URBAN RAILWAY PROJECTS IN BANGKOK
— Measures for Securing Financial Resources —

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Foreword

Traffic congestion, as a result of increased urbanization and rapid economic and population growth, is a growing problem in many developing countries. The "mega-cities" of south east Asia provide a clear illustration of the difficult condition. In an effort to reduce road congestion, urban mass transit railway projects, such as subways, are planned and, in part, under construction. The OECF has recently experienced an increase in requests for finance for these sorts of projects.

Urban railway projects require large initial investments and long term operation costs. In implementing projects in this sector, policy measures designed to secure financial resources are an important factor. In this paper we first compare existing urban railways and their financing structures. Utilizing this knowledge, we then studied the present situation of Bangkok, Jakarta and Manila. Our final recommendation was that for urban railway projects in Bangkok, the projects beneficiaries should be responsible for securing financial resources. We also carried out a simulation to demonstrate the validity of our recommendations.

This study has been conducted under the Special Assistance for Development Policies and Projects scheme which started in fiscal year 1997. In the course of this research, we organized the study group. We would like to thank Dr. Hitoshi Ieda, Professor, Department of Civil Engineering, University of Tokyo, Dr. Tetsuo Kidokoro, Associate Professor, Department of Urban Engineering, University of Tokyo and Senior Research Advisor, Research Institute of Development Assistance(RIDA), OECF, Mr. Makoto Ito, Director of Public Relations Division, General Manager of Study and Research Division, Institute for Transport Policy Studies, Mr. Kazuaki Hiraishi, Researcher, Institute for Transport Policy Studies for their guidance and comments on this study. We also express our appreciation to the cooperation given by the officials of the governments of Thailand, Indonesia and the Philippines during our research activity.

This paper was written by the following staff. Dr. Tetsuo Kidokoro reviewed the general composition and contents.

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I hope that this paper would contribute to the development of urban railway in the developing countries.

August 1998

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Summary

Chapter 1  Brief History of Urban Railways and the Necessity of Government Involvement

1. Brief History of Urban Railways

The early urban railways in Europe, the U.S, and Japan were primarily financed and operated by private corporations, which were financially self-supporting until the end of the 19th century. However, the modern urban railways are in competition with automobiles. That is why public participation is necessary for the development of modern urban railways in highly developed city areas.

2. The Merit and Benefit of Urban Railways

Urban railways have a number of advantages over other modes of transport, such as its greater capacity, speed and reliability. Furthermore, urban railways provide transportation for the lower-income population and it is less environmentally harmful and much more safe. These factors indicate how urban railways are able to bring about various benefits not only to passengers but also to road users, property owners, and the regional economy. A system for classifying urban railway benefits, beneficiaries, and measures to capture them is described in Figure 1.

![Diagram of Benefits from Newly Constructed Railways](image)

Figure 1  Benefits from Newly Constructed Railways

3. The Necessity of Government Involvement

It is necessary for the government to be involved in intermediating of external monetary and technical issues, managing long-term project risks and planning and implementing an overall plan. However, excessive political involvement should be avoided for the sake of efficient and effective development of urban railways.
Chapter 2  Case Study of Railway Constructions Financing Methods around the World

In this chapter, case studies of urban railway financing strategies in the United Kingdom, France, Germany, the United States, Singapore, Hong Kong, Korea and Japan are presented. Prior to the case studies, the results of a comparative analysis are also presented as follows:


The methods for constructing and operating urban railways reflect each country's basic policies towards railway development, the relationship between central and local governments (in particular, the capital city or region), and the division of responsibility for public transport projects between public and private sector entities.

The various concepts may be roughly divided into the three following types, in descending order of public participation: (1) public responsibility, (2) financial independence and (3) limited assistance.

2. Procurement of Urban Railway Construction Funds

Funds for capital investments in railway systems are raised by railway project implementing organizations in each country through a combination of (1) capital contributions, (2) bonds, (3) loans, and (4) subsidies.

3. Reversion of Profit Accruing from Development

In some of the cases, for the purpose of raising a large amount of initial investment, value capture schemes such as government property tax revenues and related tax revenues have been adopted.

4. Support Measures for Railway Operations

In order to cover railway operating costs, the fare revenues (the number of railway users) need to be maximized. When fares fall short of operating costs, subsidies from central and local governments, and favorable tax and finance conditions can be applied to reduce financial burdens on the railway operators. In addition, there are often other laws that also promote railway construction projects.

5. Private Sector Involvement

In general there are two purposes for private sector involvement in urban railway projects: (1) reduction of the financial burden to the public sector (i.e. central and local governments); and (2) introduction of the efficient private management skills.

Patterns of private sector involvement projects are classified depending on the degree of private sector involvement such as procurement and construction of railway facilities, ownership and operation of facilities, management of facilities etc.
Chapter 3  Basic Concepts Regarding Financial Resources for Urban Railway

This chapter summarizes the most relevant issues related to securing financial resources for urban railway construction drawn from the cases presented in Chapter 2.

1. Project Implementing Organizations

Railway financing options are directly affected by whether or not the railway operator is capable of raising sufficient funds on its own. The following points require careful consideration.

(1) Will one railway project implementing organization be responsible for both construction and operation, or will there be separate entities for each?
(2) Will the business entities mentioned above be public sector or private sector?
(3) In the case of public sector business entities, will there be direct government control or will it take the form of a publicly-owned corporation?

2. Administrative Institutions

It is proper for local government institutions to play an active role in urban railway construction since the urban railway will produce primarily local benefits. However, the following points should be considered carefully when determining which governmental entities will play key roles.

(1) If the railway benefits will be realized over a wider geographic region than is covered by existing public administrations, a superior administrative entity must take part in the railway development.
(2) It is necessary for a government organization at the largest administrative level to oversee railway alignment within a development plan and to develop a consistent plan from a long-range point of view.
(3) It is also necessary to examine to what administrative level automobile control policy makers belong.

3. Public Finance System

Tax and fee revenues should capture the benefits that result from urban railway construction, and can be used to cover construction expenses. Therefore it is necessary that a public finance system be implemented along the following lines:

(1) If a local government or public corporation plays the main role in the construction of an urban railway, the construction entity must secure financial resources in the form of local taxes and fees or else it will depend on financial assistance from the central government.

4. Value Capture of Land Development Profits

In order to equitably share railway construction costs to all who receive its benefits, it is necessary to "capture" revenues from indirect benefits as well. The following systematic framework is necessary to accomplish this task:

(1) Establishment of a legal system related to the railway business,
(2) Identification of real beneficiaries,
(3) Establishment of a real estate tax system that enables railway-induced development profits, to be "captured" and systematic collection of the tax, and
(4) Establishment of a legal system related to urban development (i.e. an urban planning law).

5. Introduction of the Private Sector

Although effective urban railway management may be difficult to achieve in the public sector, the following points should be considered carefully when introducing the private sector to railway operations:

(1) Establishment of a system that guarantees commercial profitability and reduces business risk, such as a private sector business act law,
(2) Identification of areas eligible for governmental assistance (i.e. assistance for construction and operation costs, low interest loans, "favorable" treatment provisions, etc.), and
(3) The state of domestic financial markets.

6. Urban Structure and Urban Railway Planning

In order to reinforce the city structure which pays attention to the preservation of the urban environment, urban railway construction must not only address the technical master plan for the railway network, but it must also consider the overall master plan for city development. It is necessary to take a long-term view and make a consistent plan. Finally, it is crucial to recognize the synergistic effects of creating a network of urban railway lines which increase user convenience.

Chapter 4 Urban Railway in Bangkok, Jakarta, and Manila

This chapter describes the current status of the urban railways in Bangkok, Jakarta, and Manila. The summary from viewpoints of chapter 3 is as follows:

1. Operation Organization

In Bangkok and Manila, public corporations, which were newly established for a particular purpose and directly controlled by the central governments, have been responsible for urban railway construction and operation.

In those cities, there are also on-going or planned franchising projects in which the central and local governments conclude the concession contract for construction and operation.

2. Administration System

While the local administrations found in Bangkok, Jakarta and Manila have, in theory, the necessary authority to plan large scale infrastructure projects, the reality is that many such projects have not been carried out because the local governments lacked the necessary authority and financial power.
3. Financial System

The financial resources of local governments, which administrate the capital cities in these countries, consist of their own financial base and subsidies by the central government. However, the budget for large scale infrastructure development such as urban railways within their administrative districts is directly allocated to national executing agencies but not to the local governments. This budget allocation system discourages local governments from developing large scale projects.

4. Value Capture

Since a tax system to capture direct and indirect benefits generated by urban railway development has been established in all three countries, capturing the benefits is theoretically feasible. However, the current tax system needs to be improved. There is no system for determining basic policies and agreements as to the extent of funds raised by the value generated by urban railway construction which should be directed towards future development.

5. Introduction of Private Participation

All three countries have been trying to introduce private participation in urban railway projects. However, the BOT Law for the above policy is in effect only in Thailand and the Philippines. In Indonesia, this policy differs due to the presidential orders, so coordination is necessary. Currently, in the three countries, there is no urban railway project with private participation in which construction has been completed and operation started. Thus, it is too premature to determine the most valuable method for project success as well as a desirable involvement by both the government and private sector.

6. Urban Structure and Urban Railway Plan

In general, urban railway plans are not coordinated with urban structure and urban planning. Since in the three countries, a mechanism for the sufficient coordination by the planning bureau, and other departments (ministries) and agencies and local governments has not been established.

Chapter 5  Recommendation on Securing Financial Resource

Utilizing the basic concepts learned from the existing examples of urban railways in various countries and the current status of urban railways in three Asian cities, recommendations for securing financial resources for urban railway construction in Bangkok are presented in this chapter.

1. Basic Concept for Recommendation

The basic concepts for the recommendation are: (1) Principles that beneficiaries should pay for its benefit, (2) Positive Involvement of the Thai government and Bangkok Metropolitan Authority (BMA), and (3) Introduction of the private sector initiative and know-how.
2. Proposals of Concrete Individual Measures

Based on the above, the report recommends the following measures for securing financial resources.

(1) Direct measures to secure fund

① Measures to increase fare revenue
   - Provision of facility for transferring to other urban railway lines and to other modes of transportation
   - Enforcement of feeder services
   - Coordination with suburban residential and commercial development plans
   - Control of vehicle ownership and usage through taxation

② Proposal of measures for reversion of indirect benefit
   - Increase of the car registration tax in BMA area
   - Increase of the gas tax in BMA area
   - Introduction of environmental tax (new tax)
   - Ear-marking of a part of a house & building tax that is considered to have benefited from railway development
   - Ear-marking of a part of a land building tax that is considered to have benefited from railway development
   - Introduction of charges for transport inducement

(2) Supportive measures for fund raising
   - Strengthening of OCMLT's authority
   - Introduction of private sector initiative
   - Coordination with Suburban Residential and Commercial Development Plans
   - Connection fee for the underground passage between the metro station and the real property to be charged to the property owner

3. Simulation Result

Seen from the proportion of the revenue from earmarked tax against the total project cost, effect of implementing individual measures are as Table 1 below:

Motor vehicle registration tax effects the most against the total project cost.

Thai government can reduce its financial burden by capturing those benefits.

<table>
<thead>
<tr>
<th>Measures</th>
<th>Ratio to the total project cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional tax on car registration tax</td>
<td>19.4 %</td>
</tr>
<tr>
<td>Additional tax on gas tax</td>
<td>7.3 %</td>
</tr>
<tr>
<td>Introduction of environmental tax</td>
<td>4.9 %</td>
</tr>
<tr>
<td>A portion of house and building tax increase</td>
<td>0.7 %</td>
</tr>
<tr>
<td>Introduction of land development tax</td>
<td>4.0 %</td>
</tr>
</tbody>
</table>
CHAPTER 1

BRIEF HISTORY OF URBAN RAILWAYS CONSTRUCTION AND THE NECESSITY OF GOVERNMENT INVOLVEMENT

The prevailing modes of urban public transport include buses, trams, light railways, “advanced” transport systems (such as monorails and automated guided transport), and mass rapid transit (MRT, such as subways and commuter railways). Buses are used as the primary mode of public transport in many cities due to their flexible operating characteristics – including the relative ease with which they may be re-routed, and the low capital costs of introducing service (i.e. the guide-way is provided by other entities than the transit operator). However, buses are typically affected adversely by traffic congestion. This causes significant reductions in bus transit travel speeds and service reliability, leading passenger preferences to shift to alternate, usually private modes such as cars and motorcycles, if they are available. The resulting increase in private vehicle traffic further aggravates congestion, and the downward cycle continues. This situation may also affect other transit modes without dedicated rights-of-way, such as some streetcars.

For these reasons and others, urban rail mass transport systems have been planned and built in number of countries, despite their relatively high costs of construction and operation. Yet, governments differ in their policies and strategies regarding urban mass transit. This chapter first conducts a review of the roles of rail mass transit systems and their development in major metropolitan areas of Europe, the United States, and Asia. Then the economic benefits brought by urban railways and the necessity for public involvement in their planning, construction, and operation is considered.

1.1 BRIEF HISTORY OF URBAN RAILWAYS CONSTRUCTION AND ITS CURRENT STATE

1.1.1 Brief History of Urban Railways Construction

(1) Private sector-led birth of urban railways

France, Great Britain, and the United States in the 19th century were focal points of early transit innovation, as their burgeoning urban populations and expanding cities created large markets for urban travel at a rate faster than walking. Horse-drawn “omnibuses” plied the cobblestone streets of Paris and London by 1828, while the first urban railway –
a horse-drawn predecessor of the streetcar – began service on the muddy streets between lower Manhattan and Harlem in New York in the same year. By the 1860's, steel wheel and rail traction had proved superior to wheeled wagons on even the best paved streets, and horse- and steam-powered urban street railways appeared across all the major cities of Europe and the United States. These became the prototypes for today's railways. Interurban passenger railway development was also promoted as a part of the Meiji Restoration in Japan, and resulted in rapid railway construction from 1872 onwards, although about 30 years later than in Europe and the United States.

By the end of the 19th century, electric motor technology came of age, and the modern electric street railway or tram was born. Traffic congestion on the often narrow city streets soon brought the nascent transit systems to a crawl though, and grade-separated elevated and underground urban railways began to be built to provide the quickest, most reliable service possible. London saw completion of the world's first subway in 1863, while Paris, New York, and Tokyo followed in 1900, 1903, and 1927 respectively. In addition, each of these cities saw substantial construction of "commuter"-oriented surface railways over the same period.

The early rail-based transit systems in Europe, the U.S, and Japan were primarily privately financed and operated enterprises, and their capital intensive nature precluded large numbers of operators from providing transit service in the same geographical area. Combined with the absence of other competitive means of transport such as automobiles, this situation resulted in a nearly monopolistic market for the railway service suppliers. Although fares and operating standards were regulated by local governments much like other public utilities, the railway fares at that time tended to be relatively higher than those of today, as indicated in Figure1-1. The rail transit companies of Europe and the United States continued to enjoy near monopolies in the market for rapid urban travel, and maintained their profitability up to the turn of the century. However, by the early 1900's several factors including economic recessions, excessive capital infrastructure investment, and the advent of automobile competition changed the financial outlook for the industry.
Figure 1-1  Fare rate as a percentage normal GNP per person per day in the U.S. and Japan

In Japan however, automobile transport was not as serious a competitor to the urban railways throughout the first half of this century. Newly established private systems in the Tokyo area including the Kawagoe (now Seibu) Railway in 1892 and the Meguro Kamata (now Tokyu) Railway in 1922 began to diversify their revenue stream and increase their access to capital by undertaking suburban real estate development linked to railway route plans. This strategy enabled these operators to sustain the viability of the railway enterprise through a close and synergetic relationship with more highly profitable real estate, retail, and commercial businesses. Figure 1-2 presents a revenue and profit breakdown for Japanese private railway companies at the peak of their real estate business in the 1960s.
Figure 1-2  Balance of payments for the 14 largest Japanese Private Railways

(2) Government assistance for early urban railways
   (a) Urban Railways Construction outside the US
       As their profitability as a private enterprise began to decline in the early part of this century, the urban railways of Europe began to receive supportive regulatory attention to assure balanced and socially effective accessibility for the population. Often this regulation took the form of public ownership and operation of the transit system. In England for example, the opening of the world's first subway by London's Metropolitan Railway Company in 1863 was followed quickly by the entry of many other private companies into the local subway business. However by 1933, the various subway operators had been incorporated into a single public organization. In France, the private General Operations Company initially provided subway services in Paris, but it was corporatized in 1949 after some stages of incremental public investment.

   (b) Subsidy expansion in the US
       In the US, urban railways have not been considered as important as in Europe, and the construction and operation of urban railways have left to the market mechanism. Local
government has been responsible for constructing road networks. In addition, unlike Japan, the US railway industry has been forbidden to diversify into the railway related business, consequently it has suffered.

However, as problems caused by automobiles such as traffic congestion and air pollution gradually manifested themselves, the limits of motor transport in cities became more obvious. Varying their forms according to local government, public agencies were then established to operate local transit services, albeit long after active public involvement in transit services began in the other industrialized nations. In 1964, the federal government finally began to provide capital for railway construction and operation with the promulgation of Urban Mass Transportation Act, which contributed to a revival of urban railways in the US.

When the energy crises of the 1970's struck, many US cities looked upon revival of mass transit – particularly urban rail transport – as a way to address the growing urban dependency on inefficient automobiles. Washington DC and San Francisco also drafted plans for entirely new metro systems. Throughout the '70s and '80s, the federal government continued to expand the subsidies, aiming at assisting a number of new subways, trams and bus service improvements, whereas local government started to provide subsidies in the '70s and then institutionalized them in the '80s. However, because automobile-oriented land use patterns had already been established and only a limited number of railway passengers existed, this new public financial support quickly put the US at the top of the list of operating subsidies per transit passenger.¹ This effort did gradually increase rail usage to a national rate of more than 35 trips per year per capita in the 1980’s from 26 trips in 1971.

(c) Government initiated systems in Seoul, Hong Kong and Singapore

In Seoul, Hong Kong and Singapore, it was after the automobile became the major method of transport that the urban railways started to operate. Seoul started to operate its first subway in 1974, so did Hong Kong in 1979 and Singapore in 1987.

The modern urban railways operations, including these examples, are under fierce competition with automobiles. In addition, urban railways often need to be built either

¹ During the mid-1980’s, operating subsidies per passenger averaged US$0.20 to $0.30 in Canada and the European countries, while exceeding $0.80 in the U.S.
elevated or underground, particularly in the city centers where land is densely utilized. The large construction costs posed by this type of system is typically too great for the private sector, such that it is hard for them to operate on private commercial basis. This explains why the Seoul municipal government principally constructed its subway lines and these lines are operated by a public corporation which is 100% owned by Seoul municipal government. The Hong Kong government committed itself to supporting its subway by bearing approximately 78% of the construction cost, and further providing the railway operator with land development rights over and around the stations. The Singapore government also builds its subway and offers a variety of institutional and financial support mechanisms including charging only a nominal leasing to the state railway operating enterprise.

(3) Financing methods utilizing private funds

The introduction of private funds for urban railways construction and operation is a new phenomena in several countries. Its introduction reduces the fiscal burden on the public sector and results in efficiency gains for both construction and operation through the adoption of private management know-how. These strategies have generally fallen under the broad category of complete private ownership and operation. However many variations exist.

