rail length of 4,130 km, 3,880 km are single-track lines. The network consists primarily of main lines that radiate from Bangkok into northern, northeastern, eastern, and southern corridors. The network serves 42 of the country's 76 provinces, and has the potential to be a strong backbone for land transport. The principal cargoes carried by railway are petroleum products, cement and other building materials, and containers. Most railway cargo is concentrated between Bangkok and its ports, particularly the deep seaport of Laem Chabang,¹⁴ and the inland container depot at Lad Krabang. However, Thailand's rail assets are generally old and poorly maintained, limiting the subsector's ability to expand its role in land transport. Despite the low market share, the rail freight tonnage throughput forecast for 2011 is for an 8% growth, and is forecast to average 7% growth through 2015.¹⁵

Urban transport. The Bangkok Metropolitan Region (BMR)¹⁶ has a population of about 12.0 million, representing 18% of Thailand's 2008 population of 67.8 million, and accounts for over one-half of the nation's GDP.¹⁷ The BMR is critical to the overall performance of the country's economy and energy efficiency, as it accounts for nearly one-half of all of Thailand's gasoline and diesel fuel consumption. Bangkok's widespread traffic congestion significantly reduces the efficiency of the city's urban transport network, and creates widespread journey time delays, excessive fuel consumption, and polluting emissions. Congestion is made worse by the current distribution of road space and an unbalanced spatial pattern of distributor roads, unnecessarily forcing the mixing of both long- and short-distance trips.

Public transport represents about 40% of all daily person trips in Bangkok, but with only 4% of trips by mass rapid transit (MRT).¹⁸ Forty-six percent of trips are made by four- and two-wheel vehicles, 36% by bus, and 14% on foot.¹⁹ Only a negligible number of trips are made using water transport. Even with the eventual planned development of an expanded MRT system of almost four times the current operating length, the expected MRT mode share is forecast to rise to only about 15% of all daily person trips,²⁰ with the share of bus trips falling from 36% to 31%.

2. Strategic Issues

Logistics. Important regional trading partners for Thailand are the People's Republic of China (PRC), Japan, Malaysia, Singapore, and Viet Nam, and improvements to Greater Mekong Subregion (GMS) trade links are essential to facilitate trade and investment through improved roads, transport and intermodal terminals, border facilities, and reduced nontariff trade barriers. Thailand has indeed demonstrated long-term, impressive success in expanding export trade, with an overall growth rate of 400% from 1990 to 2008.²¹ This growth relied heavily on Thailand's logistics industry, particularly the land transport component,²² despite the fact that its land-based logistics industry is widely regarded as inefficient.

¹³ Excluding rail-based MRT services in Bangkok operated by the Bangkok Transit System (i.e., the Skytrain) and Bangkok Metro Company (i.e., the blue line subway).

¹⁴ Laem Chabang was the 21st largest container port in the world in 2007.

¹⁵ Business Monitor International. 2011. *Thailand Freight Transport Report Q2 2011*. Bangkok.

¹⁶ The BMR consists of six provinces: Bangkok, which also has the status of a province; Nakhon Pathom; Nonthaburi; Phatum Thani; Samut Prakan; and Samut Sakhon.

¹⁷ Statistics from the Ministry of Interior and NESDB.

¹⁸ Composed of the 26 km Skytrain, the 20 km blue line subway, and the recently commissioned 27 km airport line.

¹⁹ 2006 estimates made by the Office of Transport and Traffic Policy and Planning's (OTP) Bangkok Transport Model.

²⁰ IMAC. 2005. *The Intermodal Services Integration for the Improvement of Mobility, Accessibility, Sustainability and Livelihood for Bangkok Metropolitan Region and Surrounding Area Project Final Report*. Prepared for OTP. Bangkok.

²¹ World Bank. 2008. *Thailand Economic Monitor*, December.

²² Vilmolsiree, P. 2005. Key Developments of Thai Logistics Policy. Prepared for the Seminar on Modern Logistics and Investment in the GMS. Jinghong, People's Republic of China. November 3–5.

The cost of logistics in Thailand represents about 19% of the country's GDP,²³ as compared to 13% for Malaysia, 11% for Japan, 10% for the United States, 8% for Singapore, and 7% for the European Union.²⁴ Historically, Thailand has been saddled with high logistics costs as indicated in the table below.

Logistics Cost Components as a Percentage of Thailand's Gross Domestic Product

Cost Component	2000	2001	2002	2003	2004	2005	2006	2007	2008
Transport costs	10.1	9.9	8.8	8.4	8.0	8.5	8.8	8.9	9.1
Warehousing and inventory holding costs	8.1	7.9	7.7	7.7	7.7	8.1	8.5	8.2	7.8
Administration costs	1.8	1.8	1.6	1.6	1.6	1.7	1.7	1.7	1.7
Total logistic costs	20.0	19.6	18.1	17.7	17.3	18.3	19.0	18.8	18.6

Source: *Logistics Digest Magazine*. 2011. Bangkok. May.

Due to road congestion and other inefficiencies in the supply chain, warehousing and inventory-carrying costs are significantly higher than would be expected. There is also limited penetration of advanced third- and fourth-party logistics providers who carry goods and/or provide other logistics services on behalf of shippers and their customers in Thailand.²⁵ Instead, the focus has been on relatively aged truck fleets, supplemented by low-quality owner-driver operations.²⁶

Thailand was ranked 31st in terms of overall logistics competitiveness by the World Bank's 2010 Logistics Performance Index survey out of 155 countries and areas.²⁷ While Thailand's overall rank increased slightly from 2007 to 2010, all regional competitor countries, except the PRC and Singapore, dramatically improved their logistics performance according to the index. With trade volumes expected to grow at rates faster than economic growth, Thailand needs to increase its efforts to improve logistics performance to remain globally competitive.²⁸

Rail transport. The SRT was originally founded as the Royal State Railways of Siam in 1895 by King Chulalongkorn. Most of the growth of the railway system was in the first 35 years, reaching about 3,000 km of railway service by 1930. In the last 80 years, the network has only grown by about 35%, with the five main routes now covering 4,043 km. More than 40% of the rails have been in use for more than 40 years; about one-third of the sleepers are wooden; 89% of its crossings with roads are at grade, causing undue traffic congestion and accidents; and only 133 of its diesel locomotive fleet of 209 (64%) are available for service.²⁹ Between 2007 and 2009, there were 171 railway accidents, with an average of 107 derailments per year.

²³ The total value of logistics costs of Thailand for 2008 was about \$57 billion.

²⁴ Data from Government of Thailand, NESDB. 2009. Thailand Logistics Report 2011. www.logisticsdigest.com/images/stories/Articles_Jun10/LogisticsCost_2008eng.pdf; and ADB, Japan Bank for International Cooperation (JICA), and World Bank. 2005. *Connecting East Asia: A New Framework for Infrastructure*. Washington, DC: World Bank.

²⁵ ADB, JICA, and World Bank. 2005. *Connecting East Asia: A New Framework for Infrastructure*. Washington, DC: World Bank.

²⁶ World Bank. 2007. *Strategic Urban Transport Policy Directions for Bangkok*. Washington, DC: June.

²⁷ World Bank. 2010. *Connecting to Compete 2010: Trade Logistics in the Global Economy*. <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTTRANSPORT/EXTTTLF/0,,contentMDK:21514122~menuPK:3875957~pagePK:210058~piPK:210062~theSitePK:515434,00.html>

²⁸ The World Bank's Logistics Performance Index surveys for 2007 and 2010 indicated the following indexes in 2007 and 2010, respectively: Thailand (3.31 and 3.29), Malaysia (3.48 and 3.44), Viet Nam (2.89 and 2.96), Singapore (4.19 and 4.09), the PRC (3.32 and 3.49), and Indonesia (2.75 and 3.01).