1.1.2 Urban Transport and Urban Development in Developing Countries

(1) Rapidly growing mega-cities in developing countries

The developing countries of today are in many ways unlike the developed countries were in the early 20th century, particularly with respect to population growth and urban development patterns. The rate of urbanization and population growth in most of the developing mega-cities worldwide typically far exceeds that of the industrial cities at the turn of the century.

In the past 80 years, for example, the population of Bangkok has increased 1,000% to over 6 million people while its urban area has increased 8,000% to over 1,500 square kilometers. The Jakarta region has exhibited a similar long term growth trend, and has doubled in population and nearly tripled in area over the past 30 years (to its present level of 8.2 million people in 656 square kilometers). In just the decade of the 1980's alone, Metropolitan Manila (National Capital Region) grew in area by over 17 times while its population nearly doubled (to the current population of 7.9 million in 636 square kilometers). Not only have these growth rates equaled or exceeded those of the
developed cities, but many of these cities are now or are projected to soon be larger in population than all of the developed cities except Tokyo. Figure 1-3 illustrates population growth in these three cities, while Figure 1-4 shows the change in population growth rates, both in comparison with the Tokyo metropolitan area.

![Graph showing population trends and projections for Tokyo, Bangkok, Jakarta, and Manila](image)

Source: Various materials

**Figure 1-3** Population trend and projection of Tokyo, Bangkok, Jakarta and Manila
Figure 1-4 The trend and projection of population growth rate in Tokyo, Bangkok, Jakarta, and Manila

Finally, while these cities have grown rapidly, commercial and industrial activities have increased and a large degree of economic and social prosperity has followed. As such, the value of local land and inhabitants’ time continues to increase, making efficient transport systems all the more necessary and urgent.

(2) Land use regulation and traffic congestion

Many developing mega-cities have been absorbing their rapidly growing populations in dense central district settlements as well as in sprawling suburban settlements. As a result, urban transport demands have increased and combined with growing incomes and automobile ownership this has brought about a drastic growth in road traffic. Meanwhile, road infrastructure has been overwhelmed by traffic volume, and serious congestion has become the normal state in most cities. Generally, it is true that developing mega-cities are more densely populated than their current industrial counterparts, but state of traffic congestion do differ from city to city owing to lack of land use regulation and urban planning.
For instance, population density is relatively low in Bangkok. However, that fact that the control on urban development is loose hampers development consequently, population and commercial activities are concentrated alongside trunk roads, leaving the areas far from truck roads undeveloped. These areas are not served even by small streets.

Similar situations are observed in Jakarta and Metro Manila, where the development has followed major arterial roads and transit demand grows toward the city center. Road network construction can not cope with the rapidly growing automobile traffic. In Jakarta, trunk roads have not been constructed as planned, and in Metro Manila, expropriation has been difficult due to the complex land ownership system.

By comparison, Singapore has adopted integrated policies for urban railway and high-density residential development, including land use restrictions. This strategy has resulted in an urban structure that features easy access to railways. In a similar fashion, the urban railways in Hong Kong were planned in advance to serve corridors that would both satisfy passenger demand and allow significant land development opportunities above and adjacent to the stations.

(3) The limit of smaller-scale transportation modes

In the urban areas of developing countries, people use a public transportation called para-transit, which uses smaller capacity vehicles such as small buses and altered jeeps and trucks. It operates like "omnibuses" of 19th century London and Paris. Examples of para-transits are three-passenger motorcycle derivatives called tuk-tuks and six-passenger silors in Bangkok, fourteen-passenger jeeps in Metro Manila, and twenty-five-passenger minibuses in Jakarta, and sixteen-passenger "public light buses" in Hong Kong.

Most para-transits are capable of providing services to the places where fixed-schedule large bus services are difficult to operate. Yet, as the result of the rapid urban population and economic growth, it is apparent that the para-transit services, private cars, and ordinary buses have become unable to meet all of the urban transportation demands. In order to solve this problem, some mega-cities in developing countries are considering the construction of urban railways, while others have already begun.
(4) Motorization and urban railways construction

Initial urban railway construction in Europe, the US, and Japan was completed before motorization. Consequently, urbanization, developed alongside railways and followed the construction of urban railways. No alternative transport mode existed, and it was possible for railways industry to charge the costs of land acquisition and structure construction to passengers. The private commercial operation of railways was thus possible.

In developing countries, however, the planning and construction of urban railways has begun subsequent to motorization. Their urban railways have been and will be built in and serve metropolitan regions that have previously been developed in relation to road-based transport. Consequently, construction through existing developed areas poses a great expense, and the existence of a variety of convenient and/or very inexpensive existing transportation systems makes it challenging for railway transportation to compete with the other transport modes.

In short, it is impossible for urban railways in the developing countries to be built and operated in a self-supporting fashion as their early predecessors in developed countries were.

1.2 Significance of Urban Railways Construction

The significance of urban rail transport to a city depends upon several factors including population, income level, development patterns, primary existing transport modes. The following subsections study the significance of urban rail construction in terms of merit and economic benefits.

1.2.1 Merit as Public Transport

In general, when compared to the other modes of transport, urban railways are intended to serve the following five goals of efficient urban passenger transport:

(1) High capacity:

With larger transport capacity than modes such as automobiles, buses, and para-transit, railways are able to effectively meet the massive traffic demands of large urban areas. Therefore, they are particularly well-suited for transport within mega-cities and between mega-cities and their suburbs.
(2) High speed:
Because they operate on an exclusive guideway, urban railways are unimpeded by roadway traffic congestion and are able to move faster than road-based modes during congested periods. This is particularly true with respect to vehicles running on city streets, rather than on exclusive automobile roadways such as expressways.

(3) Reliability:
The freedom of railways from congestion also makes it possible for operators to stick to a timetable with a nearly perfect degree of reliability. For passengers, this feature makes railways a punctual transport mode with highly predictable travel times.

(4) Provision of transportation mode for the social weak:
Many examples are seen in the industrialized country that the urban railways are constructed in policy consideration of the people who do not have access to means of transportation such as automobile, such as the urban poor, elderly, and children. (In developing countries, there is a case that para-transits are playing the same role.)

(5) Environmental preservation and safety:
Air, noise, and visual pollution caused by the excessive use of motored vehicles has harmful effects on the environment. Developing countries have also witnessed a steady increase in casualties due to traffic accidents as traffic volumes have grown and non-automobile road users have become marginalized and intimidated. Railways, in contrast, are less environmentally harmful and much more safe.

These factors indicate how urban railways are able to bring about various benefits not only to passengers but also to the overall region where they are located (see further discussion in Section 1.3). It is advisable to construct a urban railway in order to realize these benefits.

1.2.2 The Potential of Urban Railways to Reduce Automobile Use
The construction of railways positively affect the reduction of automobile usage, and thereby contribute to environmental preservation. In order to measure such effect, the following indicators can be pointed out. As shown in Figure 1-5, the per capita Gross Regional Product (GRP) of a city is in general correlated positively to per capita car use. Income level alone, however, is not a sufficient determinant of car usage rates. It is also true that the existence of alternative transport and its substantiality can influence car use.
For instance, despite its high level of income, car usage in Tokyo is kept very low because of the city's extensive railway networks.

Figure 1-6 depicts the relationship between rail network "density" and car use in many international cities. It shows that cities with high rail network densities feature low car usage rates except in the case of some developing cities where automobiles are also not prevalent. There is positive correlation between rail network density and rail usage, i.e. the denser the rail network, the more per capita rail use. (Figure 1-7) Although the correlation between line density and construction of network is not necessarily evident, it is considered reasonable that better railways network is established where the higher line density exists. Based on this premise, it can be said that making railways network is effective for promoting urban rail usage.

![Graph showing GRP per capita (US$ 1990) and automobile use by city](image)

Source: Sustainable Transport Research Group, Institute for Science and Technology Policy, Murdoch University, Perth, Australia "Indicators of Transport Efficiency in 37 Global Cities." p6, Table 1, etc.

Figure 1-5  GRP per capita (US$ 1990) and automobile use by city

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2 Due to the limited data, the two factors are not clearly correlated, but a negative relationship can be observed as a general tendency.
Figure 1-6  Rail network density (route-km/sq. km) per person of each urban cities and automobile use by city

Figure 1-7  Rail network density (route-km/sq. km) per person of each urban cities and railway use by city
1.3 Economic Benefits of Urban Railways and Construction Fund

Urban railways bring about a various economic benefits – not only to rail passengers but also to road users, property owners, and the regional economy. A system for classifying urban railway benefits, beneficiaries, and measures to capture them is described below and in Figure 1-8.

![Diagram showing economic benefits of urban railways]

**Figure 1-8 Benefits from Newly Constructed Railways**

Among the five benefits described below, the first one is received directly by the railway users, while (3) and (4) are monetary external effects through which (1) is transferred via market functions. Both (2) and (5) are technical external effects which do not come through the market.

(1) Benefit received by urban railway users

New rail users are able to save travel time compared to their previous means of transport. This benefit can be captured through passenger fare payments to the urban rail operators.
(2) Benefit to road traffic users

A shift in travel by former road users to the railway lowers the level of road traffic congestion, and thus benefits the remaining road users. Since traffic speed is highly sensitive to traffic volume at the marginal road capacity, even a small volume of users switching modes can provide significant benefits to continuing road users. Governments (including local governments) are able to capture a part of this benefit by collecting auto-related taxes.

(3) Benefit to station area property owners

New urban railways generally boost property values in station areas. This difference is a type of benefit (this is the change of a part of the benefit described (1) above). Governments are also able to capture a part of this benefit through tax increase on property or on property transactions.

(4) Benefit to station area property developers

Property developers that build along anticipated urban rail lines also receive the associated benefits of enhanced land values. Governments are again able to capture a part of this benefit through tax increase on property or on property transactions. Railway operators can obtain a portion of "exactions" (fees based upon the idea that those developments that generate traffic should be required to pay for adequate public transport facilities).

(5) Benefit attributed to regional economy and society

In addition to the benefits mentioned above, urban rail may also generate benefits to the overall regional economy and society. The following three kinds of benefits are considered most tangible.

(a) Enhancement of the regional economy through the mitigation of road congestion effects and the provision of a highly punctual means of urban transport;
(b) Development of local railway-related industries; and
(c) Reduction of environmental pollution.

The first and second items may be captured by the government through corporate or income taxes. The environmental benefit could also be captured through an automobile tax.
1.4 Necessity for Government Involvement and Support for Urban Railways

Brief history of government involvement and support is explained in 1.1, and the significance and economic benefits are discussed in 1.2 and 1.3 respectively. Based on those, we consider here the necessity of government involvement and support for urban railways construction.

(1) Intermediary of external monetary effects

Some external effects of railway development (such as increased station area land values and development potential) could theoretically be absorbed by raising the price of urban railway service (i.e. passenger fares). In essence, if the fare were raised, the increase in property value along the line would be less substantial. Such a strategy would transfer benefits through the "market." However, such fare structures are typically not politically acceptable. In this case, the risks and returns are similar for both the railway operator and the property owners/developers.

It is possible for a railway operator to internalize some land development profits through establishing a land property business, but still it could not capture such external profits completely. Government, on the other hand, is well equipped to absorb railway-induced development profits through property taxes and exaction. Therefore, it is not only desirable for the government to play a role as an intermediary for cycling such monetary external benefits back to the railway, but the government is indeed the only institution capable of effectively accomplishing such tasks.

(2) Intermediary of external technical effects

Benefits of urban railways construction which do not go through the market mechanism (Technical External economy) are the following:

(a) Mitigation of road congestion for road users (automobiles, motorcycles, etc.); and
(b) Benefit to regional economy and society such as activation of regional economic activities, development of rail-related industries, reduction of environmental pollution.

These technical external economies do not go through market mechanism at the time of benefit reversion, so that the rail industry cannot absorb them by itself. If those technical external economies are not cycled to rail industry, urban railways will not be constructed at the socially desirable level which takes into account of road traffic and environment. It is therefore necessary for the government, with its active involvement and support, as
being an intermediary of those benefits, to make rail industry to construct urban railways at the socially desirable level.

(3) Securing long-term business risks
The construction of urban railways in mega-cities which have already been urbanized and whose land acquisition cost and construction cost are high, necessitates huge initial investment and long-term revenue stream.

The risks associated with such projects, and the necessary leaves of capital required, are generally too high for the private sector. Furthermore, other factors, such as land acquisition, pose obstacles to the private sector.

In order for such projects to proceed, the private sector needs government support, either in the form of investment, loans or loan guarantees.

(4) Planning and implementation of overall plan
Finally, it is necessary for the government to make and present a long-term framework for railway construction, including determination of a preferable network and development phases, prioritization of railway lines, and definition of business systems. In addition, the government must take the initiative to guide overall tasks, such as the selection of business entities for construction and operation.

It is clear from the preceding arguments that public involvement in and support for the construction of urban railways is a necessity. However, excessive political intervention, especially in areas such as line priority, tariff rates and safety standards, may hamper effective and efficient construction and operation of urban railway systems. It is important to draw a clear demarcation between the areas of responsibility between the government and the rail industry.
CHAPTER 2

CASE STUDY OF RAILWAY CONSTRUCTION FINANCING METHODS AROUND THE WORLD

Introduction
In this chapter, case studies of urban railway financing strategies in the United Kingdom, France, Germany, the United States, Singapore, Hong Kong, Korea, and Japan are presented. The second through sixth sections detail the results of a comparative analysis of principles regarding the division of responsibilities, project types, and financial resources among central governments, local governments, and private sector entities, including the diverse financing methods and subsidy systems which have been established and made functional through institutional innovation. Outlines of the cases studied in each country are presented in the seventh section.

2.1 Concepts of Urban Railway Construction and Management Responsibility in Each Country
As shown in Table 2-1, the methods for constructing and operating urban railways reflect each country's basic policies towards railway development, the relationship between central and local governments (in particular, the capital city or region), and the division of responsibility for public transport projects between public and private sector entities. The various concepts may be roughly divided into the three following types, in descending order of public participation:

(1) Public responsibility:
Urban railways are considered as a public responsibility and the railway operator's profitability is not one of the requisites for approving a project. Public funds are the major financial resource (Europe & U.S.).

(2) Financial independence:
Governments view urban railway operators as financially independent without public subsidies, while endowing privileges such as exclusive land development (Hong Kong).

(3) Limited assistance:
Railways are basically self-supporting for infrastructure construction and service operation, while a limited amount of public subsides and institutional assistance is available (Japanese private railways).

The United Kingdom and the United States, having previously followed the first concept, are now trying to introduce privatization in order to revitalize rail public transport construction and operations.
<table>
<thead>
<tr>
<th>Country</th>
<th>Principles</th>
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| The UK      | • The central government bears full responsibility regarding urban railway construction and operation in the Greater London area.  
               • London Regional Transport (LRT), a state corporation, is in charge of subway construction, while London Underground Ltd. (LUL), a subsidiary company of LRT, operates subway service in the capital region. Several private enterprises also participate in construction and operations.  
               • Most of the capital investment in LRT is financed by national subsidies. The central government also provides subsidies for operation costs.  
               • Recent government policies aim at introducing the idea of Private Finance Initiatives (PFI) and encouraging private sector investment in railway construction as well as their participation in railway operation through concession agreements. The privatization of British Railways and suburban railway concession arrangement with private companies have been promoted. |
| France      | • Due to it being the capital region, the administration of Île de France\(^1\) including railways used to be controlled by the national government. But in 1995, transportation planning duties were transferred to the region as a decentralization strategy.  
               • The national government, Île de France (regional) government, and railway operators (Regie Autonome des Transports Parisiens, RATP, and French Railways, SNCF) share railway construction costs in the region.  
               • There are also some operation subsidies such as national and regional funds to make up the fare adjustment, and payroll tax designated for commuter pass and social discounts for the elderly and handicapped, and local governmental subsidies. |
| Germany     | • Urban railways are considered to be a part of the urban infrastructure, and the responsibility related to short-distance transportation which was once primarily allocated to the federal government was transferred to state governments after the privatization of the National Railways.  
               • The federal, state, and local governments adjacent to a newly constructed railway share the construction costs.  
               • State governments oblige to bear losses from urban railway operation through part of the federal oil tax\(^2\) revenue allocated. |
| The United States | • Based on the consensus that urban railways are the part of basic social infrastructure, the main sources of construction funding are nation-wide federal subsidies, state, municipal, and county subsidies from their respective sources.  
               • The majority of Metropolitan Transportation Authorities (MTAs) are also subsidized for their operational losses by both the federal and local governments.  
               • Recently, the USDOT (Department of Transportation) has been promoting the private sectors' participation in urban transportation projects to encourage private investment. |
| Singapore   | • As a part of its transit promotion policies, the Singapore government constructed the country's subway systems totally with their own resources in the form of direct investment. |

\(^{1}\) Île de France Region is the metropolitan area of France, comprising of the City of Paris, which is an equal term to Province, and seven provinces surrounding Paris.  
\(^{2}\) Almost the as same as gasoline tax in its usage, but the oil tax includes light oil, diesel oil, kerosene oil, in addition to gasoline.
2.2 Procurement of Urban Railway Construction Funds

Funds for capital investments in railway systems are raised by railway project implementing organizations in each country through combinations of:

(1) capital contributions,
(2) bonds,
(3) loans, and
(4) subsidies.

2.2.1 Capital

An important source of funding for most railway projects is direct capital investment by the central and/or local governments. However, such capital assistance is usually not sufficient to fulfill all of the initial financial requirements and thus bonds and/or commercial borrowing are needed in many cases.

The Hong Kong government continues to finance most of the construction expense of its urban railway systems, including the airport train lines presently under construction and railways to newly developed suburban areas.
2.2.2 Bonds
The following railway project implementing organizations and related public authorities have issued bonds to finance their expenses:

- Kobe, Japan: The Kobe municipal government financed approximately 80% of its initial investment in Kobe rapid railway construction by issuing local bonds.
- United States: Revenue bonds have been issued based on the security of operating income. (Tax exemption is available for such bonds.)
- San Francisco, US: Station construction has been financed through a Tax Incremental Financing (TIF) scheme, in which bonds were issued based on the security of an increase in station area property tax revenues.
- Seoul and Incheon, South Korea: These city governments have issued bonds to cover subway construction costs.

2.2.3 Loans
Different types of railway construction loans include those from private banks, domestic governments, international organizations, and foreign governments.

(1) Loans from private banks
A substantial portion of railway construction projects are often financed through borrowing from private banks.

- Hong Kong: Loans to finance part of the construction costs are available from private banks.
- Japanese Private Railways: Before public subsidization initiatives such as “Compensation for loan interest for private railways by Japan Railway Public Corporation” became available, loans were used to finance a substantial portion of capital construction costs. (i.e.: the Tokyu Railway borrowed about half of its Denen-Toshi Line construction costs from private banks.)

(2) Loans from domestic governments
Some countries provide long-term low-rate loans and/or interest compensation for urban railway construction.

- Japan: Low-rate domestic loans for railway construction and improvement may be obtained from the Development Bank of Japan. The Japan Railway Construction Public Corporation also provides an “compensation for loan interest” for Japanese private railways. This is a system whereby railways constructed by the Japan Railway Construction Public Corporation may then be transferred to a private railway for amortization. In this arrangement, the national and local governments bear half of the interest amount incurred by an interest rate higher than 5% for 25 years (15 years in the case of a railway serving a newly developed area) after the transfer.
- Ile de France region: The Paris metropolitan government (regional government) has a low-rate loan system for urban railway construction projects.
• Seoul, South Korea: Low-interest-rate loan from the national government’s Treasury Investment and Loan Fund and the municipal government’s Treasury Investment and Loan System is available.

(3) Loans from international organizations or foreign governments

Borrowing from foreign countries or obtaining development loans from international organizations such as the World Bank Group is also an option for urban railway construction. Compared with borrowing from private banks, this type of funding features more favorable loan conditions in terms of interest rates, loan periods, and the maximum amount of funds available. As such, many developing countries have financed their infrastructure needs in this manner. The Seoul municipal government for instance, received a loan from the Overseas Economic Cooperation Fund of Japan to finance construction of its subway system.

On the other hand, in some cases, international organizations impose conditions on their loans such as mandatory reforms of particular institutions and organizations in the borrowing countries. In addition, foreign loans pose exchange rate risks if the local currency loses value with respect to the loan currency before it is paid off, which results in increasing repayment amount.

2.2.4 Subsidies

As construction costs for urban railway projects tend to be very high, government subsidies are often a significant financial resource. National and local government subsidies may be roughly classified as either (1) subsidies from general tax revenues, or (2) subsidies from earmarked taxes.

(1) Subsidies from general tax revenues

In the United Kingdom, Germany, France, Singapore, and South Korea, subsidies from and investments financed by the general tax revenues of central and local governments cover the major portion of urban railway construction expenses.

Urban railway construction subsidies from general tax revenues are described as follows, by country:

• London Regional Transport, UK: Approximately 80% of subway construction costs were financed by central governmental subsidies in 1995/96.
• RATP and SNCF (Paris Transport Authority and French National Railway, metropolitan line), Ile de France region: 80% of subway construction costs have been financed by central and local government subsidies.
• S Bahn and U Bahn (urban and suburban railways), Germany: 40% (25% in former East Germany areas) of railway construction costs have been financed by central government subsidies.
• Mass Rapid Transit, Singapore: All construction expenses were financed by governmental subsidies.
• South Korea (Seoul and Inchon Subway): 10-20% of construction costs were financed by central government subsidies.
China: Projects The public subsidies from the central government can be obtained for the projects categorized as "New Town Railway Construction" and "Subway Construction".

(2) Subsidies from earmarked taxes
Among the countries which have petroleum product taxes earmarked for road construction and maintenance, Germany, the United States, and South Korea have institutionalized appropriations of a part of these revenues for railway projects.

Below are examples of subsidies from earmarked taxes.
- Germany: 60% (75% in former East Germany) of railway construction costs are financed by revenues from a federal tax on mineral oil.
- United States: Systems for appropriating federal gasoline tax funds for railways are a part of the current transport funding legislation, the Inter-modal Surface Transportation Efficiency Act of 1991 (ISTEA).
- Seoul and Incheon Subways, South Korea: Railway projects receive a part of the revenues from the transport tax (comprising taxes on volatile and light oil) which was launched in 1995.

In addition to earmarked tax revenues, other types of earmarked revenues include the following:
- Ile de France region: Road traffic and parking fines are allocated for improvements to access between different transport systems (i.e. transfer walkway construction) and to road construction.
- Los Angeles County, US: A part of sales tax revenues are allocated to subway construction.

2.3 Value Capture (Reversion of Profit Accruing from Development)
In some of the cases, for the purpose of raising large amount of initial investment, value capture schemes have been adopted.

2.3.1 Government Property Tax Revenues
The following are the examples of "reversion of profit accruing from development":

- Los Angeles County, US: "Special benefit assessments" were levied on land and buildings for commercial use in Special Assessment Districts (SADs) in order to finance about 9% of construction costs for the first segment of the Red Line Subway.
- San Francisco, US: As a method of "capturing" an increase in assessed land value, the construction of some stations was partly financed by a Tax Incremental Financing (TIF) scheme. This method involves issuance of bonds to cover construction costs based on the security of an increase in property tax revenues in the station area.

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3 Defined as within a certain distance from subway stations. Refer to section 2.6.4 for more details on this technique.
4 There is also another type of TIF which allocates increased tax revenues directly to construction expenses.
• Seoul, South Korea: The municipal government levies a “heavy traffic tax” on owners of commercial buildings fulfilling considered to cause excessive traffic demands.
• Kobe, Japan: In building Kobe City Rapid Transit, the municipal government has asked station area land developers to bear a part of railway construction costs and to provide land for railway use as per their housing development ordinance.\(^5\)
• Tokyo, Japan: Building owners share a part of the construction costs for transfer walkways that connect subway stations and nearby buildings.

2.3.2 Related Business Revenues

Japanese private railway company groups are also engaged in diversified business operations including real estate development, recreation, retail stores, restaurants and hotels. Many of these ventures are located around the company’s railway stations and help to reinforce ridership and boost fare revenue. As an example, the Hankyu and Tokyu Railways have developed significant residential communities and commercial buildings along their lines in suburban areas.

Two more examples of railway-related businesses are land development by Hong Kong’s Mass Transit Railway Corporation (MTRC) and the real estate ventures of the Kowloon-Canton Railway Corporation (KCRC). Both of these agencies have been making the best use of the land development rights endowed upon them by the Hong Kong government. Some characteristics of MTRC’s business ventures include joint ventures between the railway and private sector concerns, with substantial responsibilities born by the latter. In fact, approximately 15% of MTRC subway construction costs and half of the KCRC Mun Yuen Long New Town Line’s costs were financed by joint ventures.

2.4 Support Measures for Railway Operations

In order to cover railway operating costs, the fare revenues (the number of railway users) need to be maximized. When fares fall short of operating costs, subsidies from central and local governments, and favorable tax and finance conditions can be applied to reduce financial burdens on the railway operators. In addition, there are often other laws that also promote railway construction projects.

2.4.1 Subsidies

In European countries and the US, where passenger fares have been kept low, railway operators are generally provided with public subsidies to cover the shortfall between fare revenues and operating and maintenance expenses. However these operating subsidies have been decreasing recently due to changing government financial priorities due to financial difficulties and the benefit principle. As an alternate solution to the problem, some countries have initiated attempts to reduce government spending by introducing private-sector funding for the railway operations.

Some examples of current urban railway operating subsidies are presented below:

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\(^5\) This ordinance was legislated by the municipal government in order to institutionalize cost-sharing of Kobe City Rapid Transit with developers along its lines.
• Ile de France region: Low fare revenues and commuter passes and deficit-making lines are subsidized by the government.
• Germany: A portion of federal mineral oil tax revenues are allocated to local governments to compensate for losses incurred by urban railway operation.
• United States: Federal, state, and local governments subsidize urban railway operations directly.

In the following case, earmarked taxes are used to subsidize railway operations:
• Ile de France region: Companies located within this region are obliged to pay approximately 2% of their payroll as a railway operation subsidy. (known as the Payroll Tax System)

2.4.2 “Favorable Treatment in Taxation and Accounting” for Railways
Some countries have introduced favorable tax and finance systems for railway operators, including exemptions from corporate taxes. For instance, the Singapore government has provided the subway operator, SMRT, with favors such as low facility leasing fees and an exemption from corporate taxes for a specified term at the beginning of the project.

2.4.3 Legislation of Related Laws
The Croydon Tramlink project in the UK is supported by the Croydon Tramlink Act (which was enacted before the project started). These related laws intend to legislate project contents and conditions in order to support smooth implementation.

2.5 Private Sector Involvement

2.5.1 Purposes of Private Sector Involvement
In general, there are two purposes for private sector involvement in urban railway projects: (1) reduction of the financial burden to the public sector (i.e. central and local governments); and (2) introduction of the efficient private management skills.

(1) Reduction of public financial burden (central and local)
A number of governments now regard financial deficits as very serious problems, and have resorted to cutting back public expenditures as a measure to reduce the deficits. This approach has led to the conclusion that governments can no longer afford to finance all the expenses for urban railway projects (which usually require a sizable amount of resources). At the same time though, these governments recognize the necessity for public capital in urban railway construction. Therefore, private sector investments in this field are emerging as a way to ease to governmental deficits.

(2) Introduction of efficient private management skills
It is often perceived to be the case with public railway operators that a lack of incentives to improve management and obscure divisions of business responsibilities has resulted in their inefficient management. And as such, they can seldom be financially viable without enormous public subsidies to cover losses. In this case, incorporating private sector management skills is to be a way to achieve a better use of human resources, cost
reduction, and productivity enhancement – thus contributing to a decrease in government subsidies.

2.5.2 Patterns of Private Sector Involvement

Patterns of private sector involvement projects are classified as follows, which depend on the degree of private sector involvement such as procurement and construction of railway facilities, ownership and operation of facilities, management of facilities etc.

(1) Build Own Operate (BOO) method
Under this scheme the private sector owns and operates all of the railways facilities. Subsidies or low interest loans from government are available in some cases. This method is found in private railway projects in Japan and the UK's Croydon Tramlink Project.

(2) Build Own Transfer (BOT) method
With this method the private sector, under contract to the government, raises funds for investment, constructs railway facilities and owns and operates them for a limited period during which they recover their initial investment. Eventually, the private sector transfers all facilities to the public sector. The advantages of this method are that the government is able to commission new railways without increasing public sector debt, there are also gains associated with private sector efficiency in the construction and initial operation phases. Despite these advantages, BOT is rarely seen in the railway sector, due to the reluctance of the private sector to adopt the huge risks associated with the long periods of time necessary to recover the large initial investment. This method has been used in the UK based Manchester Metrolink Project (partly undertaken with government finance), and the Elevated Railway Project in Thailand.

(3) Build Lease Transfer (BLT) is another method
Under it the private sector raises funds, constructs and owns the railway, while leasing the facilities to the public transferred to the public sector. This method relieves the public sector from having to raise the finance, while the private sector enjoys a secure lease income from the government. This method has been employed in the UK’s Docklands Light Railway and Light Rail Project No. 3 in the Philippines.

(4) The separation of infrastructure facilities, such as track and civil structures, from operating facilities is another possibility. Known as Design, Build, Operate and Maintain (DBOM), the rational for this method is that, by removing the high costs of construction, the profitability of the railway business management and promotes efficient management. In the London Docklands Light Rail Project the government constructed the civil infrastructure and procured all the facilities for operation, then entrusted, by concession, operation and management of the railway to the private sector. Similarly, in the case of the Bangkok Subway Project, government management to the private sector.
2.6 A Case Study of Railway Construction Financing Methods in Each Country

Urban railway financing methods and a background discussion of construction initiatives in the following eight urban regions are presented in this section:

- Greater London and Manchester, United Kingdom
- Ile de France region, France
- Frankfurt, Germany
- New York City and Los Angeles, United States
- Singapore
- Hong Kong, China
- Seoul and Incheon, South Korea
- Tokyo, Kobe, etc., Japan

2.6.1 The United Kingdom

(1) Railway construction system in the Greater London area

The Greater London area comprises the City of London and 32 surrounding autonomous districts. London Regional Transport (LRT)\(^6\) is responsible for planning, constructing, and operating subways, light railways, and bus services in Greater London. London Underground Limited (LUL), a 100% subsidiary of LRT, is in charge of operating the subway system, and the bus system is also regulated by an LRT subsidiary. The London Docklands Light Railway, described in detail later, was built under the administration of LRT, but is currently operated by a private enterprise. Figure 2-1 shows the structure of urban transport related organizations in London.

LRT’s urban railway construction financial resources consist of grants from the central government (subsidies from general accounts) and funds on hand (operating profits, revenues from selling assets). Under the LRT Act, central government assistance grants for construction and operation are classified into two types: (1) capital and (2) operation. These two types of grants are both disbursed by the transport minister from a consolidated fund\(^7\) which is a general revenue account. Central government grants account for most of LRT’s investment expenditures, reaching 80% in 1995 / 96.

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\(^6\) A national corporation established in 1984 by the London Regional Transport Act (the LRT Act).

\(^7\) The consolidated fund is currently the same as the National Treasury (general account). Tax revenues are its main financial resource.
LRT financial responsibilities are regulated by the LRT Act and each urban railway construction project (i.e. subway projects for which construction costs exceed £10 million) is required to have approval from the transport minister. In addition, the transport minister determines the financial goals of LRT and regulates its fares. Figure 2-2 presents the flow of funds for urban railway construction and operation in London. In the United Kingdom, there are no earmarked taxes or tax systems for urban railway construction. Neither is there a “special account” system.
(2) New Construction and Operation Methods

In the United Kingdom, direct participation by the private sector in the financing and operation of urban railways is being encouraged through the Private Finance Initiative (PFI). The government utilize not only private fund but also private sector’s knowledge of effective management based on the principle that those who have the deepest understanding of the project risk take that risk, so that most effective risk share can be realized. PFI promotes both innovative financing methods for public project construction costs as well as the application of creative commercial techniques of private enterprises in all fields for railway operations. As a result, private enterprises have been able to participate in public projects depending upon perceived risk and company discretion.
In the field of urban transport, PFI has been utilized in the case of the Croydon Tramlink, the Northern Line subway, the Lewisham extension of the Docklands Light Railway, and Manchester Metrolink.

(3) Case studies of PFI projects
Cases of PFI projects in London and Manchester are presented below:

(a) Croydon Tramlink (Tramway)
The Croydon Tramlink Project was conceived by LRT and the local government and was drafted to reflect the private sector’s point of view. A key feature of this project is the high ratio of financing by private enterprises with respect to the total project cost. (Table 2-2)

Outline
1) Route:
   • 28 km in the southern suburbs of London (from Wimbledon, Croydon, and Elmers End to New Addington, via 3 routes, (Figure 2-3).
   • 36 stations
   • 17 km of old national railway track will be improved and to this an additional 11 km of new track will be added.

2) Operating organization: LRT

3) Scheme:
   • A BOO project is promoted by private enterprises.
   • The old British Railway lines and facilities will be partially re-utilized and the land for new lines is being purchased by LRT, and will be leased to the private operator.
   • The concession period ends in 1999.
   • LRT also prepares operation plans (including fare levels) and provides public subsidies for construction.

4) Total project cost: Approximately £230,000,000 (Figure 2-2 shows the organizations which will provide funds for the initial investment.)

5) Schedule: 1996(start)-1999(completion)

6) Background:
   • In 1987, LRT and the Croydon Borough began to study the project, and in July 1994 the Croydon Tramlink Act was enacted. The act authorized LRT, which

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8 In the United Kingdom, urban railway construction is promoted under respective laws. This particular law reserves the two following rights for LRT and the local government:
- Planning and operating projects
- Constructing railway facilities and purchasing necessary land
once operated only subway and bus projects, to also support suburban and city railway projects. In 1995, LRT invited competitive tenders for this PFI project, and a consortium of four companies won the tender and signed a contract to develop the system.\footnote{The winning consortium consisted of the following:
- Operating Enterprise: Centre West Buses
- Bank: Royal Bank of Scotland
- Supplier: Bombardier
- Construction Enterprise: Robert McAlpine}

The consortium and LRT will make a concession agreement and the project authority will be transferred to the concessionaire from LRT. The concessionaire is in charge of design and construction work until the project completes in 1999. It operates the systems and recovers the investment through expected fare revenue which is anticipated. The public subsidies (amounts currently undecided) are provided according to the progress of construction. In terms of the operation, only when fare increases are regulated lower than the rate of inflation, a subsidy will be provided.

Figure 2-3  Croydon Tramlink route
Table 2-2 Financial resources of Croydon Tramlink

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount (£ millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Financing</td>
<td>110</td>
</tr>
<tr>
<td>Investment and Subordinated Loans</td>
<td>12</td>
</tr>
<tr>
<td>Bank Loans (including Rolling Stock)</td>
<td>98</td>
</tr>
<tr>
<td>Government Subsidy (Grant)</td>
<td>128</td>
</tr>
<tr>
<td>Total</td>
<td>238</td>
</tr>
</tbody>
</table>

(b) Modernization of the London Underground Northern Line

An important feature of the London Underground Northern Line Modernization Project is that ownership and maintenance of trains will be entrusted to private suppliers who will also bear the cost and risk.

Outline

1) Route: The Northern Line runs north-south through the center of London, linking Morden in the south with Edgware and High Barnet in the north.

2) Operating organization: London Underground Limited (LUL)

3) Scheme:
   • A private enterprise (GEC Alsthom) is to design, manufacture, own and maintain the new rolling stock and related equipment and machinery at the train sheds.
   • The lease period to LUL will be 20 years.
   • The private enterprise will carry out the efficient maintenance of trains including providing all trains required at peak hours.
   • LUL will take responsibility for the proper management of railway (tracks, signals, communication systems, electrical charging, etc.) as well as improving operating conditions.

4) Total project cost:
   • The initial investment is approximately £420,000,000, financed by the contracted private enterprise.
   • The leasing cost, £33,000,000 in 1999, will increase by 3% annually (excluding the maintenance fee).

5) Background:
   • LUL analyzed the alternatives regarding finance, technology, procurement of equipment and machinery, human relations, operations and maintenance, in terms of all aspects such as asset value of rolling stock, lease fee (payment), cost and risk of
rolling stock ownership and maintenance, and passenger benefits. As a result, this project scheme was adopted as strategic PFI.

- Introducing the private sector in this case is intended to reduce costs (by transferring ownership and maintenance functions which LUL is presently in charge of), to provide high quality cars and reliable train operations, to improve passenger service, and to increase revenues.

6) Schedule: 1995 contract agreement
1996-98 delivery of equipment and machinery

(c) Docklands Light Railway / Lewisham Extension
Docklands Light Rail was initially developed by LRT but it is now overseen by the Environmental Ministry. System operations will soon be transferred to a private enterprise, and eventually the entire system will be privatized. Regarding the line extensions, privatization will be introduced at the time of construction.

Outline
1) Route:
- Docklands Light Rail links the Docklands redevelopment district in East London with Central London, and incorporates 22 km of track and 27 stations. (Figure 2-4)
- The Lewisham extension project is currently under development (4.2 km, 6 stations).

2) Operating organization:
- The London Docklands Development Corporation (LLDC) coordinates all development in the Docklands district.
- Docklands Light Railway Limited (DLR), a wholly-owned subsidiary of LLDC, owns and operates the railway facilities.

3) Scheme:
- Docklands Railway Management Ltd. (DRML), a private enterprise, will be the concessionaire in charge of operations on existing tracks for 7 years beginning in 1997. After the extension project is complete, the concessionaire will commence operation of all lines, maintenance of trains and facilities, and development of the surrounding areas within certain limits.
Figure 2-4  Docklands Light Rail route

- This extension project is based on a BLT contract agreement in which a private sector group builds the railway extension and associated facilities, and after a determined lease period transfers it to DLR. The extension project contract preceded the privatization of existing tracks but the content of the agreement with DLR for the extension has been passed to DRML, the concessionaire for the existing system.