²⁹ Year 2009 data from JICA. 2010. *Data Collection Survey on Basic Information of Railway Sector*. Consultant's report. Tokyo. August.

SRT operations can be characterized as a railway having high operating and maintenance costs, low fares and charges, and poor service that does not meet market demands. The SRT is a combination of aging and outdated facilities and infrastructure, and a staffed organization with poor operational and financial management capabilities. For decades, it has been the subject of numerous reports and studies that have proposed various reforms and reorganizations, including privatization.³⁰ Most of the reorganization proposals have been built around the concept of splitting railway operations from infrastructure. The SRT will retain ownership of the track infrastructure, and operations will be opened up to the private sector.

To move toward an efficient, multimodal transport system, existing rail infrastructure must be rehabilitated before expanding the network by undertaking both capacity improvement—especially on congested parts of the network, such as on the route between Bangkok and Laem Chabang—and new construction. Toward this goal, the Cabinet has approved a budget of \$6.0 billion to launch a program dedicated to increase the energy efficiency of the transport system. The program includes a plan by the SRT, to undertake (i) civil works construction (\$1.6 billion³¹) including track and bridge rehabilitation, (ii) signaling systems (\$740.0 million), (iii) procurement of locomotives and rolling stock (\$575.0 million), (iv) construction of double-track routes (\$2.4 billion), (v) construction of a new inland container depot (\$190.0 million), and (vi) modernization of maintenance depots (\$43.0 million) from 2010 to 2014.

The government has also requested support from the Asian Development Bank (ADB) to help its railways perform a more substantial role in the transport system. As previously mentioned, one of the priority issues of the SRT is the reform of its accounting systems to develop a transparent, robust financial management system. This reform is necessary to create a separation between infrastructure and operations, which would allow it to structure its operations into business units as well as to encourage private sector participation.³²

SRT's other plans include double tracking 108 km of line in areas of high demand, procuring additional rolling stock, converting 873 km of main lines from single to double track, modernizing the signaling systems, linking to the networks of neighboring countries, and rehabilitating maintenance depots and tracks. In addition, in 2010, the government opened parallel discussions with the PRC to launch a large, high-speed train program in Thailand.

Urban transport. Given the role of the BMR in Thailand's economy, the country's competitiveness in the global economy is inextricably linked with the efficiency of urban transport in Bangkok. From more than a decade, beginning in the mid-1990s, the development of expressways (now totaling about 210 km³³) was the centerpiece of transport investment in Bangkok. Although the Expressway Authority of Thailand (EXAT) has a further 120 kilometers of expressway planned, major funding does not seem to

³⁰ Recent proposals include a Cabinet decision on 5 June 2007 for transport sector and railway subsector reorganization, which is stuck at the Office of the Council of State.

³¹ The program amounts in this paragraph are approximate.

³² ADB. 2008. *Rapid Assessment Report: State Railway of Thailand*. Consultant's report. Manila.

³³ These include the First Stage Expressway System, 1983 (27.1 km); Second Stage Expressway System, 1997 (38.4 km); Ramindra–At Narong Expressway, 1997 (18.7 km); Bang Pa In–Pak Kret Expressway, 2005 (32 km); Bang Na–Chonburi elevated expressway, 2005 (55 km); part of section 1 of the Third Stage Expressway System (4.7 km); the Suvarnaphumi Airport access expressway; and the Southern Bangkok Outer Ring Road, 2010 (35 km).

be forthcoming.³⁴ Instead, since the early 1990s, rail-based MRT has been seen as a priority, with 73 km of MRT developed from 1991 to 2010, and a further 55 km currently under construction or out to tender.³⁵

While expressway systems, and more recently MRT, have been attracting major investment, Bangkok's bus system has stagnated. The average age of the Bangkok bus fleet is estimated to be over 20 years old, and the accumulated deficit of the Bangkok Mass Transit Authority (BMTA) is estimated to be about B70 billion.³⁶ Further, due to growth in the economy and increasing congestion in Bangkok, ambient air quality standards for particulate matter, ozone, and most of the other criteria pollutants³⁷ are being exceeded in parts of the city for the first time since 2003, despite standards for fuel quality and new vehicle emissions being among the strictest in Asia.

Organization. Authoritative plans, sound governance, and adequate human and financial resources are essential for achieving a well-planned transport system and effective transport outcomes. Despite the improvements to the structure of transport administration in Thailand that flowed from the civil service reforms of 2002, in which all national transport-related agencies were brought under the control of the Ministry of Transport and Communications (MOT), an excessive number of agencies are responsible for the road, rail, and urban transport subsectors. For the rail and MRT subsectors, the Bangkok Transit System (BTS) has a major role in MRT development as the initiator of elevated heavy rail MRT in the city. The SRT and the Mass Rapid Transit Authority are also developing rail-based MRT systems in Bangkok.³⁸ For the road subsector, the Department of Highways (DOH) develops highways and motorways, and EXAT is responsible for expressways, which to date, have been confined to the BMR. The Bangkok Metropolitan Administration (BMA) is responsible for local road development in Bangkok and is also involved in the planning and construction of flyovers of major junctions and small-scale traffic management.

The Office of Transport and Traffic Policy and Planning (OTP) of the MOT has a clear mandate to coordinate strategic transport planning and investment decisions and to manage public transport operations. However, too often, the MOT (through the OTP) tends to reflect the desires of each of its agencies rather than represent an optimal plan, or even a realistic plan for metropolitan transport development.³⁹

Public-private partnerships. In the last 2 decades, steps have been taken by the government to regulate public-private partnerships (PPPs). In 1992, the Act on Private Participation in State Undertaking was promulgated to regulate PPP investments, which involved a two-step process of submission to a PPP

³⁴ EXAT was formerly named the Mass Transit and Expressway Authority of Thailand. Its planned projects include constructing (i) a collector road (2 km), (ii) the balance of Third Stage Expressway System (38 km), (iii) Ramindra-Outer Ring Road Expressway (9 km), (iv) Sri Nakarin-Samut Prakarn Expressway (14 km), (v) Fifth Stage Expressway System (23 km), (vi) Fourth Stage Expressway System (14 km), (vii) Si Rat Outer Ring Road (14 km), and (viii) Si Rat-Dao Kanong Expressway (4 km).

³⁵ This includes 9.1 km of MRT on the railway corridor to the west, 19.0 km of purple line MRT to the northeast, and 27.2 km of blue line MRT western extensions.

³⁶ According to the Ministry of Finance, at the end of 2005, the accumulated deficit of BMTA was B47 billion and was growing at B5.1 billion per annum in 2005 prices.

³⁷ Government of Thailand, Pollution Control Department. 2009. *Thailand's Air and Noise Status and Management in Year 2009*. Bangkok. September.

³⁸ The SRT owns the airport line and the western railway MRT; the Mass Rapid Transit Authority of Thailand owns and is developing the current blue line MRT and its planned extension, the purple line MRT.

³⁹ As an example, the new MRT master plan published in 2010 by the OTP proposes an additional 420 km of MRT to be constructed by 2030 for a total investment of \$25 billion, representing 22 km per year to be developed, which is seven times the historical rate of MRT development. The low rate of historical MRT development was in part due to lack of knowledge of MRT as well as the poor state of the economy and financial markets in the late 1990s to 2003 and again after 2008. Given the political uncertainty since the unrest of May 2010, economic prospects are uncertain, and MRT development is unlikely to be rapid.

committee. The committee would initiate the formal process of consideration of a project⁴⁰ and then approve it, paving its way to implementation. However, this act contained little additional legal framework or guidelines to facilitate PPP arrangements, and was not based on a partnership arrangement.⁴¹ Then, in June 2008, the government announced that it had established a high-level PPP committee, chaired by the Prime Minister, to select and approve potential PPP projects, but there was no accompanying legal framework or guidelines other than the reference to the 1992 Act.