4) Total Project Cost:
- The central government bore the total amount of the construction cost, £633,000,000 for the existing system. The project concession has now been transferred to DRML.
- The initial investment needed for the Lewisham extension was £200,000,000. A private sector consortium financed about £35,000,000 of this total, while a bond
issue raised £160,000,000. The bonds are to be paid off using proceeds from DRML's leasing fees as well as fare revenues.

5) Schedule:
Existing line: 1987 Start of Operation
1994 Announcement of Privatization Plan
1997 Planned Start of Concession Operation by DRML (concession period: 7 years)
Extension line: 1996 BLT Contract, Start of Construction
1999 Completion of Construction

(d) Manchester Metrolink
Manchester Metrorail is an urban railway which was firstly developed in England based on a privatization method called DBOM (Design, Build, Operate, and Maintain).

Outline
1) Route:
   • This streetcar operation consists of a 29km, 26 station railway extending from the north, through the city center, and on to the south of the city. (Figure 2-5)
   • Over half of the line utilizes existing British Railway tracks and stations.
   • A second phase of system construction is currently underway.

![Manchester Metrolink route](image)

*Figure 2-5  Manchester Metrorail route*
2) Operating organization:
   • GMPTE\(^9\)
     • GMML was established by GMPTE and the private sector consortium which submitted a winning bid.\(^{10}\) The financial ratio of GMPTE is 12.3%.

3) Scheme:
   • GMPTE as a representative of local tax payers owns all system infrastructure such as tracks, trains, stations and equipment.
   • GMML takes responsibility for system design, construction, and operation under agreed technological and environmental conditions.
   • GMML has also gained authority for the determination of fares at its discretion, although GMPTE (as an investor) influences this decision.

4) Total project cost:
   • First Investment: approximately £154,000,000 (refer to Table 3-3 for burden ratio.)
   • Second Investment: approximately £120,000,000 (refer to Table 3-3 for burden ratio.)
   • A public subsidy has been provided only for construction not operation.

5) Background:
   • Manchester Metrorail which commenced operation in 1992, provides service every 6 minutes with a fleet of 26 light rail vehicles. The system not only links major locations within the city, but also Piccadilly Station on the Intercity railway. It also connects with the regional and airport rail systems thereby enhancing their use and increasing passenger ridership.
   • Unexpectedly, 13 million passengers have been attracted to Metrolink in the opening year (versus 7.5 million passengers on the previous railway system). Surprisingly high operating revenues in the first year were also attributed to low operating costs, lower pricing during off-peak periods, effective Metrorail routing to reduce peak period travel times, and good public relations. The introduction of Metrorail has eliminated an estimated 2 million car trips per annum, thus contributing to reduced road congestion and to a cleaner environment.
   • The success of Manchester Metrorail Phase I has piqued the interest of the private sector, which has contributed 50% of total project costs for the Phase II system additions (see Table 2-3).

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\(^9\) The GMPTE was established under The Transport Act of 1968. It is an operating organization which implements plans and policies determined by the GMPTA, also established under the above act. The GMPTA committee, composed of 30 representatives from 10 cities and the metropolitan autonomous district in the Greater Manchester area, determines public transport policy for the entire region.

\(^{10}\) Comprising a supplier, GEC Alsthom, and construction enterprises, Mowlem and Amec.
Table 2-3 Financing of Manchester Metrolink No.1 and No.2 (£ millions)

<table>
<thead>
<tr>
<th>Manchester Metrolink (No.1)</th>
<th>154</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Private (Operator) / Concession Fee</td>
<td>5</td>
</tr>
<tr>
<td>- European Regional Development Fund</td>
<td>1</td>
</tr>
<tr>
<td>- European Investment Bank</td>
<td>3</td>
</tr>
<tr>
<td>- Public World Loan Board</td>
<td>1</td>
</tr>
<tr>
<td>- Public</td>
<td>5</td>
</tr>
<tr>
<td>- Government (Section 56) Grant</td>
<td>48</td>
</tr>
<tr>
<td>- GMPTA (Local Tax)</td>
<td>6</td>
</tr>
<tr>
<td>- GMPTA (Local Tax) etc.</td>
<td>9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Manchester Metrolink (No.2)</th>
<th>120</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Private (Contractor)</td>
<td>60</td>
</tr>
<tr>
<td>- European Regional Development Fund etc.</td>
<td>10</td>
</tr>
<tr>
<td>- Public</td>
<td>15</td>
</tr>
<tr>
<td>- Government / Section 56 Grant</td>
<td>35</td>
</tr>
</tbody>
</table>

2.6.2 French Republic

(1) Railway construction system in Ile de France

Known as Ile de France, the Paris metropolitan area comprises the City of Paris and seven neighboring provinces. Passenger transport in this area was once administered by the central government, but through a “decentralization” program it was transferred to the local governments in 1995. Transport facility improvements are determined according to long term plans (25 years) comprising urban city plans and basic arrangement plans, as well as five-year national and local area plan contracts.\(^\text{11}\) The subsidy burden ratio between the national and local governments is determined by these project contracts. The burden ratio for urban railway extensions is 30% from the national government, 50% from the local government, and 20% from the railway operator. In fact, local governments bear approximately 60-70% because they also provide loans to the railway operators.

In Ile de France, STP (a public authority established in 1959) integrates all public transport operations. The main responsibility of STP is in the approval of investment plans for Ile de France, selection of public transport enterprises, adjustments between transport organizations, determination of fare levels, administration of transport

\(^{11}\) Decentralization of the central government gave local governments autonomous administration. The agreement between the local government and the central government for national plans is determined by this contract.
payments, and an audit of RATP, the Ilé de France administrative bureau of the French national railway, SNCF.

RATP is responsible for the development and operation of all public transport systems (railways, buses, and trams) in the Paris region and SNCF, metropolitan (Ilé de France) department provide its railway service in self-supporting account from other SNCF department. It’s fares and adjustment with subway are under all control of STP. Figure 2-6 lists all urban railway agencies in Ilé de France.

![Diagram of urban railway organization in Ilé de France]

Note: Ilé-de-France is an exceptional self-governing body in which the central government takes control of public transport management through STP.

Figure 2-6 Organization of urban railway in Ilé de France

(2) Construction cost support systems
As indicated above, construction costs for public transport are divided among the central and local governments and the transport operators based upon predetermined proportions. Local government loans to transport operators for capital investment typically involve a 3 year grace period and a 25 year redemption period. The interest rate is lower than the basic interest rate determined by the central government. The total burden borne by Ilé de France, including loans to a transport enterprises, amounts to 70%.

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12 See (3) in this section.
RATP and SNCF can receive also subsidies from the central government or Ile de France for line extensions and engineering work on specific construction projects. Table 2-4 shows the ratio between the burdens borne by the central government and Ile de France and transport operators (RATP and SNCF).

Table 2-4 Burden sharing ratios among the Central Government, Ile de France, and railway operators

<table>
<thead>
<tr>
<th>Projects</th>
<th>Burden Sharing Ratios for Railway Construction (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Government</td>
<td>Ile de France</td>
</tr>
<tr>
<td>Extension of Railway Tracks (General)</td>
<td>30</td>
</tr>
<tr>
<td>Extension of Railway Tracks (Exceptional Projects Determined by the Self-governing Body)</td>
<td></td>
</tr>
<tr>
<td>Extension of Subways, Reseau Express Regional (RER), Suburban Railways</td>
<td>80</td>
</tr>
</tbody>
</table>

The construction costs are financed by subsidies from the general tax revenue accounts of the central government and Ile de France, capital from the railway operator, and loans. As indicated previously, due to the fact that most of the loans financed by Ile de France are long-term and have low rates, Ile de France's share of the burden is high. Figure 2-7 shows capital flow for urban railway construction in Ile de France.

![Diagram](image_url)

**Figure 2-7 Capital flow of railway construction in Ile de France**

Note: % on the chart shows general burden ratio since 1994.
(3) Operational cost support systems
RATP and SNCF operating costs are covered by fare revenues, payroll tax revenues, public subsidies (subsidies from the central government and Ile de France or public discount compensation based on the planned contract), and others (loans and related business revenues). Public subsidies include compensation for:

(a) fare revision,
(b) fare discounts and
(c) the operation of deficit-making services.

These public subsidies are described below:

(a) Fare revision compensation
This was established in 1959 to compensate for the fare differences between nominal fare and actual fare. Nominal fare was determined by STP to keep balance of revenue and cost, and the actual fare was revised by Minister of Transport to be decreased. This financial burden is allocated 70% to the central government and 30% to Ile de France. Both expenditures come from the general accounts. The breakdown of the subsidy to RATP in 1995 is as follows:

<table>
<thead>
<tr>
<th></th>
<th>Amount</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Government</td>
<td>4,739,700,000F. F.</td>
<td>(70%)</td>
</tr>
<tr>
<td>Ile de France</td>
<td>2,031,300,000F. F.</td>
<td>(30%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6,771,000,000F. F.</strong></td>
<td><strong>(100%)</strong></td>
</tr>
</tbody>
</table>

(b) Fare discount compensation
The fare discount compensation system is mainly applied to compensate public transport operators for the use of discounted “Carte Orange”\(^{12}\) commuter tickets and other public discount fares. The subsidy for Carte Orange commuter tickets is compensated by payroll tax revenues (on employers) administered by STP. The breakdown of the compensation for public discounts in 1995 is as follows:

<table>
<thead>
<tr>
<th>Subsidy for Elderly Discounts</th>
<th>Amount</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsidy for Big Family, The Handicapped and Student Discounts</td>
<td>338,000,000F. F.</td>
<td>Paris and 6 Provinces</td>
</tr>
<tr>
<td></td>
<td>114,000,000F. F.</td>
<td>Central Government</td>
</tr>
<tr>
<td></td>
<td>49,000,000F.</td>
<td>Paris and 6 Provinces</td>
</tr>
</tbody>
</table>

(c) Compensation for operation of deficit-making lines
In Ile de France, low fares sometimes lead to deficit operation on some railway lines. In 1995, 24 cities, towns and villages excluding Paris paid a compensation of 25 million French Francs in total to RATP for public transport.

(4) Payroll tax system as a special finance resource

\(^{12}\) A weekly or monthly “open ticket” for unlimited travel on RATP’s regional express railway, bus routes, SNCF lines, or private bus lines. Over 2 million people use these commuter tickets each month.
Besides the operational cost supporting systems described above, there is a payroll tax system through which employers in Ile de France are obliged to pay in keeping commuter tickets affordable. The payroll tax system was instituted by the city of Paris and three provinces in 1971 and was applied in 1973 to other local cities except for the metropolitan area. It is based on the idea that the enterprises in Ile de France receive the benefits of reduced operating costs and increased labor force accessibility when employees may effectively utilize the public transport network.

The current payroll tax rate is 2% of total payments to employees, and is collected by STP. Non-profit organizations, public organizations, and foundations are exempted from the tax, while companies with under nine employees and those offering a commuter system of their own or having employee accommodations on site are eligible for refunds of the tax. The main purpose of transport subsidies is not only to compensate the Carte Orange discount commuter tickets, but subsidies may also be used for investment in bus-related facilities, assistance with public transport facility depreciation costs, and to cover the operational costs of STP.

In addition, revenue from traffic violation fines are allocated towards public transport service (including, but not limited to urban railways) as a special financial resource.

Figure 2-8 shows the general flow of public transport operating funds in Ile de France and its component ratios.

Figure 2-8 Capital flow of urban railway operation in Ile de France
2.6.3 Federal Republic of Germany

(1) Railway construction and operation systems in Germany

In Germany, urban rail projects have been considered as "social infrastructure" and as such the central (federal) government used to be in charge of their construction. However, with the reunification of East and West Germany, the administrative responsibilities of federal and state governments have been changed, and railway projects which were once considered to be in the realm of the federal government have been decentralized. In addition, legal reforms have also affected DBAG which was established by unifying former national railways in East and West Germany. These reforms included the enactment of the Decentralization of Short-Distance Public Transportation Act (or the "decentralization law"). DBAG's former administrative rights for Short Distance Railway Transport (SPNV) services\textsuperscript{14} were transferred from the federal government to state governments. Consequently, state governments are responsible for project implementation and supervisory control of DBAG's SPNV services as well as short-distance public transport operators (ÖPNV) including railways, streetcars, and buses. The state governments have in this manner gradually assumed control of regional transport.

At the same time, in this decentralization law, a certain amount of federal oil tax revenue is allocated to the general account of states government from fiscal year 1996, as a compensating financial measures that state government was forced to become oblige to compensate for the operating deficit of SPNV.

On the other hand, as for subsidy for construction, federal government subsidized 60\% of the railway construction from its mineral oil tax revenue, based on Act of Federal Government's Support for Transport Improvement of Local Government (Act for Support Local Transport).

(2) Federal oil tax as specific financial resource

The federal oil tax is an earmarked tax collected by the federal government to be allocated for public transport construction in order to provide alternatives to road congestion and improve environmental conditions. However, due to federal financial policy restrictions on the special account system, a portion of the federal oil tax revenues to be allocated to a special account for public transport is initially determined and any remaining tax revenues are allocated to the general account (Federal Transport Subsidy Act).

Before 1991, the allocation ratio between urban railway and road construction projects would fluctuate year by year. However, the Local Transport Subsidy Act increased the amount available through the special account to a maximum of approximately DM 3,300,000,000. As a consequence, the federal government allocates 20\% of these tax revenues for railway projects which exceed DM 100,000,000 in cost (not limited to urban railway projects). The remaining 80\% of revenues is disbursed to state governments which retain the authority to determine the allocation ratio between railway and road projects.

\textsuperscript{14} Urban transport systems which comprise less than 50km of urban/suburban railways and local lines.
The "Decentralization Act" of 1993 also stipulated that state governments have the responsibility to finance deficit obligations of the SPNV services which were formerly funded by the federal government. This act also authorized the provision of uniform amounts of federal mineral tax revenues to state general accounts beginning in 1996. Figure 2-9 illustrates the flow of urban railway construction and operation funds in Germany.

Figure 2-9 Capital and operating flow of urban railway in Germany

(3) Railway construction in Frankfurt

Frankfurt, located in the mid-western state of Hessen, is the fifth largest city in Germany. With the transfer of SPNV projects from the DBAG to state governments in January 1996, the state of Hessen has been taking general responsibility for the preparation of regional transport plans, as well as the operation and financing of the state's ÖPNV systems including urban railways (S Bahn), subways (U Bahn), trams, and bus systems. The Public Corporation of Frankfurt is that city's implementing organization for urban railways (see Figure 2-10).
*The administrative responsibility of Short-Distance Railway Transport Sector in The German Federal Railway (DBAG) was transferred from the federal government to the state government on January 1, 1996.

Figure 2-10 Organizations of urban railway in Frankfurt

The financial resources for urban railway construction (S Bahn and U Bahn) in Frankfurt are provided in Table 2-5 (according to The Local Transport Subsidy Act). Maintenance and land acquisition costs are deducted from infrastructure costs which include tracks, tunnels, bridges, and stations.

Table 2-5 Burden Sharing Ratios for Urban Railway Construction in Hessen

<table>
<thead>
<tr>
<th>U Bahn (Subways)</th>
<th>S Bahn (Urban Railways)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60% : Federal Mineral Tax Revenues</td>
<td>60% : Federal Mineral Tax Revenues</td>
</tr>
<tr>
<td>40% : General Finance Resources from States and Cities</td>
<td>40% : General Finance Resources from States and Self-governing Bodies along Lines.</td>
</tr>
<tr>
<td>(Consolation by Federal and Local Governments)</td>
<td>(The Burden Ratio under Contract with DBAG and State)</td>
</tr>
</tbody>
</table>

In addition to urban railway construction, an operations subsidy using mineral oil tax revenues was instituted in 1996. With respect to urban railways (S Bahn and U Bahn) in Frankfurt, the state government now allocates a part of their share of federal
government mineral oil tax revenues to cover operating costs of an S Bahn project promoting the adoption of integrated fares and schedules within each city.\textsuperscript{17}

2.6.4 The United States of America

(1) Railway construction and operations systems in the United States

Public transport is recognized as part of the “social infrastructure” of the United States. As such, there are various kinds of subsidies available to assist it. Subsidies can be divided into two general groups:

\begin{itemize}
  \item those granted by the federal government through the state, and
  \item those granted by local governments.
\end{itemize}

Each of these subsidy types may be available for capital as well as operations costs. However, as these subsidy sources are limited, cities often make efforts to garner additional financial resources for public transport by utilizing innovative funding methods such as “value capture”.

The key pieces of federal legislation related to public transport assistance in the US are described below in chronological order.

Problems such as traffic jams and air pollution became conspicuous in 1960’s as automobiles became the dominant means of urban transport in metropolitan areas across the United States. A federal government response to some of these problems was to begin granting subsidies for improvement of urban public transport.

The following laws have been enacted since the mid 1960’s to expand the financial resources available to urban railways:

(a) Urban Mass Transportation Act of 1964,
(b) Federal-Aid Highway Act of 1973,
(c) Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, and
(d) Federal Transit Act Amendments of 1991 (Chapter 3 of ISTEA).

(a) Urban Mass Transportation Act of 1964

This was the first act\textsuperscript{3} to authorize federal financial assistance for the improvement of urban public transport infrastructure across the US. Although this legislation had a limited duration, subsequent reforms have expanded it significantly.

\textsuperscript{17} This project has been undertaken by The Line Mine Transport Union (BVV), which was established by expanding and reorganizing the former Frankfurt Transport Union (FVV). The transport unions established in the large cities from the 1960’s to the 1980’s have integrated transport networks, schedules and fares between urban railways, and improved railway services - all of which have contributed increased ridership.

\textsuperscript{3} This act specified the businesses and organizations eligible for subsidies, the burden rate between the federal and local governments (2/3 to 1/3), and the total amount of subsidies. Subsidies for urban public transport had not previously been specified in US.
(b) Federal-Aid Highway Act of 1973

This act raised the federal government’s share of urban transport assistance to 80%, and approved a partial allocation of gas tax revenue for public transport facilities (previously these revenues had gone entirely to highway facilities).

(c) Inter-modal Surface Transportation Efficiency Act of 1991 (ISTEA)

The allocation of gas tax revenues for public transport improvements, introduced in the Federal-Aid Highway Act of 1973, was continued in ISTEA. This legislation authorized annual appropriations through the Federal Budgeting Agency from both general revenues and earmarked gas tax revenues to fund “effective investments” in transport infrastructure.

The Act expanded the subsidy resources available and revised the criteria regarding allocation of the federal budget for public transport. These revisions made it possible for state and local authorities to allocate a much greater share of previously “highway-only” funds to public transport projects.

(d) Federal Transit Act Amendments of 1991 (Chapter 3 of ISTEA)

This act expanded the range of financial resources available for public transport and left the choice of whether to improve roads or public transport to the discretion of state and local government policy. As a result, the authorized total budget for public transport was to be doubled, to about $31.5 billion, in six years (1992-97).

Authorized sources of fund “diversions” based on the Federal Transit Act Amendments are classified for three kinds:

• Surface Transportation Program (STP) funds,
• diversion of interstate road planning funds, and
• other funds.

Out of the National Highway System (NHS) budget, $2.1 billion can be applied to STP funds (including a fund for improvement of public transport facilities). This money is shared 50% federal / 50% state, although it can be increased up to 100% federal under special circumstances.