In February 2009, the Cabinet set up a working committee to establish a framework on how to increase the private sector role in PPPs and to determine what additional policies, regulations, and new laws would be needed to encourage such participation from the private sector. Then, in May 2011, the Cabinet approved (in principle) the draft PPP Promotion Act, which also included a provision for the cancellation of the 1992 Act. This draft act has been sent to the Office of the Council of State for its legal consideration, will secure opinions from the National Economic and Social Development Board (NESDB) and the Budget Bureau, and will ultimately be submitted to the Council Liaison Committee for final consideration.

ADB has an ongoing technical assistance (TA) project to support the development of a PPP framework to help structure priority projects and to create institutional capacity in Thailand.⁴² The outputs include the (i) development of a national PPP policy framework and a central PPP unit with a detailed mandate, (ii) development of bankable PPPs for private sector participation, (iii) support for pilot transactions in priority infrastructure sectors,⁴³ and (iv) development of institutional capacity.

B. Constraints

1. Road Subsector

Outdated motorway master plan. The master plan for motorway development in Thailand was prepared by the Japan International Cooperation Agency (JICA) in 1990. Identifying a nationwide network of more than 4,100 km,⁴⁴ the master plan was prepared based on the premise that the motorway network would be the backbone for intercity vehicular travel. In lieu of proceeding with investing in an intercity motorway network based on high speed, high volume, and controlled access, the government opted to proceed with two phases of its national Four-Lane Highway Widening Program, which has been implemented along about 80% of the length of the nation's trunk road grid system. The DOH has recently commissioned a national consultant to undertake the updating of the motorway master plan.

Stalled motorway development. Of the national highway system, under the control of the DOH, only about 0.4% consists of access-controlled motorways. This gap in the road network hierarchy is emerging as a problem, as major highways are increasingly affected by congestion in the vicinity of towns including the approaches to Bangkok, the eastern seaboard industrial zones, and the Laem Chabang port. Without

⁴⁰ Projects with a value above B1 billion must go through the process set by the 1992 act.

⁴¹ Specific drawbacks included (i) time-consuming and prescriptive procedures; (ii) lack of clear definition of the nature, scope, and sector of a project; (iii) lack of defined policy principles and procurement process to be followed; (iv) undefined provisions for government support or obligations; and (v) absence of enabling provisions to facilitate private sector participation. Source: ADB. 2010. *Technical Assistance to Thailand for Mainstreaming Public-Private Partnerships*. Manila.

⁴² ADB. 2010. *Technical Assistance to Thailand for Mainstreaming Public-Private Partnerships*. Manila.

⁴³ Specifically by developing terms of reference for transaction advisors (e.g., legal, technical, financial, and environmental) to assist the Mass Rapid Authority of Thailand in preparing bid documents, interfacing with potential bidders, evaluating bids, developing financial models, selecting project developers, and negotiating with selected private concessionaires.

⁴⁴ Now, over 20 years later, only three DOH motorways have been completed: the Bangkok-Chonburi Motorway, the Outer Bangkok Eastern Ring Road, and the Southern Bangkok Ring Road motorways, totaling a little over 200 km, or about 5% of the scope identified in the 1990 master plan.

an access-controlled national road network, and having to depend only on four-lane divided highways, the road subsector is severely limited in its ability to further reduce the transport cost component (see table on page 4) of logistics costs.

Delays in developing a public–private partnership legal framework. The government policy for the future development of its strategic intercity motorway network is to attract private sector finance to address the funding gap. However, for the policy to succeed, the following challenges need to be addressed: (i) the expected low cost recovery of motorways from toll revenue alone and hence the need for other means of providing financial support efficiently;⁴⁵ (ii) inadequate legal and contractual mechanisms; and (iii) limited knowledge of, and capacity for, designing, procuring, and managing the new forms of concessions.

Performance-based road maintenance. Based on a pilot project initiated by the World Bank, the DOH is embarking on a strategy of wider use of performance-based road maintenance contracting using private sector contractors. The aim is to improve the quality of road maintenance and, over the period of the contract for a specific road section, to reduce maintenance costs. The DOH and the Ministry of Finance agree that performance-based maintenance is the most technically and financially viable option available to overcome chronic underfinancing of road maintenance on the national road network.

2. Rail Subsector

State Railway of Thailand’s excessive focus on investment. The government wants railways to perform a more substantial role in the transport system. Currently, the SRT is a passenger-oriented railway organization and earns one-third of its revenue from freight transport and two-thirds from passenger services. Yet, the SRT has so far been unable to achieve an operating surplus—cash flow deficit has been around \$185 million–\$200 million per annum⁴⁶—and hence requires considerable financial support. Experience with the revival of railways in other countries suggests that internal reforms by railway agencies are critical to achieving a financially sustainable future. To date, however, the SRT has made limited progress in initiating and sustaining suitable reforms to improve its efficiency.

3. Urban Transport

In 2007, the World Bank, under the Urban Transport Development Partnership, authored a report on Bangkok urban transport policy, in which it summarized the remaining challenges (footnote 26). This report determined that the remaining challenges lie mainly within the government’s area of influence including the efficiency and effectiveness of public investment in transport, and the supporting policy, plans, and programs that direct, coordinate, operate, and maintain the investment.

Ineffective integration and coordination of transport agencies. The government’s 2010 MRT master plan focuses only on the development of MRT infrastructure through a series of projects put forward by MRT agencies, SRT, Mass Rapid Transit Authority, and BTS. Consideration of integrating the individual MRT lines, and the associated operation and maintenance costs, need further attention.

⁴⁵ World Bank et al. 2007. *Consulting Services for Framework and Case Study for Public–Private Partnerships in Thailand’s Highway Program*. Bangkok.

⁴⁶ ADB. 2007. *Country Partnership Strategy: Thailand, 2007–2011*. Manila.

The government is considering the use of the gross cost⁴⁷ form of concession agreement for operations and maintenance, but further attention is needed to the development of (i) the appropriate payment mechanisms for MRT concessionaires; (ii) appropriate legal and contractual mechanisms; and (iii) the capacity for designing, procuring, and managing the new form of concession.⁴⁸

Poor land-use planning. BMA's ability to manage land use and development is improving but gaps exist. BMA's Department of City Planning prepares and administers the Bangkok city plan, which in practice, has had insufficient impact on the type of developments in each of BMA's 13 zones. The BMA can impose controls on individual buildings in terms of (i) setbacks along specified roads and within specified areas, (ii) their gross floor area and proportion of a site to be occupied, and (iii) parking requirements. However, the BMA imposes such controls inequitably, and they are not always enforced during implementation or during subsequent building operations.

Inattention to the bus system. The operations and effectiveness of the bus system need significant attention, even though it carries 10 times the demand of the MRT. The bus routes and services duplicate much of the current and planned MRT system, even though the bus network is being relied upon, and will continue to be relied upon, to expand the catchment areas of the present and future MRT systems. The BMTA has a high staff–bus ratio of 5.0 that is above the international good practice norm of about 3.5, which contributes to the bus system's inefficiency and ineffectiveness.

Institutional impediments limiting effective traffic management. The BMA and the Metropolitan Police are presently responsible for various aspects of traffic management in Bangkok.⁴⁹ Their responsibility is fragmented with a need for greater accountability.⁵⁰ For the BMR to have a comprehensive traffic management program, a competent organization, comprising experts in traffic management, administration, traffic engineering, and information technology, needs to be legally established and mandated with the overall responsibility for the city's traffic management. The police would then be charged with enforcement of traffic laws and regulations. The need for such an organizational arrangement has been widely known and accepted for decades, but needs to be implemented.

⁴⁷ ADB. 2006. *Integrating Mass Rapid Transit in Bangkok*. Manila (TA 4676-THA). This report recommended that a gross cost form of concession contract for MRT is needed to achieve the desired outcomes of an efficient, integrated, and flexible MRT system. Under such an arrangement, the government would pay for the cost of the infrastructure and services that each concessionaire provides. Payments would be related to patronage, commensurate with the ability of concessionaires to influence demand. Payments would also be linked to service quality. Fare revenue would be collected by a central agency using a single, common electronic ticketing system with fare revenue accruing to the government to contribute to the cost of its payments to concessionaires. Such a concession form could also be described as an availability performance contract. This differs from the current system in which each MRT line is operated independently, and each concessionaire collects and retains fare revenue for its line and attempts to meet costs from this and other sources of revenue without further recourse to government funds.

⁴⁸ The separate development of each MRT line as an individual project with a different operator has hindered the achievement of an integrated system through inadequate physical integration, implementation of noninteroperable ticketing systems and ticket products, different fare structures, and the requirement to pay a separate boarding charge for subsequent stages of a bus or MRT journey.

⁴⁹ BMA's main responsibilities for street management are provision and maintenance of signs and markings, sidewalks, and a shared involvement with urban traffic signal control with the Metropolitan Police. The Metropolitan Police is responsible for urban traffic control in Bangkok. In neighboring provinces in the BMR (and elsewhere) where the provincial police have authority, they appear to have less interest in urban traffic control, and local governments (e.g., Pattaya) have a significant traffic control function.

⁵⁰ For instance, when a new one-way street scheme or turning and/or parking restrictions are introduced, it is planned and implemented by traffic police officers, typically without any detailed analysis, use of traffic engineering principals, or input from the BMA.

Attention to pedestrians. Despite walking being a vital component of most trips and a major means of travel in its own right, pedestrians are generally given low priority in Bangkok's transport system—for example with respect to train and metro stations' accessibility—and often face poor quality sidewalks. Improved walkability is important. This will also expand the catchment of bus and MRT services.

C. Development Needs

1. Road Subsector

Motorway network expansion. As motorways account for less than 0.1% of the total road network in the country, there is room for motorway development to contribute to the improved performance of the road sector. With their integration into industrial zones and other economic drivers, and the effective management of strategic logistics interchanges through rationalization and access improvement to the many chaotic dispersed truck terminals in outer Bangkok, major advances in highway efficiency can be expected. Such motorway expansion could also significantly contribute to reduced logistics costs in the transport subsector.

2. Rail Subsector

Passengers or freight. Nonurban, mainly single-track railways can provide an efficient transport service for either passenger or freight services, but usually not both at once, because of their different operational needs. In Thailand, the largely social nature of passenger railway services where fares are retained at very low levels has hindered the development of efficient, effective freight railway services due to the need to share largely single-track infrastructure. The generally low level of either type of traffic does not justify double tracking, except in certain high-demand corridors, particularly regional cooperation corridors.

Experience in other countries suggests two key markets: (i) passenger travel, where there are either very large passenger flows or when passengers are prepared to pay a premium for the service that railways can offer; and (ii) freight market segments, where railways have a competitive advantage, which is likely to include the movement of bulk, relatively low-value freight over even moderate distances (around 100 km or more); the movement of higher-value, containerized traffic over longer distances (around 500 km or more); and the movement of freight where other transport and/or geographical or social constraints make it well suited. Railways generally need to carry large quantities of traffic to justify the high cost of fixed infrastructure, such as tracks and signaling systems.

Institutional reform and modernization. As previously mentioned, at the institutional level, assistance to reform the financial management system of the SRT can streamline the separation of the monolithic state-owned enterprise into different business units managing different types of operations. This will lead to accountable, sustainable rail services.

The government is also interested in ADB assistance to modernize the information technology systems, including signaling and system management. ADB is considering providing support to assess the needs and priorities of system modernization, as setting up a proper regulatory body to deliver security standards and to control railway operations will require a specific institutional and technical assessment. Actions that are needed include (i) focusing on the market segments in which the railway can use its competitive advantage to capture sufficient traffic to operate profitably, (ii) investing in fixed infrastructure and rolling stock that is essential to carry profitable traffic, and (iii) managing operating practices and costs to maximize efficiency. Payment of public service obligations for unprofitable services that governments require railways to provide, as what happens with the SRT, is appropriate as long as they encourage, rather than inhibit, efficiency.

3. Urban Transport

Consolidated road master plan for the Bangkok Metropolitan Region. The various road agencies have developed road plans, but only the OTP, over the long term, has the authority to develop a single, authoritative, consolidated road master plan to guide new road investments throughout the BMR. Such a road plan that permits improved coordination with planned major residential and commercial developments and other key urban infrastructure has been lacking and is a priority for the BMR and its neighboring provinces.

Integrated and accessible mass rapid transit. In the same way a hierarchical road system caters to demand in an efficient, effective manner, the development of an integrated, layered system of rapid transit (MRT and buses) and on-street bus services is needed by any large metropolitan city like Bangkok. Key needs are the (i) development of a consolidated rapid transit and bus services plan; (ii) need to promote sustainable private sector participation in future MRT and bus lines; (iii) integration of other modes of transit and coordinating institutions, which is currently being addressed by OTP; and (iv) integration of existing MRT operators into a new ticketing system, which is a matter of institutional complexity that has been studied by the OTP and ADB.⁵¹

Reorientation and modernization of the bus system. The potential for substantial improvement to urban bus operations has been identified by the BMTA and the State Enterprise Policy Office of the Ministry of Finance with Australian Agency for International Development support.⁵² Specific areas recommended for government intervention to commence BMTA reform and, more generally, bus system modernization, (i) clarify and separate regulatory and operational activities; (ii) corporatize and downsize BMTA, and convert it to just have an operator-only function; (iii) provide bus rapid transit and bus services through gross cost contracts, and permit integration with each other and MRT; (iv) purchase a new bus fleet; (v) redesign bus route structures and services to match demand; and (vi) introduce new bus operators with investment backing on a PPP basis in the medium term.

Public–private partnerships. MRT requires both high initial investment and high overall whole-of-life costs, and it generally has poor rates of cost recovery. Due to these cost characteristics, several recent ADB TA projects have identified gross cost concessions⁵³ as the optimal PPP arrangement for MRT in Thailand (footnote 47). In the case of MRT where there are strong network effects, the need for government to retain policy control of fares and to achieve an integrated transport system can only be achieved with gross cost concessions.

Although Thailand was an early pioneer of PPP arrangements for urban expressways and the two current forms of MRT in Bangkok, it must continue to mobilize private investment, facilitate appropriate risk transfer, and encourage innovation to provide value for money. To develop and sustain these new forms of gross cost PPPs and because of the complexity of the new modalities, a significant level of technical support and capacity building will be required.

⁵¹ ADB. 2008. *Technical Assistance to Thailand for Preparing the Bangkok Mass Rapid Transit Integrated Ticketing Project*. Manila. Development of a common, smart card-based electronic ticketing system for MRT, buses, and water transport modes in Bangkok and appropriate fare price setting is needed to facilitate affordable and effective fares, thus maximizing use and community benefits, while at the same time enhancing the cost recovery of MRT.

⁵² Centre for Transport Strategy, University of Queensland. 2006. *Technical Assistance to the Ministry of Finance for BMTA Bus Reform*. Funded by the Australian Agency for International Development's Public Sector Linkages Stream. Queensland.