Regulations on diversions of interstate highway development funds have been divided into two categories: the “Interstate Substitution Program” (ISP) based on road resources; and the “Interstate Transfer Program” (ITP) based on general resources. 8
Figure 2-11 is the capital and operating subsidies for urban mass transport in the US.

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8 ITP ended in 1993.
(2) Local Railway Construction and Operation Systems

Urban rail systems in the US do not recover their operating costs from fare revenues alone. Capital and operating assistance is usually provided from local and state governments as well as from the federal government. Local and state financial assistance comes from various sources including tax revenues (state gas taxes, sales taxes, and property taxes), bonds (backed by fare of tax revenues), transport "trust funds," parking fees, etc.

One innovative financial resource of state and local governments has been capturing increased tax revenues from station area land development. Representative techniques include:

(a) Tax Increment Financing (TIF),
(b) Impact Fees (IF), and
(c) Special Assessment Districts (SAD).
(a) Tax Increment Financing (TIF)
This system assesses the total property tax levy in an area designated by the local
government and issues bonds to be paid off with the projected increase in tax revenues
generated by infrastructure improvement-related developments (e.g., station and land
developments).

(b) Impact Fees (IF)
This system imposes a once-and-for-all fee on developers in specified areas to cover the
costs of development-related infrastructure improvements. The fees may vary according
to the land value or other factors.

(c) Special Assessment District (SAD)
This system regularly imposes a tax on property owners in areas designated by the local
government depending upon the benefit which property owners obtain. The tax is
typically based on land value, and the revenues are applied to the costs of infrastructure
improvements. This system was introduced in Los Angeles Metro to cover a portion of
their subway construction costs.

(3) Case study of financial support for urban railway improvements
(a) Los Angeles
This city has largely been developed with the automobile serving as the primary means
of transport. As a result, it suffers from severe traffic congestion and auto-related
environmental pollution. Partly in response to these issues, local urban transport policy
priorities began to shift from highways to public transport in 1990.

Figure 2-12 illustrates the structure of urban railway-related organizations in Los
Angeles (as well as in New York, detailed below). LACMTA is responsible for public
transport in Los Angeles County including buses, light rail, subway, and commuter rail.
FTA (Federal Transit Administration)

New York State Government
New York Metropolitan Transportation Authority (Urban Railway Operator)

California State Government
Los Angeles County Government
Los Angeles County Metropolitan Transport Authority (Urban Railway Operator)

1: FTA is a department of USDOT. It grants subsidies for urban and local public transport and provides technical support. State governments are responsible for transport administration within the state, while the federal government is in charge of interstate matters. **Figure 2-12 Organizations of urban railway in New York/Los Angeles**

In 1994 LACMTA approved a comprehensive 20-year public transport capital and operations master plan (for the period 1995-2015). The budget for this program was estimated at $72.4 billion (see below for the breakdown). In this program, railway construction investment accounts for approximately 21% of the total budget and the operation subsidy accounts for approximately 7% of the total budget.

<table>
<thead>
<tr>
<th></th>
<th>Amount</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Government</td>
<td>$12.4</td>
<td>(17%)</td>
</tr>
<tr>
<td>State Government</td>
<td>$6.9</td>
<td>(10%)</td>
</tr>
<tr>
<td>Local Government</td>
<td>$53.1</td>
<td>(73%)</td>
</tr>
<tr>
<td>Total</td>
<td>$72.4</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

The federal government's contribution comes from the general account and ISTEA appropriations, and in addition, LCMTA, implementation agency of urban railway, obtains the subsidy in accordance with Full Funding Grant Agreement (FFGA) through negotiation between LCMTA and Federal Transit Administration.

Financial resources from the State of California come from the state gas and sales taxes, as well as state railway bonds (paid for with general tax revenues).
In 1980, Los Angeles County voters approved a 0.5% increase in the local sales tax in order to fund the County's share of a proposed 150 mile urban railway network. The 18.6 mile (30 km) Red Line subway is a part of this railway project. Its first section (4.4 miles in Downtown Los Angeles) was completed in 1993, a second section (a 6.7 mile extension to the west) was also completed in 1996, and a third section (a further 8.5 mile extension) is due to open in 2000.

The breakdown of total construction costs for the first section is as follows:

<table>
<thead>
<tr>
<th></th>
<th>Cost</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Government</td>
<td>$696</td>
<td>(49%)</td>
</tr>
<tr>
<td>State Government</td>
<td>$344</td>
<td>(24%)</td>
</tr>
<tr>
<td>County Government</td>
<td>$244</td>
<td>(18%)</td>
</tr>
<tr>
<td>City Government</td>
<td>$134</td>
<td>(9%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$1,420</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

Of the state government share, about $130 million (or 9% of total construction costs) are to be collected as "special profit taxes" (development revenue taxes) as described below.

LACMTA (formerly SCRTD) set up special assessment districts (SAD) around the planned subway stations and imposed a real estate tax within the areas.

The tax is imposed on all real property including land, offices, shops, hotels and motels located in the following area, designated as SAD:
- 1/2 miles walking distance from station in commercial districts
- 1/3 miles walking distance from station in Wilshire/Alavardo districts

The tax is collected at a rate of 30 cents per square foot of space for 22 years and the revenue is allocated for repayment of the subway construction bonds.

Collection of this tax began in the first year of project construction in 1986 but was then suspended due to a legal challenge brought about by some affected property owners. SCRTD reinstated the tax when the first Red Line section became operational in early 1993.

SAD's were established along the second Red Line section as well. These taxes are to be imposed for a period of 29 years from 1996, when the second section started service. Total construction costs for this extension project were about $1,518 million, divided among the funding entities as follows.

<table>
<thead>
<tr>
<th></th>
<th>Cost</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Government</td>
<td>$819</td>
<td>(54%)</td>
</tr>
</tbody>
</table>

---

*Reasons given for the lawsuit included the following:
- Inconveniences (such as blocked roads), not benefits are created during construction;
- It is unfair not to impose the tax on renters; and
- It is unfair that the tenants who actually pay the tax did not have a right to vote in the local referendum. The Supreme Court judged that tax is legitimate, but that it should not be imposed during the construction period since the benefits are not able to be realized then.
State Government $227 million (15%)
County Government $349.14 million (23%)
City Government $121.44 million (8%)
Total $1,518 million (100%)

Of the state government share, about $45.5 million (or 3% of total construction costs) are to be collected from the SAD.

(b) New York
NYMTA manages four public railways, two public bus companies, and one public bridge and tunnel corporation. It owns and provides service over 393 km of subway lines, 1,080 km of commuter railway lines, and 4,238 km of bus lines. The operating agencies affiliated with NYMTA are entitled to subsidies from the federal, state, and local governments. From the federal government, there are improvement subsidies based on ISTEA, STP, and “flexible” funds diverted from highway use.

The State of New York provides financial resources for public transport in the form of “commuter revenue bonds” (to be paid by the operating revenues of the commuter railways), NYMTA bonds, a commuter railway operation subsidy called CRR capital, and part of the investment revenues of the TBTA. The City of New York provides capital subsidies for subway improvements, as well as funds created from bonds issued by the city’s own financing organizations.

2.6.5 Republic of Singapore
A small city state of 625 square kilometers, the Republic of Singapore has made the elimination of traffic congestion the foundation of its traffic policy. Urban railway improvements have played a key role in attaining this goal, and have been implemented with strong government planning and finance initiatives.

Various measures to encourage and facilitate patronage including linking MRT (Mass Rapid Transit) improvements with public housing and business development as well as selling common tickets for MRT and buses have been taken. In addition to MRT improvements, the government has initiated a Car Traffic Restraining Policy (including an Area License System, a Road Pricing System, and limitations on automobile purchases by means of high duties and registration fee) to strongly promote public transport use.10

MRT projects are developed entirely by the Government of Singapore. By introducing car restraint policies and “separation of civil structure and operation” system of railway construction and operations (see below), the government has been preparing favorable conditions for MRT operation.

10 The Area License System (or area entering fees) reduces car use by requiring drivers to buy a permit to enter the city. Road Pricing (or passing fees) imposes S$2 per passenger car fee at three spots along the highway. When purchasing a car, a purchasing right must be bid for, as the government controls the number of new cars permitted. The higher the price of the car, the higher the bidding price for the permit.
(1) Overview of Singapore’s mass rapid transit

Urban rail transport is considered a social asset, and as such is a responsibility of the government. MRT construction began in 1982, and the first section opened for service in 1987. As of November 1996, the MRT system measured 83 kilometers in length. The section comprising the East-West Line and the South-East Line was completed in 1990 for S$5 billion, while a second section (the Woodlands Extension) opened in 1996 at a cost of S$1.5 billion. A new transport system is under construction for a feeder connecting two lines; 20km extension of North-East Line and other existing MRT lines.

MRTC was established in 1984 with 100% government funding, to be in charge of MRT construction. SMRT was established in 1987 by joint investment between a government holding company and MRTC and is in charge of railway operations.

(2) “Separation of Civil Structure and Operation”

Singapore’s MRT plans have been organized based on an “Separation of Civil Structure and Operation” which separates railway operations from the possession of infrastructure assets. The government (through MRTC) has been responsible for all construction and maintenance costs for MRT infrastructure including land, vehicles, and other assets. Meanwhile SMRT is exclusively in charge of railway operations, under the assumption that it is better to have independent accounting for railway operation and to clarify the operator’s obligations and its need for organizational efficiency.

During and after MRT construction, MRTC has been responsible for owning assets such as facilities and trains and for leasing them to the direct operators of public transport service. The government bears all costs for capital improvements to the MRT system as well as annual depreciation costs, which helps to explain that by taking responsibility of the infrastructure, the government can promote the plan with the coordination of other urban projects. SMRT and MRTC signed a 10-year lease contract to operate MRT service, but a 1995 government reorganization established the LTA which has now assumed the former functions of MRTC.

(3) Financial resources for MRT capital and operating expenses

Singapore’s governmental contributions to the MRT construction cost were made as a direct subsidy expenditure from the general account. The government doesn’t set up earmarked taxes or special accounts in order to avoid rigidity of public finances.

SMRT’s main financial resource is fare revenues, although rental fees for kiosks in the stations, advertising fees, and non-sales receipts account for about 30% of total revenues. Of these revenues, SMRT is obligated to save a reserve for facility maintenance expenses (repair expenses for systems, machines, and equipment) in addition to their lease fee payment to LTA. This maintenance reserve amounted to S$87.3 million in 1995/96, or a little more than 60% of after tax revenues. However, under the current contract the lease fees are nominal (for example, S$100,000 per year for fixed assets and only a small portion of the asset value for vehicles). Together with favorable measures such as exemption from corporate tax payments and reduction and exemption measures for fixed
asset taxes on station facilities, SMRT's financial condition is so good that their operating revenues more than cover operating expenses. The financial market value of their accumulated internal reserves has reached S$0.9 billion per year.

Figure 2-13 shows the flow of MRT capital and operating funds in Singapore.

![Diagram of MRT capital and operating funds in Singapore]

Notes: SMRT financial breakdown is as of 1995/1996

**Figure 2-13 Flow of capital and operating funds of urban railway in Singapore**

2.6.6 Hong Kong, Peoples Republic of China

(1) Overview of Hong Kong's Mass Rapid Transit

MTR began service in 1979, and was the result of a HK$26 billion investment in three MRT lines totaling 43.2 kilometers in length. The organization in charge of both construction and operations is the MTRC. This entity was established by the government in 1975 (Figure 2-14). MTR has become a widely recognized urban railway example by its operation without continuing government subsidies and by turning successfully station area real estate ventures into profitable railway assets.

![Diagram of Organizations of urban railway in Hong Kong]

**Figure 2-14 Organizations of urban railway in Hong Kong**
In 1992 MTRC and the Hong Kong government agreed on a major project to design, construct, and operate two new lines which will add 34 kilometers of track to the MTR network. The Airport Express Line will connect Hong Kong Island and Kowloon Peninsula and the new airport; while the Lantau Line will serve the west side of Kowloon Peninsula and the north side of Lantau Island.

(2) Revenues from real estate development (value capture)

MTRC can obtain neither a security guarantee on construction loans nor a subsidy from the government. However, MTRC has been given absolute control of development rights for railway land and other sites provided by the government. As a part of this system, MTRC works with private companies to jointly develop real estate projects on railway land and adjacent to stations. Private companies are selected to develop on a competitive bid basis. These companies pay the government a premium of the land price for development and independently construct facilities with their own funding. MTRC then owns and leases out a portion of the developed business facilities, office buildings, and houses, while selling the remainder and sharing the profits with their private partners.

There are a number of real estate developers who would like to be a partner with MTRC for the joint development projects since the excellent site locations of the projects make them highly commercially profitable. By 1990 MTRC had earned HK$4 billion (15.4% of their total operating costs) by developing 18 projects on 675 square kilometers of total floor area along existing line. MTRC can typically attribute 8% of its annual profits to real estate developments.

In 1991 MTRC recorded an operating profit for the first time, and since then has regularly covered operating costs from railway revenues and related sources. In 1995 MTRC recorded an operating profit of HK$1.2 billion on revenues of HK$5.7 billion. In 1996, all outstanding debts of the railway were completely retired, and MTRC returned a dividend for the first time to its sole shareholder, the Government of Hong Kong.

The provision of land development rights by the governments is indirect financial support to MTRC as it draws income from highly profitable real estate businesses.

Differing from the way of covering an operation deficit with a subsidy, the characteristics in financing of Hong Kong railway projects are that the government provides an operational environment to administrate the railway projects on its own accounting and promotes MTRC's, an operation body's, business efforts.

Figure 2-15 shows the flow of MTR capital and operating funds in Hong Kong.
(3) Financial Resources for MTR Capital and Operating Expenses

(a) MTR
The total cost of constructing the initial MTR system came to approximately HK$26 billion. Of this, HK$20.2 billion (nearly 78%) came from the Hong Kong Government's general account, while the remainder was obtained through short- and long-term commercial loans, bond issues, various fund raising schemes, and internal reserves. There is no “special account” system for financing urban railway improvements in Hong Kong.

MRTC is now an independent corporation which is able to cover its operating expenses, loan payments, and bond payments with revenues from railway operations and related business without receiving any subsidies or loan guarantee from the government. Highly rated in international debt markets, MRTC is now in a good position to hedge exchange
risks with futures and options in order to minimize costs and support financial stability by securing advantageous fund raising conditions.

(b) Airport Lines

The Airport Express Line and the Lantau Line are collectively known as the “Airport Lines.” Both lines are presently under construction and due to begin service by June, 1998. Of the HK$35.1 billion total construction cost, HK$23.7 billion is being funded by the Hong Kong Government as an increase in capital to MTR, while the remainder is from loan sources external to MTRC.

MTRC has obtained the right to excise control of land development projects on five sites along the new line (62 ha in total). They plan to pursue real estate ventures in a similar fashion to that used along the existing lines.

(c) KCRC New Town Line, light rail transit

The “New Town Line” is another example of integrating real estate development and new urban railways. This system functions as a transport means for residents within the new towns.

1) Routes:
   - Eight light rail lines
   - 31.75 kilometers in length
   - Connecting several residential areas in northwest Hong Kong (New Territories)

2) Operating organization: Kowloon-Canton Railway Corporation (KCRC)
   - KCRC was established in 1982 to operate the 34km route of the Kowloon-Canton Railway within Hong Kong. (The entire railway connects Hong Kong’s Kowloon Peninsula with the Chinese city of Guangzhou.)
   - KCRC is a 100% government-owned company responsible for implementing both the construction and operation of Light Rail Transit in the “New Towns” area.

3) Scheme:
   - The Hong Kong Government entrusted implementation of Light Rail Transit operations to KCRC in 1984.

4) Total project cost:
   - Total construction costs for the initial section amounted to HK$1.1 billion; and was funded entirely by KCRC drawing upon their internal reserves.
   - A subsequent investment of about HK$0.9 billion was also self-funded.

5) Real estate and land development:
   - KCRC has initiated real estate development projects at 4 sites and is planning 2 additional projects jointly with private companies. Like MTR, KCRC intends to make the most of the ‘right of land use’ provided by the government.
· Real estate development revenues have so far covered half of the LRT construction costs. Although the LRT system has been receiving assistance from other departments to cover deficits, it turned a profit before depreciation in late 1995. It has paid dividends to the government since 1992.

2.6.7 Republic of Korea

(1) Urban railway construction financing and subsidy systems

A primary objective of traffic policy in Korea has been to reduce road congestion around large cities like Seoul by means of urban railway improvements such as subways.

In Korea, local governments are responsible for traffic infrastructure construction within their jurisdictions in a carefully planned manner, and therefore, function as the entities in charge of urban railway projects. For example, the City of Seoul is in charge of most of the construction costs for its subway.

Subsidies and loans to local governments are drawn out of a central government special account called the “Traffic Facilities Improvement Special Account.” Enacted on 31 December 1994 as a 10-year “temporary” law, this special account is available for all traffic facility construction including roads, railways, airports, seaports. Other financial resources for traffic improvements come from the general accounts of the local governments.

(2) Traffic tax as a special financial resource

A key funding source for the “Traffic Facilities Improvement Special Account” is traffic tax revenues. The Traffic Tax Law was enacted in 1995 and imposes a tax on gasoline and light oil. These revenues are intended to ensure sufficient financial resources for expansion of both road and rail transport facilities. Traffic tax revenues accounted for approximately 42% of Special Account proceeds in 1996, while the remainder was covered by general tax revenues. As such, it has quickly become a key financial resource.

(3) Payment for traffic inducement

In addition to general tax revenues, local governments have also utilized an innovative financial resource based on the principle that building owners should pay for the demands they will place on local infrastructure. As such, traffic “impact fees” have been exacted from traffic “inducing” developments in Seoul and other large cities.

This system began as the principle of payment for traffic inducement, a concept disseminated among various Korean governmental organizations on April 13, 1992. The policy imposes a fee on tenants of buildings larger than 1,000 square meters in cities of greater than 100,000 inhabitants. The fee is intended to compensate for public infrastructure improvements warranted by the traffic demands these developments induce.

11 Fees are calculated based on the following formula (which attempts to estimate the burden induced by the development): Total area of building * unit burden charge (350 won/m²) * traffic inducing coefficient
Fees are collected according to four classifications: Seoul and other cities, and urban areas and others. The classifications are further subdivided into facility uses within these four classifications.

This system was used for the first time in the construction of the Bundang New Town. The principal developer, the Land Development Corporation, and other related organizations negotiated the following allocation scheme for fee payments.

Land Development Corporation: 55%
Railway Organization: 22%
City of Seoul: 23%

In Korea local government’s traffic control policy is backed up by their solid financial resources. For instance, the city budgets of Seoul and Inchon are each funded exclusively from local financial resources — 90% from local taxes such as residence taxes and property taxes, and the remainder from non-tax revenues such as license fees.

However according to Korea’s Urban Railway Law, railway operators are prohibited from directly engaging in non-railway business. As a consequence, they are unable to generate revenue from station area land developments to help cover railway expenses.

(4) Financial resources for MTR capital and operating expenses

(a) City of Seoul

As the capital of the Republic of Korea with 10.6 million inhabitants, the City of Seoul is responsible for building and operating subway lines as described below:

1) Routes:
   · Four existing lines, 118 kilometers in length
   · 160 kilometer subway system expansion is under construction (four additional lines)

2) Operating organization:
   · Seoul Subway Construction Department of Seoul City is in charge of subway construction.
   · The first four lines are operated by Seoul Metropolitan Subway Corporation (100% city funded).
   · The second four lines will be operated by Seoul Metropolitan Rapid Transit Corporation (also 100% city funded).

3) Total project cost (see Table 2-6 for details):
   Total Construction Costs for the Second Section: 8,830 billion won
   Central Government fund: 1,862 billion won (21%)
   City of Seoul fund: 4,281 billion won (48%)
   City of Seoul loan: 2,685 billion won (31%)
   · The central government fund comprises both a subsidy and a government loan. These funds come from the “Traffic Facility Improvement Special Account” described previously.
• The City of Seoul’s fund is fed by both contributions from the city’s general account as well as from special accounts. The special accounts include traffic impact fees; urban railway public bond issues (the purchase of which is obligatory when registering a car, contracting construction related to subways, or obtaining a food sanitary license), and overseas bond issues (only in the North American market) to be repaid with railway operating revenues.

• In addition to these funds, the City of Seoul has also utilized various types of loans including Korean government fiscal investments as well as ODA loans from the Overseas Economic Cooperation Fund of Japan. The Korean government fund is managed by the Financial Economic Planning Institute and raised by selling government stock holdings and other financial assets. Details are presented in Table 2-6.

Table 2-6 Breakdown of financial resources for the second section construction project of Seoul City Subway

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand Total</td>
<td>88,300</td>
<td>55,916</td>
<td>10,385</td>
<td>9,459</td>
<td>12,540</td>
</tr>
<tr>
<td>Government’s Expenditure</td>
<td>18,625</td>
<td>11,290</td>
<td>2,690</td>
<td>2,356</td>
<td>2,289</td>
</tr>
<tr>
<td>Government Subsidy</td>
<td>15,085</td>
<td>7,750</td>
<td>2,690</td>
<td>2,356</td>
<td>2,289</td>
</tr>
<tr>
<td>Government Loans</td>
<td>3,540</td>
<td>3,540</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Seoul City Expenditure</td>
<td>42,818</td>
<td>27,559</td>
<td>4,716</td>
<td>5,052</td>
<td>4,491</td>
</tr>
<tr>
<td>General Account</td>
<td>36,656</td>
<td>22,880</td>
<td>3,822</td>
<td>4,463</td>
<td>5,491</td>
</tr>
<tr>
<td>Special Account</td>
<td>2,380</td>
<td>1,950</td>
<td>280</td>
<td>150</td>
<td>-</td>
</tr>
<tr>
<td>Other Revenues</td>
<td>2,232</td>
<td>1,179</td>
<td>614</td>
<td>439</td>
<td>-</td>
</tr>
<tr>
<td>Government Corporations’ Expenditure</td>
<td>1,550</td>
<td>1,550</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Loans</td>
<td>26,857</td>
<td>17,067</td>
<td>2,979</td>
<td>2,051</td>
<td>4,760</td>
</tr>
<tr>
<td>City Fiscal Investments and Loans</td>
<td>6,320</td>
<td>3,551</td>
<td>-</td>
<td>-</td>
<td>2,769</td>
</tr>
<tr>
<td>City Railway Public Bonds</td>
<td>13,275</td>
<td>7,363</td>
<td>1,873</td>
<td>2,048</td>
<td>1,991</td>
</tr>
<tr>
<td>Loans from the OECP</td>
<td>4,462</td>
<td>3,353</td>
<td>1,106</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Government Fiscal Investments and Loans</td>
<td>400</td>
<td>400</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Overseas Bond Issues</td>
<td>2,400</td>
<td>2,400</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

* All figures mentioned above are as of September, 1994. (Source : Seoul Subway Construction Head Office)

4) Scheme:

• Seoul subway also utilizes an “separation of civil structure and operation” system to delineate the infrastructure development and system operations. Due to its extensive technical experience and knowledge of subway construction, the city has charge of construction, while city-owned corporations are in charge of operation.

• In Seoul subway, two public corporations are responsible for the operation of each other line (line constructed as Phase-1 and Phase-2) in order to maintain a

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12 Since eating and drinking businesses are assumed to induce traffic.
streamlined management and to introduce competition for effective operation. Subway Construction Department of Seoul City is in charge of construction and after completion, all the facilities including debt were transferred to the above mentioned corporations. This is probably due to the reason that Subway Construction Department is responsible for effective construction utilizing its construction knowledge while two public corporations are responsible for effective operation and self-supporting financial management.

- The corporations' loans will be paid off with the expected operating revenues (railway fares and income from other related business). Figure 2-16 shows the flow of subway capital and operating funds in Seoul.

\[\text{Contributors} \rightarrow \text{Central Government General Account \rightarrow Special Account "Special Account for Traffic Facility Improvement" \rightarrow Operation Body Seoul Government Subsidy (17%) \rightarrow Subway Improvement} \]

Notes: Breakdown of Improvement Costs are that of financial resources for Section II (1989~1998).

**Figure 2-16 Flow of capital and operating funds for the Seoul Subway**

(b) City of Incheon

As the fourth largest city in the Republic of Korea with 2.4 million inhabitants, the City of Incheon began construction of its first subway (Line 1) in 1993. Completion of the 24.6 kilometer facility is planned for 1998. The entity responsible for construction is the Incheon Subway Construction Department of Incheon City.
Total construction costs have been estimated at 1,500 billion won, borne by the central government and the City of Inchon as follows:

- Central Government fund: 30%
- City of Inchon fund: 30%
- City of Inchon loan: 40%

(Loan activities of the City of Inchon include bond issues and other long-term fiscal investment and loan.)

The above percentages are based upon the Overall Measures for Metropolitan Traffic, and became effective in 1991. It was applied to the City of Seoul and five large provincial cities: Pusan, Inchon, Taegu, Kwangju, and Taejon.

The City of Inchon has allocated 190 billion won (10% of its total annual budget) for subway construction. The financial resources drawn upon by the city include their general accounts as well as special account for traffic impact fees from which a subway construction fund is drawn. The city issues foreign and domestic bonds to raise capital, and intends to pay off the debt with railway operations revenues.

Subsidies from the central government are drawn from the Traffic Facility Improvement Special Account described previously as well as some additional money lent by the central government as a fiscal investment and loan.

![Figure 2-17 Organizations of urban railways in Seoul and Inchon](image)

2.6.8 Japan

(1) Urban railway construction financing and subsidy systems

In Japan, railway operators are largely responsible for funding improvement costs on their own. However, as railway operating revenues are often not enough to fully cover
the high initial costs of major railway infrastructure investments, some additional financial resources are often necessary. These include:
(a) public subsidies,
(b) value capture from non railway-user beneficiaries;
(c) cross-subsidization of railway operators by revenues from non-railway services.

(a) Public subsidies
The central government subsidies for urban railway projects include:
1) Subsidy for construction of public subway,
2) Subsidy for construction of public new town railway,
3) Subsidy for construction of railway constructed by Japan Railway Construction Public Corporations,
4) Low-interest-loan by Japan Development Bank, and
5) Other subsidy systems.

1) Subsidy for construction of public subway,
The central and local governments each provide 35% (70% total) of subway construction costs to TRTA (Teito Rapid Transit Authority) and other public subway for five years beginning at the start of construction.

2) Subsidy for construction of public new town railway,
This system provides railway construction funds to new town railway construction organizations which are either public or funded by local governments. Approximately 36% of construction costs may be subsidized (in equal shares by the central and local governments) for six years following the start of railway service. These funds may be used together with the “Developer Burden Charge System” whereby land and housing developers and land readjustment scheme implementing bodies provide land to the railway at market value and pay half of the civil works construction costs.\textsuperscript{13}

3) Japan Railway Construction Interest Subsidy for Public and Private Corporations
In this scheme, private railways agree to purchase new or expanded lines from the Japan Railway Construction Public Corporation and pay off the interest and capital in 25 equal yearly installments (15 years for new town lines). In return, the central and local governments reimburse interest payments in excess of 5% per annum.

The subway construction subsidy and the interest payment assistance scheme were officially systematized in 1972 based on an agreement among the Ministries of Transport, Construction, and Finance. Financial resources for these programs come from the Government’s general account and are granted through the Railway Development Fund.

\textsuperscript{13} Civil works include bridge structures, earthen fill and excavation, and underground structures in tunnels.
4) Low-interest-loans by Japan Development Bank
This institution was established in 1959 to assist private railway companies with the construction of safety features such as grade separate crossings as well as service improvements such as line extensions, double-track construction, platform expansion, and maintenance facility upgrading.  

5) Other subsidy systems
The following additional subsidy systems are also available:

- Japan Railway Construction Public Corporation - Interest Support System for Metropolitan Traffic Lines: Through this system, the central government covers interest payments in excess of 5% over a period of 40 years for the construction of main routes and metropolitan traffic lines.
- No-interest loans for Japan Railway Construction Agency-funded projects and TRTA line improvements: The former class of loans is intended for construction of the Joban New Line in Tokyo and double-track improvements on ten metropolitan lines, while the latter class is for new line construction in Teito Rapid Transit Authority.
- Support for New Transit System (formerly Urban Monorail) infrastructure as a part of Road Improvement Projects: Central government funds can be used to subsidize up to 59.9% of total construction costs for New Transit System infrastructure (such as supports and girders) built primarily over urban roadway facilities.

(b) Value internalizing and capturing system
There is a “Charge for New Town Developers” which requires value captures from land developers. According to agreements with railway operating organizations, new town developers may pay for half of the railway construction costs and offer land to the railway at market value. The system applies to both public and private-sector new town developments, but is jointly used with Subsidy for Construction of Public Newtown Railway when the developers are public or semi-public.

In the case of Osaka City Subway’s Midosuji Line, railway area land owners were asked to share in the railway construction cost burden according to the “beneficiary’s burden principle” under the old Urban Planning Law. Burden rates were calculated based upon the distance from the station to the land in question, and a quarter of the total costs was planned to be paid by the subsidy. However the entire estimated amount was never fully collected.

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14 As of August 1997 the standard rate for these loans was 2.8%, both for special construction (i.e. safety measures) and general construction (i.e. transport service improvements). Up to 50% of project costs may be borrowed at these rates for special construction and up to 30% for general construction. The loan duration and other terms of payment are negotiable.
(c) Complimentary activities to enhanced profitability of railway business

As a means to augment their financial resources and reinforce railway use, private railways in Japan have for a long time engaged in complimentary business ventures such as real estate development, commercial enterprises, and services.¹⁵

Providing houses, department stores, recreation facilities, and even universities along the railway attracts railway riders and boosts fare revenues. Diversified business operations also increase the combined capital assets and the overall credit rating of the entire corporation, allowing more favorable terms for financing railway debt. Generally, private railway's operation of department stores, hotels, recreation facilities, and other commercial ventures in addition to a railway operation, helps to ensure the profitability of the entire business of railway group companies.

(2) Financial resources for urban railway construction in Japan

There are various examples of successful railway financing techniques in Japan:

(a) Tokyo Denen-toshi Line,
(b) Joban New Line,
(c) Chiba New Town Line, and
(d) Kobe Express Railway as examples of local governments and a public corporation.

(a) Tokyo Corporation - Den-en toshi Line

"Tama Denen City" is known as the largest and most successful real estate project ever developed by a Japanese private railway company. Tokyo Corporation built the Denen-toshi Line as a part of the "Denen City Project." The goal was to use the railway to integrate the urban development of a 5,000 ha hilly area in the south-west suburbs of Tokyo. The 22 kilometer railway cost 22 billion yen and was financed with loans of equal value by both the Japan Development Bank and a commercial bank.

Tokyo Corporation played a leading role in planning "Tama-Denen City" from the very beginning, particularly with respect to land "readjustment" of town lots (which was originally the responsibility of the municipality). As the largest land owner, Tokyo was able to work with the municipalities to obtain project sites. With 500,000 inhabitants, this project also represents the largest scale private sector urban housing development. Tokyo Real Estate, the Japan Housing Public Agency, and the municipality's Housing Public Corporation all participated in housing development along the railway. In addition, the Tokyo Group constructed department stores, shopping plazas, and recreation facilities.

(b) Joban New Line

In the Tokyo Metropolitan Area, the rapid urbanization led to the necessity of new railway systems connecting the center with remote areas. Therefore, the official plan for the 60 kilometer Joban New Line between Tokyo and Tsukuba Gakken city was

¹⁵ In addition to private railways, local governments such as the City of Kobe have also initiated railway-related development projects to support railway use.
announced in 1985, and projected to cost 150 billion yen. The line will serve Tokyo, three prefectures (Chiba, Ibaragi, and Saitama), and 12 municipalities.

In 1991 a law on “Special Measures of Promotion of Housing and Railway Development in Urban Area” was drawn up by the Ministries of Transport, Construction, and Home Affairs, and was enacted through a resolution of the Diet. This law established procedures for determining the basic plans and subsidy measures (such as local bond issues for railway construction and intensive land exchange and readjustment systems for railway sites) needed for efficient integrated development of housing and railway constructions, while ensuring sufficient funds, land, and railway passenger demand. The law also mandates that local municipalities play a key role in project implementation.

As a result, the municipalities involved contributed 14 billion yen to establish the third sector “Metropolitan New Transit Railway Development Corporation” which is now in charge of building the Joban New Line. The resources used to finance this railway investment are as follows:

Loans:  
1050 billion yen  
1030 billion yen (80%) - no interest loan  
20 billion yen (20%) - equity and fiscal investment and loan

Internal financial resources:  20 billion yen

Fifty percent of the no interest loans are from the Railway Development Fund, while the remainder are loans from the local municipalities. Financing from related municipal entities and private companies are also expected. Although repayment plans are still being developed, local governments are planning to finance through local bonds and pay them back using increased general tax revenues from railway construction.

(c) Chiba New Town Railway

The Chiba New Town Line was developed jointly by the Housing and Urban Development Public Corporation and local public organizations, which makes it a rare if not unique railway project in Japan. The Housing and Urban Development Public Corporation was responsible for railway construction, while the Hokusou Development Railway Corporation operates the line. It also construct and operate Hokusou Line connecting the Chiba New Town Line to Tokyo Metropolitan Area. The Hokusou Development Railway Corporation was established in 1972 with privately invested capital of 2 billion yen to operate the Hokusou line and serve the residents' transport needs. Figure 2-18 shows the relationships between these organizations.
Chiba prefecture drew up the Chiba new town plan based on an increasing demand for housing in the metropolitan area. It had to also take responsibility for the integrated development of housing and rail infrastructure since it could not expect other railway corporations to participate in the project for financial reasons. The railway construction began in February, 1975 and the Housing Development Public Corporation (now the Housing and Urban Development Public Corporation) eventually joined in new town development when it became financially difficult for Chiba to continue. The Housing Development Public Corporation decided to take over the railway construction.

Chiba prefecture’s investment, a new town railway subsidy, and developers burdens from the prefecture and the agency were used to pay 10 billion yen of the construction costs for the four kilometer Chiba New Town Line between Komuro and Chiba New Town Chuo, which opened in 1984. Approximately 60% of the remaining costs (5.9 billion yen) were paid by national investment and loans, and 40% by issuing bonds. The bonds have since been refinanced and are now being paid off using railway operating revenues. Figure 2-19 shows the flow of Chiba New Town Line capital and operating funds.
Figure 2-19 Flow of Construction and Operation Fund of Chiba New Town Railway
(d) Kobe City Rapid Railway

The City of Kobe has initiated a series of new town construction plans in undeveloped areas to the northwest of the city in order to cope with its increasing population. In accordance with these plans, the Kobe Municipal Transportation Bureau constructed the Kobe City Rapid Railway to connect Shin-Kobe and Seishin and provide direct access to the center of the city for the new town residents. By 1987, the 22.7 kilometer line comprised three sections: the 7.6 kilometer Yamate Line serving the center of the city; the 5.7 kilometer Seishin Line passing through the Suma New Town area; and the 9.4 kilometer Seishin Extension serving newly developed areas to the northwest of the Seishin new town, including industrial complexes and a college town.

Kobe city issued local bonds totaling 212.5 billion yen as the main financial resource to cover the 254 billion yen construction cost of the Kobe City Rapid Railway. These bonds will be retired using general account funds (10%) and special account for railway project (90%).

The "Subsidy for Construction of Public Railway" described above was utilized in the case of the Yamate and Seishin Lines while the "Subsidy for Construction of Public Newtown Railway" was utilized for the Seishin Extension. A "Grant for Subway Project" was also used to cover a part of the interest payments on the local bonds, which were issued to pay back the interest on the other bonds mentioned above. The three kinds of subsidies totaled 100.5 billion yen by 1990, or 44% of total construction costs.

In addition to the subsidies, the following techniques were also used to provide financial support to the railway:

- Charge for Developers was utilized for Seishin Extension.
- Return of future development value system, a new system based on the Guidelines for Housing Development enacted in 1973, was introduced for construction of the 4.5 kilometer Myodani to Itayado subway segment. This system requested that developers in two areas adjacent to the Suma New Town station to offer the railroad sites in the developing area for free, to share financial burden for railroad sites outside of their development area, to cover the costs of civil works for construction of infrastructure, and to pay for subway construction costs of the city.
- The City of Kobe's revenues from housing developments, construction of research and industry parks, freight transport centers, sports centers, and shopping plazas alongside the railway were used to pay subway construction and operations expenses as "internal" subsidies.