⁵³ A gross cost concession defines the services (or outputs) required by the private sector, including provision of finance and investment in trains (for MRT) and other facilities; and the fixed infrastructure to be financed by the government. In return, the concessionaire receives certain payments by the government that are determined by competitive tendering.

A. Government Sector Strategy, Policy, and Plans

The government is in the process of finalizing the 11th Plan (footnote 1). Whereas the 10th National Economic and Social Development Plan, 2007–2011 stressed investment in infrastructure as a central midterm strategy for improving Thailand’s competitiveness, the 11th Plan will be based on a more holistic, people-oriented vision, that is, that Thai society should be built upon equity, fairness, and resilience. The 11th Plan will recognize three objectives: (i) to promote a peaceful society with good governance, (ii) to promote sustainable development, and (iii) to prepare society to be resilient to change.

In the application of the 11th Plan to the transport sector, the government plans to implement three strategies:

- i. **Creation of a knowledge-based economy.** A key component will be the continuing development of infrastructure and logistics systems by seeking support from the private sector through public–private partnerships (PPPs), improvement of logistics management, and development of modern information and communications technology systems.
- ii. **Strengthening of regional cooperation.** The country will aim to cooperate with neighboring countries to facilitate expansion along economic corridors, enhance capacities of border towns and economic zones, and provide infrastructure and logistics systems along these corridors.
- iii. **Support movement toward sustainability.** The plan will emphasize urban environment and infrastructure management to minimize adverse impacts on the environment and on communities.

As noted earlier, there is fragmentation in institutions with responsibilities for Thailand’s transport sector. The Bangkok Metropolitan Administration (BMA) has major responsibilities within its geographical area of jurisdiction, but this is less than the Bangkok Metropolitan Region’s (BMR) coverage, which more clearly encompasses the nation’s capital. In addition to ministries and departments of the national and local governments, there are a number of statutory authorities, state enterprises, and ministerial committees. The size and strength of most of the institutions makes interdivision and interagency coordination, and hence integrated transport, difficult to attain. Coordination and integration is facilitated by the incorporation of most of the major national transport departments within the Ministry of Transport and Communications (MOT), with the Office of Transport and Traffic Policy and Planning (OTP) playing the key role. Other ministries with major responsibilities in the transport sector are the Ministry of Finance, which is responsible for government budgets, public debt, and government shareholding in state enterprises, and the Ministry of Interior within which BMA and the police are located.

The MOT identifies its strategy as aiming to (i) increase the ability for infrastructure and transport services by encouraging a strategy for integrated transport for development; (ii) develop mass rapid transit (MRT) and other public transport services to provide accessible transport to the public and

to be a catalyst for the sustainable development of the country; (iii) streamline the existing transport network; (iv) ensure the safety of the transport system, lessen its environmental impact, enhance the quality of life of the community, and minimize economic loss; and (v) maximize the potential for good governance and improved quality of public transport with public participation in the monitoring of services.

B. ADB Sector Support and Experience

Thailand is currently the 17th largest shareholder of the Asian Development Bank (ADB). Total ADB lending to Thailand has been about \$5.4 billion; the energy sector has accounted for 31% of the lending, followed by transport and communications at 23%; finance at 12%; and loans for water supply, sanitation, and waste management comprising 10%. Most of this lending occurred during the 30-year period of 1966–1996, with a steady decline in disbursements since 1997; the only active loan is for the GMS Highway Expansion Project.⁵⁴ ADB has undertaken about 150 technical assistance (TA) projects in Thailand, at a total cost exceeding \$55 million.

ADB has played a continuing role in supporting the government, and in its response to the government's direction, ADB's role in Thailand has evolved toward knowledge products and complex operations involving the private sector. This assistance currently occurs within the framework of a country partnership strategy (CPS).⁵⁵ ADB is prepared to initiate new lending operations for transport, as it is able to employ its experience, skills, and products by assisting the government to implement its priority infrastructure agenda.

The most recent transport loan to Thailand, for the Bangkok Urban Transport Project, was rated *highly successful*.⁵⁶ The review of the project identified future needs as (i) government agencies concerned with road construction taking a more systematic approach to environmental management, land acquisition, and resettlement; (ii) the assessment of road maintenance budget requirements becoming more systematic; and (iii) creating more secondary and distributor roads in the BMR.

Line and other government agencies have demonstrated considerable capability to implement TA projects. Nevertheless, additional progress is needed in some aspects of the development process. Moreover, as its economy becomes more sophisticated, Thailand will need to draw upon international expertise and best practices to expand policy reforms. The ability of the government to develop its capacity to do so is illustrated by its use of TA provided by ADB since 2005 regarding MRT development in Bangkok, including private sector participation and planning for the introduction of integrated ticketing.

The current CPS describes the strategic partnership between the ADB and Thailand. At the national level, the CPS focuses on enhancing the competitiveness of the economy through infrastructure development, capital market development, and environmentally sustainable development. At the regional level, the partnership identifies certain joint initiatives, such as cofinancing projects in neighboring countries and facilitating increased trade and development. The CPS also places emphasis on knowledge sharing and private sector lending.

⁵⁴ ADB. 2010. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the Kingdom of Thailand for the Greater Mekong Subregion Highway Expansion Project*. Manila. The project will upgrade 178 km of two-lane national highways to a four-lane divided highway standard: Highway 12 from Phitsanulok to Lom Sak (73 km) on the Greater Mekong Subregion East–West Corridor, and Highway 359 from Phanom Sarakham to Sa Kaeo (73 km) along the Greater Mekong Subregion Southern Economic Corridor.

⁵⁵ ADB. 2007. *Country Partnership Strategy: Thailand, 2007–2011*. Manila.

⁵⁶ ADB. 2005. *Performance Evaluation Report: Bangkok Urban Transport Project in Thailand*. Manila.

The lessons learned from the last completed ADB transport sector project came from the Second Regional Roads (Sector) Project.⁵⁷ In the project completion report,⁵⁸ the following issues were identified: (i) cash flow problems were the single biggest cause of civil works delays, although it was noted that this was largely caused by the 1997/98 Asian financial crisis; (ii) procurement was delayed because the Department of Highways (DOH) was unfamiliar with ADB's standard bidding documents, and Cabinet approval of contracts was required; (iii) covenant compliance, especially with regard to submission of audited accounts and adequate maintenance of project facilities, needs to be enforced thoroughly during implementation; and (iv) an excessive number of components involving too many executing agencies complicated project administration. To address these issues, the following actions are proposed: (i) using international standard contract documentation following the requirements of ADB's international competitive bidding procedures, (ii) providing assistance to the government during the preparation and procurement of civil works and consulting contracts, (iii) specifically addressing compliance with loan covenants in all ADB loan review missions, and (iv) minimizing the number of project components and executing agencies.

In ADB's recent exposure to the urban transport sector in Bangkok, the primary lesson that has been because there are too many government agencies involved in urban transport, decision making is cumbersome, time-consuming, and often requires developing a consensus of opinion to move forward.

C. Other Development Partner Support

The government seeks coordinated and integrated involvement of development partners. With Thailand having reached many of the Millennium Development Goals in the early 2000s, few development partners currently remain in Thailand. ADB, Agence Française de Développement (AFD), Japan International Cooperation Agency (JICA), United Nations Economic and Social Commission for Asia and the Pacific, and the World Bank remain active directly and indirectly.⁵⁹ This has been supported by the Urban Transport Development Partnership, which is a cooperation framework established by ADB, AFD, Japan Bank for International Cooperation, and the World Bank Group.

The Japan Bank for International Cooperation has been active in supporting the development of MRT in Bangkok and also other railway programs of the State Railway of Thailand (SRT) through the provision of concessional lending and related support. Since Thailand is about to graduate from the higher section of middle-income country status, JICA's strategy will continue focusing on transport issues related to climate change and environment.

AFD's overall focus in Thailand is on public goods and decentralization, governance, and climate change.⁶⁰ AFD is not involved directly in the transport sector, but would consider a long-term perspective in railway and urban transport. AFD support to the decentralization of urban services and infrastructure management is done through subsovereign lending. AFD and ADB are currently identifying cooperation on key infrastructure sectors, including urban planning, water supply and sanitation, and urban transport.

The World Bank has provided considerable assistance to Thailand in the past. A review of the performance of 25 projects in Thailand approved between 1983 and 1990 found that it had been difficult to address the institutional and policy framework in Thailand, with institutions fragmented, overlapping, and

⁵⁷ ADB. 1995. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the Kingdom of Thailand for the Second Regional Roads (Sector) Project*. Manila.

⁵⁸ ADB. 2004. *Completion Report: Regional Roads (Sector) Project and Second Regional Roads (Sector) Project in Thailand*. Manila.

⁵⁹ Through governance and institutional cooperation programs, environment, climate change in the transport sector, or urban development projects.

⁶⁰ France is participating with \$300 million in the Carbon Technology Fund.

duplicative. The report also recommended that urban transport be given top priority.⁶¹ In its 2008 review of infrastructure, the World Bank identified key objectives in the transport sector as being to (i) promote the role of railways in Thailand, (ii) improve railway infrastructure and SRT performance, (iii) increase the resources available for road maintenance, (iv) prevent encroachment of development along highways to improve road safety and traffic movement, and (v) take account of the implications of regional transport developments for transport in Thailand.⁶² ADB has been recently directly collaborating with the World Bank in regard to cooperation and information sharing on the World Bank's ongoing Highways Management Project.⁶³ Further, they are jointly financing 433 kilometers (km) of road improvements under the Government's Four-Lane Highway Widening Project (Phase II).⁶⁴

The government has established the Neighbouring Countries Economic Development Cooperation Agency (NEDA) as a means to provide development support to other countries in the region. ADB and the World Bank have established working relationships with NEDA. To date, NEDA has provided financial support for the extension of the railway between Bangkok and Nongkhai across the Friendship Bridge that passes over the Mekong River to a terminal at Thanalang on the outskirts of Vientiane in the Lao People's Democratic Republic. It is also assisting in the upgrading of a section of the Greater Mekong Subregion (GMS) Southern Coastal Corridor in Cambodia that links Bangkok to the Mekong Delta in Viet Nam. This expansion of the government's interest to the links with neighboring countries will contribute to regional transport integration and support Thailand's role as a transport hub.

D. ADB's Sector Forward Strategy⁶⁵

ADB's forward strategy in the sector will be designed to address the core sector problem: its noncompetitiveness and inefficiencies, while focusing on the land transport subsectors of rail, motorways, and urban mass transport in the BMR (Appendix). To maximize effectiveness, the strategy will also address the three major identified sector causes of the core problem: (i) noncompetitive and inefficient national logistics networks; (ii) lack of integration and poor continuity of BMR transport networks; and (iii) inefficient planning, programming, and implementation of transport projects. ADB's future assistance to the transport sector will also address emerging issues such as climate change and urban congestion.

Based on the 11th Plan and ADB's assessment of the transport sector, the strategy concentrates on four support areas: (i) railway modernization; (ii) expansion of the motorway network; (iii) support for the urban MRT network in the BMR; and (iv) advisory capacity development in procurement, PPPs, and good governance. The advisory capacity development support will be designed into each project as a cross-cutting activity. The targeted sector impacts of the strategy will be to reduce transport logistics costs, urban congestion, environmental and social degradation, and operating costs and delays in the implementation of transport projects. The overall national impact will be to improve logistics, trade, and support to economic and social development.

⁶¹ Talvite, A. 1997. *Performance Audit Report: Thailand, Second Provincial Roads Project, Highway Sector Project, Second Highway Sector Project, Third Highway Sector Project, and Railway Efficiency Improvement Project*. Report No. 16733. Washington, DC: World Bank.

⁶² World Bank. 2008. *Thailand: Infrastructure Annual Report 2008*. Washington, DC.

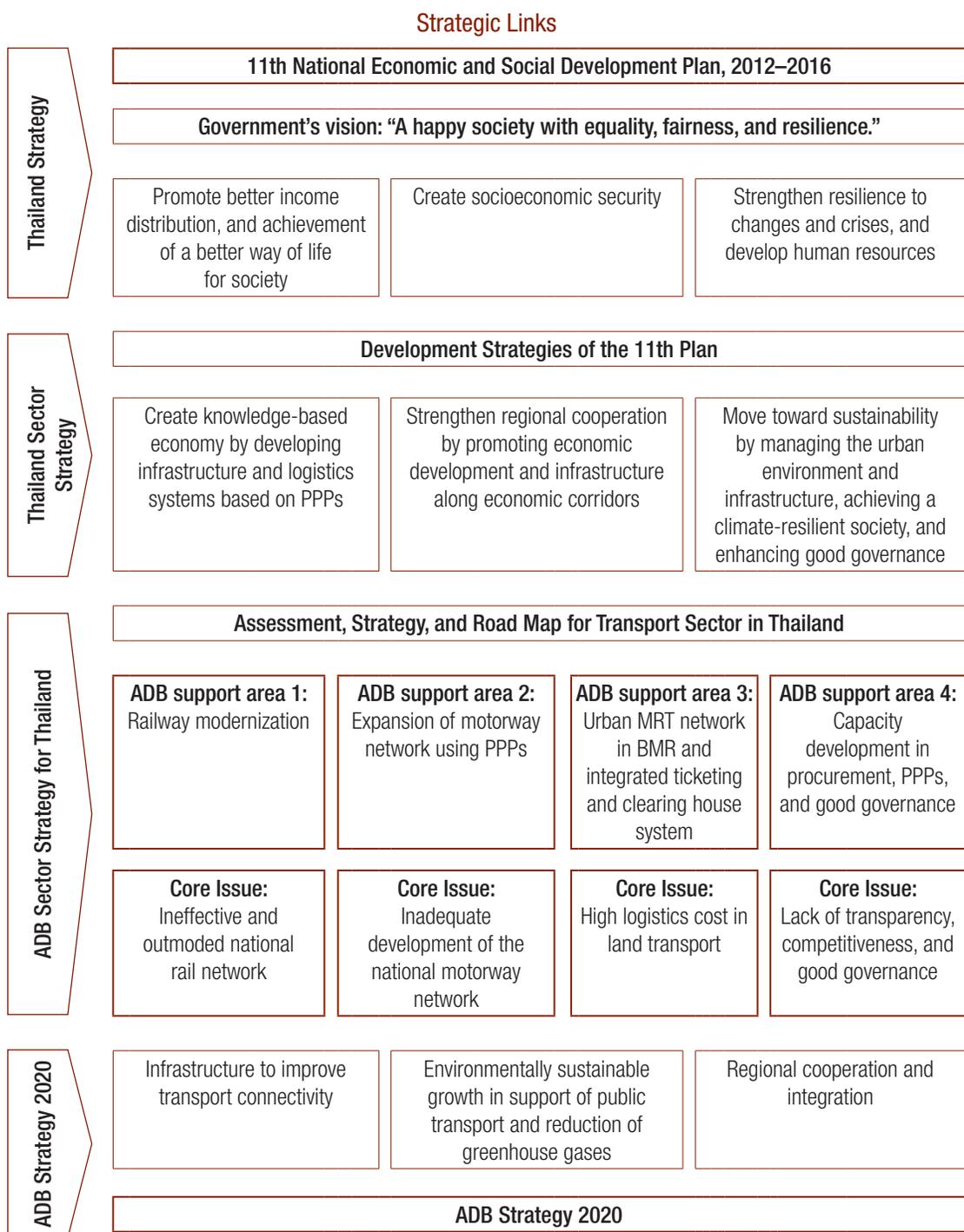
⁶³ TA under this project includes (i) developing recommendations for an appropriate framework to ensure a clear separation of responsibilities for roads and to provide effective management of road infrastructure; (ii) developing a program for increasing the institutional capacity of DOH (or a successor agency) to manage road assets; and (iii) preparing a preliminary technical and financial assessment of the Bang Pa-In-Nakhon Ratchasima Motorway, including a concession agreement for a PPP to finance, implement, and operate the motorway.