Figure 2-20 shows the flow of Kobe City Rapid Railway capital and operating funds.
2.6.9 Summary of Case Study

Table 2-7 shows the summary of case study of each measure, and Table 2-8 shows the sharing rate of construction cost among central and local governments and railway operators.
<table>
<thead>
<tr>
<th>Measures to Secure Financial Resources</th>
<th>England</th>
<th>France</th>
<th>Germany</th>
<th>U.S.A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fare Revenue (accumulated funds, internal reserves)</td>
<td>Covers only part of operation cost, not for repayment of initial construction cost</td>
<td>Covers only part of operation cost, not for repayment of initial construction cost</td>
<td>Covers only part of operation cost, not for repayment of initial construction cost</td>
<td>Covers only part of operation cost, not for repayment of initial construction cost</td>
</tr>
<tr>
<td>Subsidy from Governmental Account (general tax revenue, general account)</td>
<td>London Regional Transport receives subsidy from National general fund. Subsidy from national government covers majority of capital investment.</td>
<td>Subsidies from general account of central, regional and local government for both construction and operation.</td>
<td>A part of construction cost is covered by general accounts of central and local governments.</td>
<td>Both construction and operation are covered by general accounts of Federal, state and local governments.</td>
</tr>
<tr>
<td>Subsidy from Governmental Specific Account (earmarked tax revenue, i.e. oil tax, car registration tax, consumption tax, property tax, area licensing tax, other various surcharges)</td>
<td>No earmarking revenue exists. A residential tax increase was proposed to reduce public transport fares in London (1991), but rejected as illegal.</td>
<td>Fare discounts are compensated by payroll charges from private companies in Paris and local cities. Local additional taxes are temporary collected for improvements and construction of station in Paris and local cities.</td>
<td>Oil tax (national tax) is earmarked by Local Transport Subsidy Act. Oil tax is appropriated as subsidy for operation costs by Local Decentralization Act. Increased revenue of oil tax has been allocated to repayment of railway debt since 1994.</td>
<td>Rule of diversion of gas tax (road construction fund) to railway based on ISTEA, 1991. LA City raised fund from special benefit tax with SAD. LA County raised fund from increased revenue of sales tax by local referendum.</td>
</tr>
<tr>
<td>Reversion of Profit Accruing from Development (i.e. development charge, connecting passage construction charge, special assessment district (SAD), tax increment financing (TIF), internalization of development profit by real estate development etc.)</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>LA City collected tax from business alongside railway as a special benefit tax (tax from special assessment district, SAD).</td>
</tr>
<tr>
<td>Fund Raising (governmental soft loan, bond issue, overseas aid organization loan, special business revenue)</td>
<td>None</td>
<td>Regional government supplies low-interest loan to operators.</td>
<td>None</td>
<td>Various kind of bonds were issued in NY (revenue bond, collateral bond for railway facilities). State railway bonds were issued in LA by local referendum.</td>
</tr>
<tr>
<td>Introduction of Private Funds (private railway project, turnkey (design &amp; build), full-turn key (BOT, BOO, etc)</td>
<td>Private finance is promoted by Private Finance Initiative (PFI) in a form of BOT, BOO.</td>
<td>None</td>
<td>None</td>
<td>Federal Transit Administration promotes turnkey style (design &amp; build) projects financed by private companies.</td>
</tr>
<tr>
<td>Measures to Secure Financial Resources</td>
<td>Singapore</td>
<td>Hong Kong</td>
<td>Korea</td>
<td>Japan</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>-----------</td>
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<td>-------</td>
</tr>
<tr>
<td>Fare Revenue (accumulated funds, internal reserves)</td>
<td>SMRT (operator) is obligated to retain a reserve for maintenance and improvement of facilities.</td>
<td>MTRC (operator) covers operation costs and has paid back their debt portion of the initial investment.</td>
<td>Covers only part of operation cost, not for repayment of initial construction cost.</td>
<td>Private railway companies are responsible for financing not only the operation but for the construction and repayment. Some private companies are allowed to save revenues from fare increases for future capital improvements.</td>
</tr>
<tr>
<td>Subsidy from Governmental Account (general tax revenue, general account)</td>
<td>100% of construction cost covered by central government's subsidy from general account. No other support system.</td>
<td>Most of the construction cost is funded by government's general account.</td>
<td>Most of the construction cost is from Seoul City's general account.</td>
<td>Subsidies from central government's general account for subway and new town urban railway exists. Subsidies for interest payment by Japan Railway Construction Public Corporation.</td>
</tr>
<tr>
<td>Subsidy from Governmental Specific Account (unreserved tax revenue, i.e. oil tax, car registration tax, consumption tax, property tax, area licensing tax, other various surcharges)</td>
<td>No earmarking revenues exist.</td>
<td>No earmarking revenues exist.</td>
<td>A subsidy granted from &quot;Special Account for Traffic Facility Improvement&quot;. Traffic tax (special consumption tax on gasoline and light oil) tax collected since 1995 as urban railway improvement fund. Transport Inducement Charge.</td>
<td>Some local governments earmarks the additional portion of corporate tax on the corporations in project area for future railway improvement fund. Funds are established to facilitate railway construction.</td>
</tr>
<tr>
<td>Reversion of Profit Accruing from Development (i.e. development charge, connecting passage construction charge, special assessment district (SAD), tax increment financing (TIF), internalization of development profit by real estate development etc.)</td>
<td>None</td>
<td>By utilizing exclusive land development right given by government, MTRC earned a large amount of profit from real estate development by joint venture with private sector.</td>
<td>Transport inducement charges are collected from property owners of a certain floor area and are used for special account of local government.</td>
<td>New town developers are required to pay a half of the construction cost of civil works portion and to provide their fund for the railway at standard price. Internalization of profit from the real estate developments. Property owner's payment for connection passage between building and subway station in Tokyo.</td>
</tr>
<tr>
<td>Fund Raising (governmental loan, bond issue, overseas aid organization loan, special business revenue)</td>
<td>None (SMRT is exempted from corporate tax for a period and the lease charges on the systems are lowered.)</td>
<td>MTRC raised fund for part of construction costs by bond issuance. No financial guarantee by government.</td>
<td>Seoul City issues urban railway bonds which are obligatory to purchase upon car registration, subway related contracts etc.</td>
<td>Local governments raise fund by bond issuance. Internalization of profit from the real estate developments. Fiscal loan for public corporations and a low interest loan for private railway improvement.</td>
</tr>
<tr>
<td>Introduction of Private Funds (private railway project, turnkey/design &amp; build), full-turn key (BOT, BOO, etc)</td>
<td>None</td>
<td>Revenue from joint real estate development projects with private sector is allotted to part of construction costs.</td>
<td>None</td>
<td>Each private railway company has been constructing and operating its railway with financial autonomy.</td>
</tr>
<tr>
<td>Name of Project</td>
<td>Construction Cost</td>
<td>Sharing Rates</td>
<td>Operator</td>
<td>Reversion of Profit Accruing from Development</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------</td>
<td>---------------</td>
<td>----------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>England, Croydon Tramlink</td>
<td>£230 million</td>
<td>Subsidy 54%</td>
<td>None</td>
<td>Private Trustee Corporation Group 46%</td>
</tr>
<tr>
<td>England, Manchester Metrolink, Phase-1</td>
<td>£154 million</td>
<td>Subsidy 31%</td>
<td>Manchester City 45%</td>
<td>Private Corporation 3%, Loan from European Investment bank, etc 21%</td>
</tr>
<tr>
<td>Il de France Region, Five Year Project Contract of Public Transport Facility Construction</td>
<td></td>
<td>Subsidy 30%</td>
<td>Il de France Region 50% (real term: 60-70%)</td>
<td>Loan from Il de France 20%</td>
</tr>
<tr>
<td>Germany, S bahn, U bahn</td>
<td></td>
<td>Subsidy (oil tax revenue) 60% (Former East Germany region 75%)</td>
<td>State and regional government served by railway 40% (Former East Germany region 25%)</td>
<td>None</td>
</tr>
<tr>
<td>USA, Los Angeles, Red Line Subway, Section 1</td>
<td>US$ 1.42 billion</td>
<td>Subsidy 56%</td>
<td>State 17%, County 14%, LA City 3%</td>
<td>None</td>
</tr>
<tr>
<td>USA, Los Angeles, Red Line Subway, Section 2</td>
<td>US$ 1.518 billion</td>
<td>Subsidy 54%</td>
<td>State 12%, County 23%, LA City 8%</td>
<td>None</td>
</tr>
<tr>
<td>Singapore, Mass Rapid Transit</td>
<td>S$ 6.5 billion</td>
<td>Subsidy 100%</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Hong Kong, Mass Transit Railway</td>
<td>HK$ 2.6 billion</td>
<td>Equity 78%</td>
<td>None</td>
<td>Loan from bank and bond issuance, etc. 22%</td>
</tr>
<tr>
<td>Hong Kong, Kwai Tsun Canton Railway Corporation, New Town Railway</td>
<td>HK$ 1.1 billion</td>
<td>None</td>
<td>None</td>
<td>100% (KCRC pull down retained earnings)</td>
</tr>
<tr>
<td>Korea, Seoul Subway Section 2</td>
<td>Won 8.830 billion</td>
<td>Subsidy 17%</td>
<td>Seoul City Subsidy 49%, Bond Issuance and OECF loan 30%</td>
<td>Local government is an operator</td>
</tr>
<tr>
<td>Japan, Chiba New Town Railway</td>
<td>¥ 10 billion</td>
<td>Subsidy 9.5%</td>
<td>Subsidy 9.5%, Equity 9%</td>
<td>Fiscal Investment &amp; loans to Housing &amp; Urban Development Public Corporation(HUDPC)35%, Private Bond 24%</td>
</tr>
</tbody>
</table>
References

Great Britain’s Private Finance Initiative and the Privatization of British Railways

Private Finance Initiative (PFI)

The provisions of Section 56 of the Transport Act of 1968 permit the central or local governments to supply funds to relevant entities for the purpose of making improvements to national or local public transport facilities. Many such grants have indeed been made for both government and private sector-initiated public transport improvements, and have helped bring success to the privatization effort. These successes have been attributed to (1) the “Riely Rules”16 initiative to make the most of private funds, which was announced by the Ministry of Finance in 1981; and (2) to PFI implementation, which was announced by the same Ministry in November 1992.

As the “Riely Rules” required greater cost-effectiveness in privately-funded public operations than in operations with fully public funding, the utilization of private funds is quite limited. In order to improve this situation and increase the utilization of private sector resources, the government in 1989 decided to no longer deduct the amount of private funds from the concerned division’s budget.

In addition, the Ministry of Finance introduced the following PFI principles17 as a new policy in November 1992.

1. The cost-effectiveness of private-sector and public-sector public investment shall not be compared.
2. Joint operations by private and public entities shall be encouraged.
3. Public operators shall consider lease financing strategies in order to spread risks and increase the utility of limited funds.

PFI is not a law, but rather a guideline of the Ministry of Finance. However, budgets are not to be allocated for operations in which PFI policy has not been examined or reflected upon.

As indicated in Figure 2-21, central government expenditures to public entities have decreased significantly, while private funds have been successfully introduced into public

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16 Starting in 1980, private funds started to be used in traditionally public sector projects. Upon examination, the Ministry of Finance in 1981 announced the following two principles called the “Riely Rules.”

1. When utilizing private funds, the total amount should be less than were the project to depend fully on public funds.
2. Private funds may not to be added to the originally planned public funds, but rather should be reduced from the budget.

17 This system was based on the notion that since those who do not use the railway still obtain a social benefit from its existence, the government can voluntarily provide operating assistance as long as the total of it plus fare revenue remains below total operating costs.
sector projects (which used to be impossible). Expenditures of transport sector are estimated to be approximately 42% of the total private funds related to PFI for year 1997/98. The most significant application of PFI strategies may be found in the privatization of British Railways, which is explained below.

Privatization and Division of British Railways Operation

The privatization and division of operation of British Railways (BR) was a complicated project including structural reform, sales of affiliated companies, and entrusting railway operations to the private sector. In these respects it differed significantly from examples of line-based privatization efforts.

BR was formerly in charge of constructions for all of the main railway routes in the United Kingdom. However, because of recognized management inefficiencies and due to the increasing public subsidies needed for capital and operating expenses, starting in 1989, examination on hand over of many BR services to other agencies or private operators has started. Possibilities such as transferring electricity generation to the Electric Power Agency and letting private contractors repair the cars were discussed.

As part of the PFI policy, the government ultimately decided to privatize BR fully and enacted the Railway Act of 1993 to legislate the decision. BR had been one operating entity, but in January 1994 it was divided into an infrastructure corporation (responsible for tracks, signals, electric systems, stations, classification yards, etc.) and several functional corporations (operating companies, vehicle companies, freight companies, service companies, etc.). The infrastructure corporation, "Railtrack," then became a national corporation, and the functional corporations were sold individually to private sector or they were franchised. By the time Railtrack's stock was listed on the London stock exchange in May 1996, private companies had taken responsibility for all railway operations.

As of April 1997, BR had become an organization of about 50 people managing judicial affairs and liabilities. An Organization for Passenger Rail Financing (OPRAF) has been established by the government to grant subsidies to 25 railway operating corporations that face difficulties in cost accounting. In return for this assistance, the government retains the right to supervise the corporations on management efficiency, enforce rigid adherence to the safety standards, and raise the level of services they provide. (See Figure 2-21 for the relations between the affiliated companies).

The privatization effort has helped the private sector to utilize advanced managing technologies which are expected to eventually reduce costs, increase revenues, and reduce government subsidies. Prior to the 1993 privatization, BR would receive an annual subsidy for operation of about £3.5 billion for operating assistance and £1 billion for new construction and station modernization. The total grants requested by the private operators has so far been significantly lower than this amount.
Figure 2-21 Trend of capital investment in public and private sector after the introduction of PFI

Ministry of Transport

Organization for Passenger Rail Financing (OPRAF)  Subsidy  Train Operating Companies

Regrets of subsidy

Rail Track  Vehicle  Operation

Figure 2-22 Organizations of British Railways after division and privatization
CHAPTER 3

BASIC CONCEPTS REGARDING FINANCIAL RESOURCES
FOR URBAN RAILWAY CONSTRUCTION

3.1 Urban Railway Benefits and Appropriate Sharing of Burden
The beneficiaries of urban railway construction (as described in Chapter 1) may be identified as follows:
(1) Railway users;
(2) Road users;
(3) Station area real estate owners; and
(4) The overall community.

The main benefits enjoyed by these beneficiaries may also be described as follows:
(1) Being able to save time by taking the railway;
(2) Being able to save time due to reduced road congestion;
(3) An increase in the value of station area real estate; and
(4) Reduced environmental pollution

As indicated in Table 3-1, each benefit listed above implies possibilities for paying the construction costs for the railway that provides the benefit. The first may be compensated by the passenger fare, the second by automobile related taxes, the third by taxes on station area real estate, and the fourth by other local taxes.

In general, railway fare revenues are allocated for railway construction if possible. If this is not a sufficient funding source, local tax-supported subsidies are often utilized. However, if an appropriate share is not asked of road users and real estate owners, the cost burden will be allocated inequitably among the various beneficiaries.

As all of the cost payments other than passenger fares involve government taxation, it is important for the government to study the financial structure of urban railway construction in order to achieve appropriate share to each benefit from urban railway project.
Table 3-1  Proper cost pay determinants of financial resource in urban railway construction

<table>
<thead>
<tr>
<th>Beneficiary</th>
<th>Benefits</th>
<th>Means of cost pay</th>
<th>Feasible conditions of the cost pay</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Urban railway user</td>
<td>Benefits from use</td>
<td>Fare</td>
<td>- Proper fare level</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Comparative advantage for the other transport service</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Explainable management effort for user</td>
</tr>
<tr>
<td>(2) Road user</td>
<td>Mitigation of congestion</td>
<td>Tax related automobile</td>
<td>- Traditional idea of budget (investment priority for public transportation)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Ability and results of tax collection of various taxes related road transportation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Necessity of alternative in road transportation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Feasibility of tax reform in assembly (in case of tax increase and new tax)</td>
</tr>
<tr>
<td>(3) Owner of real estate</td>
<td>Increase of property</td>
<td>Tax related to the value (return Ability and results of tax of development profit)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Increase of property value real estate collection of various taxes related to the real estate</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Formulation of legal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- System about urban development</td>
</tr>
<tr>
<td>(4) Overall community</td>
<td>Preservation of environment</td>
<td>Local tax</td>
<td>- Independence of local public finance</td>
</tr>
<tr>
<td></td>
<td>Obtaining of the diversified</td>
<td></td>
<td>- Consensus for urban railway construction</td>
</tr>
<tr>
<td></td>
<td>Alternative transport</td>
<td></td>
<td>- Purposing the preservation of environment</td>
</tr>
<tr>
<td></td>
<td>Institution</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.2 Financial Resource Transactions

As indicated above, a straightforward categorization of urban railway construction financial resources excluding fares could be considered as follows:

- Automobile taxes on road users (2)
- Real estate taxes on property owners (3)
- Other local taxes on community members (4)

As long as existing automobile and real estate taxes are not "earmarked" taxes, it may be possible to use a portion of current revenues to cover urban railway construction costs. In addition, it may be possible to change these tax rates or to create new taxes altogether.

There are several potential transaction methods for allocating these financial resources (increased or a portion of existing tax revenues) to urban railway construction. They include:

- Allocations from General Accounts
- Allocations from Special Accounts
- Allocations from Funds

The characteristics of three methods are described in the following subsections:
3.2.1 General Account

As long as they are not considered earmarked taxes, urban railway-related tax revenues may accrue to the general account and allow flexible budget allocations each fiscal year. However, this flexibility is also dependent upon annual legislative approval and can thus be affected significantly by politics. Therefore such a strategy may not guarantee sustained long-term allocations for urban railway construction.

3.2.2 Special Account

Although railway-related tax revenues accrue over a long period, the most intense financial demands of urban railway development are concentrated in the initial stages of construction. As such, it is standard practice to issue bonds to cover construction costs and repay them with future taxes. A special account for railway-related taxes helps to clearly identify the cash flows related railway project while remaining resistant to political interference due to the direct obligation of this account to bond redemption.

3.2.3 Fund

It may be possible to establish a fund for urban railway construction if the following conditions exist:

• There is time to save in advance for the future financial demands; and
• Working capital is available for the time being;

If a fund is possible, its flexibility for contributing to urban railway construction is relatively high.

3.3 The Viewpoint of this Study Towards Urban Railway Construction

The following subsections summarize the most relevant issues related to securing financial resources for urban railway construction drawn from the cases presented in the preceding chapter.

3.3.1 Project Implementing Organizations

Railway financing options are directly affected by whether or not the railway operator is capable of raising sufficient funds on its own. The following questions require careful consideration.

• Will one railway project implementing organization be responsible for both construction and operation, or will there be separate entities for each?
• Will the business entities mentioned above be public sector or private sector?
• In the case of public sector business entities, will there be direct government control or will it take the form of a publicly-owned corporation?

3.3.2 Administrative Institutions

It is proper for local government institutions to play an active role in urban railway construction since the urban railway will produce primarily local benefits. However, the following points should be considered carefully when determining which governmental entities which will play key roles.

• If the railway benefits will be realized over a wider geographic region than is covered by existing public administrations, a superior administrative entity must take part in the railway development.

• It is necessary for a government organization at the largest administrative level to oversee railway alignment within a development plan and to develop a consistent plan from a long-range point of view.

• It is also necessary to examine to what administrative level automobile control policy makers belong.

3.3.3 Public Finance System

Tax and fee revenues should “capture” financially a variety of the benefits that result from urban railway construction, and can be used to cover construction expenses. Therefore it is necessary that a public finance system be implemented along the following lines:

• If a local government or public corporation plays the main role in the construction of an urban railway, the construction entity must secure financial resources in the form of local taxes and fees or else it will depend on financial assistance from the central government.