⁶⁴ With the ADB component being presently implemented under the GMS Highway Expansion Project.

⁶⁵ The strategy presented here is for discussion purposes only and represents no commitment on behalf of ADB or its clients.

Expected Results

The strategic links showing the four support areas of potential ADB support are indicated in the figure below.



ADB = Asian Development Bank, BMR = Bangkok Metropolitan Region, MRT = mass rapid transit, PPP = public–private partnership.
Source: ADB.

Railway modernization. In May 2011, ADB held discussions with the government on a proposed Railway Modernization Project for the SRT.⁶⁶ The results of this discussion confirmed the focus and priority given by the government to rail transport in Thailand. The government requested that ADB prepare and design an investment and modernization program for the SRT with the following objectives: (i) to define a turnaround and modernization strategy for the SRT, (ii) to identify an investment program for rehabilitation and development of selected sections of the SRT rail system⁶⁷ aimed at supporting this modernization strategy, and (iii) to develop a realistic implementation road map. The investment program will study the modality of financing, including the multitranche financing facility.

The major thrust of the ADB program in the transport sector in the near term will focus on the upgrading and modernization of the SRT network and infrastructure. The National Economic and Social Development Board recently instructed the Public Debt Management Office to include the Railway Modernization Project in the government's 2012 financing program. The concept for the project is under preparation and review, and the project preparatory TA is in the pipeline for 2012.⁶⁸ There are ongoing discussions with AFD and JICA to cofinance the project.

Expansion of motorway network using public–private partnerships. In the road subsector, the expansion of the motorway network offers the best opportunity for reducing logistics costs. Only through the effective use of PPPs will the motorway network in Thailand be able to expand. In 2010, ADB approved a TA project for mainstreaming PPPs in Thailand, and it is expected to be finalized in 2011.⁶⁹

ADB is providing technical advice and support for the strategic intercity motorway network.⁷⁰ The study is expected to be completed in 2012. Under this study, ADB will assist the government to prepare a clear, detailed financial and implementation plan utilizing an appropriate PPP arrangement, so that certain motorways along five corridors⁷¹ radiating out from Bangkok will be financed, constructed, and operational by 2017.

In early 2011, ADB carried out a rapid assessment for a potential motorway project in southern Thailand from Hat Yai to Sadao, near the Malaysian border.⁷² The DOH intends to construct a new section of the intercity motorway (along a new alignment) from National Route 4 northwest of Hat Yai to bypass congested environs around Hat Yai and connect directly to the Thai–Malaysian border crossing.⁷³ The new motorway would connect to the present Malaysia expressway system at that point, and provide a continuous expressway (i.e., a controlled-access roadway) from north of Hat Yai to Singapore. This project is one of the flagship projects of Thailand under the Indonesia–Malaysia–Thailand Growth Triangle cooperation framework, and would be part of the continuation of the GMS North–South Corridor.

⁶⁶ ADB. 2011. *Railway Modernization Project. Back-to-office report of reconnaissance mission.* Manila. 23–26 May.

⁶⁷ One of the primary criteria for selecting sections of the rail network for rehabilitation under this ADB program will be rail links and other improvements that support ADB's regional cooperation policy.

⁶⁸ The estimated cost of the project preparatory TA is \$1.5 million.

⁶⁹ ADB. 2010. *Technical Assistance to the Kingdom of Thailand for Mainstreaming Public–Private Partnerships.* Manila.

⁷⁰ ADB. 2008. *Technical Assistance to the Kingdom of Thailand for an Implementation Plan for the Strategic Intercity Motorway Network Project.* Manila.

⁷¹ The five corridors are (i) Bang Pa-In–Nakhon Ratchasima, (ii) Chonburi–Map Ta Put, (iii) Bang Pa-In–Nakhon Sawan, (iv) Bang Yai–Kanchanaburi, and (v) Nakhon Pathom–Cha Am.

⁷² ADB. 2011. *Rapid Assessment Report: Road Sector in Southern Thailand.* Consultant's report. Manila.

⁷³ The DOH intends to utilize a PPP to finance and implement this motorway.

There is presently road and urban congestion along the existing National Route 4 alignment between Hat Yai and the border station.⁷⁴ The next step will be further discussions with the DOH.

Urban mass rapid transit network in the Bangkok Metropolitan Region and integrated ticketing and clearing house system. ADB has recently completed a study for preparing an MRT integrated ticketing project in the BMR.⁷⁵ Its objective was to support the Public Debt Management Office and the OTP to develop a strategic approach, financing plan, implementation program, and project management arrangements to procure an integrated ticketing system for the new rail MRT lines included under the government's expansion plans for the network.

The OTP recently indicated that ADB's continued engagement in the MRT integrated ticketing project was key to setting up of such intelligent transport system in Thailand. In response to this request, ADB is considering to provide technical advisory and capacity building support, to be financed through the e-Asia Fund, aimed at supporting the information and communication technology needs of the project.

Capacity development in procurement, public-private partnerships, and good governance. Capacity development in procurement and good governance will be a cross-cutting activity integrated into ADB's support for areas 1, 2, and 3. Recent experience in Thailand on the GMS Highway Expansion Project and discussions with government officials during the preparation of this assessment, strategy, and road map as well as discussions with development partners, have confirmed that too often there is a lack of transparency and competitiveness in procurement, particularly for civil works on large transport projects. Other common issues in the procurement process include excessive bureaucratic processes and outside interference in the bidding process. The outcome in large-scale procurement is often long delays in bidding and award, prolonged construction periods, and high construction costs. The ADB strategy will be to include appropriate capacity development components as an integral part of all projects, with the intended impact being increased good governance in civil works procurement.

⁷⁴ Average daily traffic along this road is in excess of 25,000 vehicles per day, and the cross-border freight and passenger traffic is estimated to be one of the highest of any border crossing between GMS countries. The estimated budget cost of the new motorway section is about \$300 million.

⁷⁵ ADB. 2007. *Technical Assistance to the Kingdom of Thailand for Preparing the Bangkok Mass Rapid Transit Integrated Ticketing Project*. Manila.

IV

Transport Sector Road Map and Results Framework

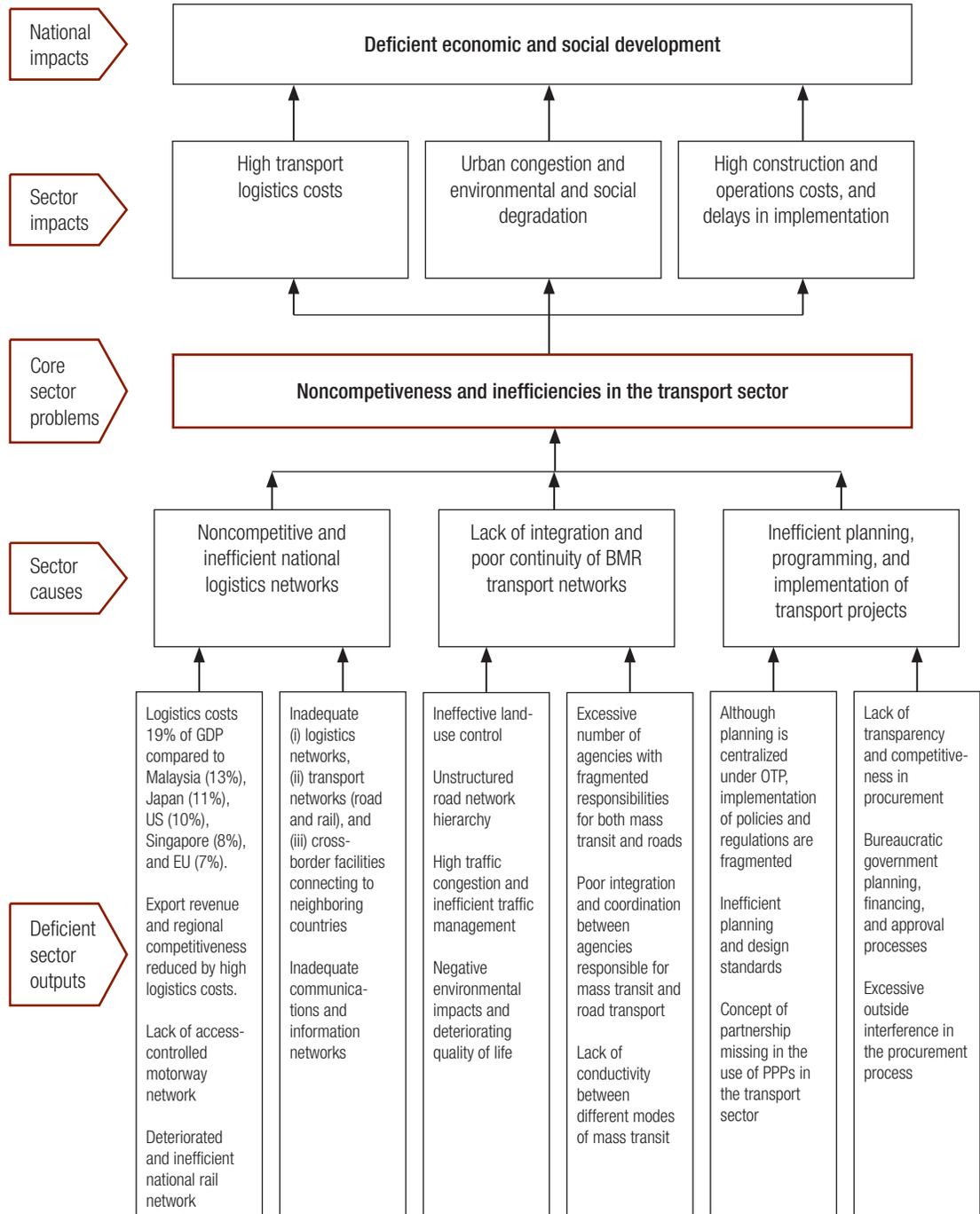
Country Sector Outcomes		Country Sector Outputs		ADB Sector Operations	
Outcomes with ADB Contributions	Indicators with Targets and Baselines	Outputs with ADB Contributions	Indicators with Incremental Targets (Baseline Zero)	Planned and Ongoing ADB Interventions	Main Outputs Expected from ADB Contributions
<ul style="list-style-type: none"> Reformed and physically rehabilitated SRT operating more efficiently Expanded motorway network to the north and to the west of the BMR Increased integration and coordination of mass transit entities in the BMR Greater efficiency, transparency, and cost effectiveness in civil works procurement 	<ul style="list-style-type: none"> Cross-border traffic increases between Thailand and Malaysia by 20%, and between Thailand and the Lao People's Democratic Republic along the East–West Economic Corridor by 20% within 3 years of the completion of the Hat Yai–Sadao motorway and the four-laning project along the corridor. The SRT takes the first significant steps in its reorganization as part of its modernization program. The government significantly increases its support for the subsectors of rail, inland waterways, and coastal shipping. The government supports and implements a coherent policy framework for PPPs as it applies to the transport sector. 	<p>Roads</p> <ul style="list-style-type: none"> Increased road capacity along GMS East–West Economic Corridor and the GMS Southern Economic Corridor 60-km motorway prepared for PPP implementation Increased regional connectivity <p>Rail</p> <ul style="list-style-type: none"> Double tracking, new locomotives, and modernized signaling and operational systems Strengthened capacity and rail reforms implemented <p>Urban Transport</p> <ul style="list-style-type: none"> An operating common ticketing system for many components of Bangkok's urban transport network <p>Intermodal</p> <ul style="list-style-type: none"> A study that produces development guidelines to establish priorities between projects in road, rail, and inland waterway subsectors 	<ul style="list-style-type: none"> Road capacities along 178 km of East–West Economic Corridor and the Southern Economic Corridor are increased by 100% Congestion relieved, and more efficient shipment of goods and passenger across border between Thailand and Malaysia averaging 45-minute time savings per truck and 30-minute time savings per passenger car Financial and asset management of the SRT operations approved Physical completion of double tracking (415 km) in 2017 (baseline: TBD) Railway operational capacity doubled by 2017 (baseline: TBD) Number of railway accidents reduced by 50% along the lines (baseline: TBD) Locomotives upgraded and in operation by 2017 (baseline: TBD) 	<p>Planned Key Activity Areas</p> <ul style="list-style-type: none"> Modernize railway Expand motorway network Improve MRT operations Intermodal development assistance for railway, road, inland waterway, and coastal shipping subsectors Develop capacity in procurement and good governance for PPPs <p>Projects in the Pipeline with Estimated Amounts</p> <ul style="list-style-type: none"> Project preparatory TA for Railway Modernization Project Railway Modernization Project TA study on intermodal development priorities <p>Ongoing Projects with Approved Amounts</p> <ul style="list-style-type: none"> GMS Highway Expansion Project (Loan: \$77.1 million) Implementation plan for Strategic Intercity Motorway Network Project (\$1.45 million) 	<p>Planned Key Activity Areas</p> <ul style="list-style-type: none"> MRT common ticketing equipment and implementation and development support Prefeasibility study for GMS conductivity and double-tracking railway project <p>Ongoing Projects</p> <ul style="list-style-type: none"> Highway expansion construction (178 km) MRT common ticketing program development Motorway PPP implementation program (60 km, one section)

ADB = Asian Development Bank, BMR = Bangkok Metropolitan Region, GMS = Greater Mekong Subregion, km = kilometer, MRT = mass rapid transit, MRTA = Mass Rapid Transit Authority of Thailand, PPP = public–private partnership, SRT = State Railway of Thailand, TA = technical assistance, TBD = to be determined.

Source: ADB staff.

Appendix

Transport Sector Problem Analysis



BMR = Bangkok Metropolitan Region, EU = European Union, GDP = gross domestic product, OTP = Office of Transport and Traffic Policy and Planning, PPP = public-private partnership, US = United States.

Source: ADB.

Thailand Transport Sector Assessment, Strategy, and Road Map

The Asian Development Bank (ADB) is preparing sector assessments, strategies, and road maps (ASRs) to help align future ADB support with the needs and strategies of developing member countries and other development partners. ASRs are a working document that help inform the development of country partnership strategies. This transport sector ASR highlights development issues, needs, and strategic assistance priorities of the Government of Thailand and ADB, with a focus on roads and railways. It highlights sector performance, priority development constraints, the government's strategy and plans, other development partner support, lessons learned from past ADB support, and possible future ADB assistance, including knowledge support and investments. The product serves as a basis for further dialogue on how ADB and the government can work together to tackle the challenges of managing transport sector development in Thailand in the coming years.

About the Asian Development Bank

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two-thirds of the world's poor: 1.8 billion people who live on less than \$2 a day, with 903 million struggling on less than \$1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

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