3.3.4 “Value Capture” of Land Development Profits

In order to equitably share railway construction costs to all who receive its benefits, it is necessary to “capture” revenues from indirect benefits as well. The following systematic framework is necessary to accomplish this task:

• Establishment of legal system related to the railway business

• Identification of real beneficiaries,

• Establishment of a real estate tax system that enables railway-induced development profits to be “captured” and systematic collection of the tax

• Establishment of a legal system related to urban development (i.e. an urban planning
3.3.5 Introduction of the Private Sector

Although effective urban railway management may be difficult to achieve in the public sector, the following points should be considered carefully when introducing the private sector to railway operations:

- Establishment of a system that guarantees commercial profitability and reduces business risk, such as a private sector business act law.
- Identification of areas eligible for governmental assistance (i.e. assistance for construction and operation costs, low interest loans, “favorable” treatment provisions, etc.)
- The state of domestic financial markets

3.3.6 Urban Structure and Urban Railway Planning

In order to reinforce the city structure which pays attention to the preservation of the urban environment, urban railway construction must not only address the technical master plan for the railway network, but it must also consider the overall master plan for city development. It is necessary to take a long-term view and make a consistent plan. Finally, it is crucial to recognize the synergistic effects of creating a network of urban railway lines which increase user convenience.
CHAPTER 4

URBAN RAILWAY IN BANGKOK, JAKARTA, AND MANILA

4.1 Urban Railway Projects in Bangkok

4.1.1 Economic and Social Environment and Current Situation of Urban Traffic

(1) Economic environment

The Thai economy has made a remarkable growth and rapid change in the past 30 years. Especially from 1988 to 90 the growth rate reached two figures in a row, but in 1992 it fell down to 8.1% in the political disorders. After 1993, it recovered again to a high growth with the growth rate of 8% level (Table 4-1). In the meantime per capita income reached $200 in 1972, $500 in 1978, $1,000 in 1988, $2,000 in 1993, $2,770 in 1995, and $3,000 in 1996.1

<table>
<thead>
<tr>
<th>Table 4-1 Economic growth of Thailand and Bangkok</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thai GDP Substantial Growth Rate (%)</td>
</tr>
<tr>
<td>Bangkok GRDP Substantial Growth Rate (%)</td>
</tr>
</tbody>
</table>

(Source: Thai Development Research Institute, TDRI)

The most contributing factor of these recent high economic growth is the expansion of export through the introduction of foreign capital. Although the Thai export structure used to consist mostly of primary products such as agricultural products, exports of industrial products exceeded those of primary goods in 1985 as the industries have made steady progress. As foreign manufacturing company starts its full operation in middle of the eighties, export expanded drastically and the industrial goods export has been diversified.

Viewing the Thai economy by region, Bangkok Metropolitan Administration (BMA), the administrative authority of capital city of Bangkok2, produces about 40% of the total GDP. Per capita GDP of the area is $12,000, about four times the national GDP average, in 1995.

However there was a change in the economic conditions in 1996. GDP growth rate fell to 6.4%, exports decreased to minus growth comparing with that of the previous year and the deficit in the current balance reached 8% to GDP. After the industrial production

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1 The figures of per capita income are based on 1996’s exchange rate, which is about 30% lower than that of dollar base after devaluation of bahts in 1997.
2 Administrative organization which governs only the city of Bangkok. It does not administrate the whole metropolitan region. We use the city of Bangkok as an administrative area governed by the BMA, which is the central part of Bangkok Metropolitan area.
index reached two digit figures in 1995, it fell down to somewhere around 7% from March in 1996. In addition to the economic change, the fact that its international balance of payments structure depends too much on short-term private funding and that problems in exchange rate control raised a monetary crisis, forced Thai economy to slow down drastically in 1997. In such economic conditions, a tax revenue increase cannot be expected as used to and it is very unlikely that the future scale of budgetary shares of urban railway estimated in preparation for Mass Transit System Master Plan\(^3\) will be ensured.

(2) Population trend

The total population in Thailand is 59,460,000 in the late 1995, with a 0.6% increase over the previous year, according to the Local Administrative Bureau under the Ministry of Interior (MOI). As for population by city, there are about 5,780,000 people in BMA in 1995, which means one out of ten lives in the area. Population in BMA increase 4.2% from 1970 to 75 while it fell to 2.2% from 1990 to 95. The national population increasing rate is, however, around 1% in the first half of 1990's, so population flow into Bangkok Metropolitan Area seems still continuing. Judging from a big population move from Bangkok to other regions at the Lower House election, quite a few people go to work in Bangkok without moving the registration there, which indicates there are much more people in Bangkok than the figures in the statistics. It is estimated there will be an increase of about 17,000,000 people by 2020 in Bangkok Metropolitan Region\(^4\) including BMA and its surroundings. Table 4-2 was made based on the data prepared for Bangkok Transport Planning Unit Project (BTPU)\(^5\) and the data from the Local Administrative Bureau in MOI.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangkok</td>
<td>5,882</td>
<td>5,584</td>
<td>5,784</td>
<td>6,785</td>
<td>8,005</td>
<td>9,002</td>
</tr>
<tr>
<td>Metropolitan</td>
<td>8,590</td>
<td>8,851</td>
<td>9,240</td>
<td>11,185</td>
<td>14,208</td>
<td>16,682</td>
</tr>
</tbody>
</table>

(Source: Bangkok Transport Planning Unit Project, BTPU)

(3) Current situation of urban traffic

As development of Bangkok Metropolitan Region has been conducted by constructing arterial roads and development along these roads, this city structure forces traffic demands to depend on road traffic. As shown in Table 4-3, among traffic modes in Bangkok, bus share (public and private buses) accounts for 47% of the total trips as the largest means of transportation followed by walking (19%), passenger cars (11%), and railway (only 0.2%).

As the city structure depends on road traffic, the road network in Bangkok Metropolitan Area suffers severe traffic congestion not only at the peak commuting times in the

---

\(^3\) Mass Transit System Master Plan (by OCMLT) was approved by the Cabinet in 1994.

\(^4\) Composed of the city of Bangkok and the adjoining five prefectures: Samut Prakan, Nonthaburi, Pathum, Nakhon Pathom, Samut Sakorn.

\(^5\) A traffic survey for establishing a planning method for the whole Bangkok region performed by BMA in 1990.
morning and evening but also during the day due to increased number of vehicles in accordance with increased income. The fact that vehicles' average speed is 10 km or less at a rush hour implies transportation by roads is not functioning well as urban traffic system. Table 4-4 shows the number of registered vehicles in Thailand and the city of Bangkok. About 25% the total vehicles are concentrated in the city of Bangkok where about 10% of the nation dwell. The possession of self-owned automobiles, taxis, and microbuses and the like are higher than those of other regions reflecting higher income. As there is no alternative means but road transportation, the number of travel by vehicle will keep increasing.

Table 4-3  Traffic modes' share in Bangkok

<table>
<thead>
<tr>
<th>Traffic Mode</th>
<th>Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking</td>
<td>18.87</td>
</tr>
<tr>
<td>Bicycle</td>
<td>0.72</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>10.78</td>
</tr>
<tr>
<td>Passenger Car</td>
<td>11.13</td>
</tr>
<tr>
<td>Taxi</td>
<td>1.59</td>
</tr>
<tr>
<td>Samlor, Silor (three-wheeler, four-wheeler)</td>
<td>3.15</td>
</tr>
<tr>
<td>Public Bus (including mini bus)</td>
<td>45.20</td>
</tr>
<tr>
<td>Truck</td>
<td>5.24</td>
</tr>
<tr>
<td>School Bus, Private Bus</td>
<td>2.12</td>
</tr>
<tr>
<td>Railway</td>
<td>0.20</td>
</tr>
<tr>
<td>Boat</td>
<td>0.68</td>
</tr>
<tr>
<td>Others</td>
<td>0.32</td>
</tr>
<tr>
<td>Total</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(Source: The Study on Medium to Long Term Improvement/Management Plan of Road and Road Transport in Bangkok, JICA, 1990)

Table 4-4  Number of registered vehicles in Thailand and Bangkok

<table>
<thead>
<tr>
<th>Make</th>
<th>1993</th>
<th>1995</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Thailand (%)</td>
<td>Bangkok (%)</td>
</tr>
<tr>
<td>Passenger Car</td>
<td>1,041,246</td>
<td>(9.4)</td>
</tr>
<tr>
<td>Taxi</td>
<td>50,807</td>
<td>(0.5)</td>
</tr>
<tr>
<td>Truck</td>
<td>425,645</td>
<td>(3.8)</td>
</tr>
<tr>
<td>Bus</td>
<td>107,411</td>
<td>(1.0)</td>
</tr>
<tr>
<td>Van and the like</td>
<td>556,991</td>
<td>(5.0)</td>
</tr>
<tr>
<td>Wagon, Small Truck</td>
<td>1,381,048</td>
<td>(12.5)</td>
</tr>
<tr>
<td>Auto-three-wheeler</td>
<td>51,847</td>
<td>(0.5)</td>
</tr>
<tr>
<td>(Tuk-Tuk)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motorcycle</td>
<td>7,260,665</td>
<td>(65.6)</td>
</tr>
<tr>
<td>Others</td>
<td>186,796</td>
<td>(1.7)</td>
</tr>
<tr>
<td>Total</td>
<td>11,062,456</td>
<td>(100.0)</td>
</tr>
</tbody>
</table>

Introduction of alternative means to road transportation such as vehicles and buses is indispensable in order to evade worsening traffic congestion.

(4) Urban development plan and traffic policy
The Department of Town and Country Planning of MOI has elaborated three urban development plan of Bangkok since 1960. However, as that office was only a department in MOI, the urban development plans have not been elaborated with careful coordination with other infrastructure development plans. Two urban development plans elaborated in 1960 and 1972, were not successful in regulating land use due to the deficiency in urban planning law, consequently, the only tool for realizing the plan was to guide land use by constructing roads. The department of road transport of the Ministry of Transport and Communications constructed arterial roads based on its original plan in order to cope with ever increasing demand. As a result, the Metropolitan area of Bangkok expands alongside with major roads with low density, and that rouse further automobile traffic.

Due to that situation of urbanization, the National 5 Year Plan of 1996-2000 proposed the construction of rail mass transit system such as urban railways in Bangkok and High-speed train between Bangkok and Pataya, in order to shift the main means of transportation from "road based transportation" which has increased since 1980 to "rail based mass public transport".

Besides the traffic policies above, some government bureaus have also tried various measures to cope with the serious traffic problems in Bangkok, approaching from the point of improvement on road based transportation. The followings are representative measures and their administrative authorities:

- Implementation of large-scale one way networks: Royal Police Department (RPD) under MOI
- Implementation of bus lanes: RPD under MOI
- Regulation on large-sized vehicle traffic: RPD under MOI
- Introduction of large-scale regional traffic control: BMA
- Introduction of microbuses with high quality services: BMA
- Introduction of canal water-buses: BMA
- Construction of overpasses: BMA
- Strengthening of traffic police: RPD under MOI
- Change of bank opening hour: BMA

Although these measures worked in their own ways, the impact was limited under the rapid progressing urban sprawl where the measures are not drastically solving the problems. Under the rapid sprawl phenomena, the effectiveness of these policies are

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6 Measures for Promoting Urban Improvement in Bangkok - Focusing on Institutional Aspects-
7 Royal Police Department is one of departments in the MOI.
8 Bangkok Metropolitan Transit Authority provides bus service in the city of Bangkok as a competitor of private sector with a operation concession provided by BMA.
limited, and those do not solve the problem fundamentally. Under the city structure that offices and schools are concentrated in the center of the city and people living in suburban residential area along the arterial roads have only choice to commute, doing so by foot and bicycle is impossible. People have to use the road traffic, despite of traffic congestion, if there are no alternative means. Therefore, road traffic congestion is getting severe in accordance with expansion of the city.

The office being in charge of the urban development plan currently under elaboration covers the period of 1997 and 2001 switched from DTCP to Urban Planning Division of BMA. In the process of its elaboration, regular meetings are held between BMA and the Office of the Commission for the Management of Land Traffic (OCMLT) which coordinates urban railway. However, no urban development plan, which is based on urban railway plan has been elaborated.

4.1.2 Current Status and Future Plan of Urban Railway

(1) The attempts in the past and the current situation of urban railways
State Railway of Thailand (SRT) has routes radiating from Bangkok Central Station in all directions. It mainly serves for inter-city long-distance transportation, but it is not functioning as a means of urban transportation owing to their inconvenience such as bad location of the stations and long operation intervals. Growth of road traffic, as aforementioned, has brought about urban structure that generate traffic congestion. The Thai government made an overall Bangkok metropolitan region traffic development plan in cooperation with the German government between 1971 and 1975. The plan includes mass public transportation construction such as urban railways. Based on the plan, an elevated-railway development project called 'Sky Train' was drafted by Expressway and Rapid Transit Authority of Thailand (ETA). The project was opened to bid and private sectors were to construct and operate it under supervision of ETA.

A Canadian corporation, the first bidder, declined its offer in the contract negotiation for they could not go along with the Thai government's policy. Despite of that, the Thai government confirmed its policy to construct and operate urban railway with private fund. As a result, in the end of 1980's, two elevated-railway projects in Bangkok metropolitan region were proposed by different governmental organizations. Although either of them were not consisted with the above-mentioned Sky Train Project, both of them started to construct in the middle of 1990's with Thai government's authorization. 15 years have been passed since the traffic development plan in 1975, and traffic congestion has gotten worse to an extreme during that period.

The reasons why the urban railway plan were not implemented for a long time despite its existence are (1) ETA, the newly established executing agency, is in charge of constructions of both highway and urban railway, but has considered a construction of highway network mainly, (2) coordination among major stakeholders such as government agencies and private sectors, which was necessary to construct railway system in the

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8 Bangkok Transport Plan, Ministry of Interior, 1975
9 These projects are named after organizer, Hopewell Project and Thanayong Project. For the details of the projects, refer to the following section.
already urbanized area, was difficult under the traditional Thai political and administrative system. In the existing political and administrative systems, Thai's coordinating function among government organizations and private sectors concerned does not work for the multi-coordination required for railway construction in the current city areas.

In order to clear up the situation that different Thai government organizations and executing organization promote the construction of urban railway individually, and as a result, each plan does not coordinated mutually, the government re-conducted a survey in 1992 which is called "Bangkok Advise on Rationalization of Rapid Transit Systems"(BARRTS)”, which aims to get rid of administrative redundancies in urban traffic plans and to find a way to construct effective urban railways networks. In consequence, the cabinet approved the plan known as Initial System Project (ISP) in 1994, which contained a subway construction project to be implemented by the government and two elevated railways projects to be implemented by the private enterprises. BARRTS proposed the transfer of authority to construct urban railways from ETA to a newly established organization. In August 1992, Metropolitan Rapid Transit Authority (MRTA) has established to be the implementing agency for the urban railways construction. The Bangkok urban railways construction plan, which was prepared by OCMLT after BARRTS study and approved by the Cabinet in 1994 includes the extension of ISP, totaling 238km. This is the current master plan of urban railways construction (For the details of each line refer to Table 4-5 and Figure 4-1).

Network in the urban railway master plan covers not only the city of Bangkok but also overall Bangkok metropolitan region. So, whole Bangkok metropolitan area, i.e. the city of Bangkok as well as the adjoining prefectures receive benefits through this urban railway networks.
<table>
<thead>
<tr>
<th>Line</th>
<th>Section</th>
<th>Settled Lines</th>
<th>Lines under planning</th>
<th>Route Extension Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Existing plan</td>
<td>Under consideration</td>
</tr>
<tr>
<td>Blue Line</td>
<td>First Section (Bang Sue-Hua Lampong)</td>
<td>20.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>B-1 (north-west extension)</td>
<td>Bang Sue - Phra Nang Klao Bridge</td>
<td>-</td>
<td>10.0</td>
<td>-</td>
</tr>
<tr>
<td>B-2 (south-west extension)</td>
<td>Hua Lampong-Bangkok Yai-Bang Khao</td>
<td>-</td>
<td>12.4</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>20.0</td>
<td>22.4</td>
<td>-</td>
</tr>
<tr>
<td>Green Line</td>
<td>Concession Route</td>
<td>23.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(Tanayong Project)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G-1 (east extension)</td>
<td>On Nut-Bang Na-Second International Airport</td>
<td>-</td>
<td>16.2</td>
<td>-</td>
</tr>
<tr>
<td>G-2 (north extension)</td>
<td>Mor Chit-Rachayothin</td>
<td>-</td>
<td>2.5</td>
<td>-</td>
</tr>
<tr>
<td>G-3 (west extension)</td>
<td>Sathorn-Wong Wien Yai</td>
<td>-</td>
<td>3.0</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>23.0</td>
<td>21.7</td>
<td>-</td>
</tr>
<tr>
<td>Red Line</td>
<td>First Concession Section</td>
<td>44.3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(Hopewell Project)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R-1 (west extension)</td>
<td>Yommarat-Bangkok Noi-Taling Chan</td>
<td>-</td>
<td>9.6</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Taling Chan-Outer Ring Road</td>
<td>-</td>
<td>-</td>
<td>3.5</td>
</tr>
<tr>
<td>R-2 (south-west extension)</td>
<td>Hua Lampong-Wong Wien Yai-Phonimit</td>
<td>-</td>
<td>6.2</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Phonimit-Outer Ring Road</td>
<td>-</td>
<td>-</td>
<td>5.0</td>
</tr>
<tr>
<td>R-3 (east extension)</td>
<td>Hua Mark-Second International Airport</td>
<td>-</td>
<td>-</td>
<td>10.0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>44.3</td>
<td>15.8</td>
<td>18.5</td>
</tr>
<tr>
<td>Orange Line</td>
<td>Bang Kapi-Rathurana</td>
<td>-</td>
<td>27.3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Rathurana-Ban Na</td>
<td>-</td>
<td>16.4</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Bang Kapi-Minburi</td>
<td>-</td>
<td>-</td>
<td>10.0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>-</td>
<td>43.7</td>
<td>10.0</td>
</tr>
<tr>
<td>Purple Line</td>
<td>Bang Phut-Bang Sue</td>
<td>-</td>
<td>12.0</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Bang Sue-Thewet</td>
<td>-</td>
<td>-</td>
<td>6.7</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>-</td>
<td>12.0</td>
<td>6.7</td>
</tr>
<tr>
<td>Grand Total</td>
<td></td>
<td>87.3</td>
<td>115.6</td>
<td>35.2</td>
</tr>
</tbody>
</table>

(Source: "Analysis of Bangkok MRT Initial System Plan," January 1997)
Figure 4-1  Bangkok urban railway projects routes
(2) Outline of current projects

(a) MRTA Subway Construction Project (Blue Line, Phase 1)

   1) Project summary:
      The initially planned routes of Bangkok subway Blue Line run in the South (Hua Lampong - Huai Khwng) and North districts (Huai Khwang - Bang Su). Total length is 20 Km, and the number of station is 19. The initial design was elevated-railway above the existing road without the underground part around the Hua Lampong station at the south terminal, but it was changed later in the Cabinet to subway for the reason that it runs through the center of the city. The transportation capacity is 40,000 people per hour one direction.

   2) Operation scheme:
      The organization for construction is MRTA under control of Office of Prime Minister. On the other hand, regarding an operation, by entering into concession contract, a private company will be in charge of it. Private corporation obtain operation right based on concession contract, and after 30 years of operation including procurement of operational facilities, operation right and operation facilities should be transferred to MRTA. The project scheme separates construction and operation. Fund raising capacity and efficient operation are expected to the operation by private company.
      MRTA is in charge of the following five items: construction of underground structure of the south district and the north district, depot, rail tracks, and station. The construction has already started and will be expected to be completed in late 2001. The private concession contract should include procurement of rolling stocks, signals and communication system, power facilities, automatic fare collection system, all the facilities in the depot. It also includes operations and maintenance of the systems and facilities.

   3) Financing & repayment plans:
      The total cost is approximately ¥450 billion (Construction cost is 390 billion, and operation cost is 60 billion). The contents of fund-raising are as follows:
      Construction: 250 billion will be funded by Thai government including bonds with government guarantee and 140 billion funded by the ODA loan.
      Operation: About 60 billion will be all funded by the private sector.
      Repayment plans about above mentioned financing are as follows:
      Construction: Repayment from the fund created under operation contract will be appropriated for the ODA loan and bonds with government guarantee. However, that amount may not be sufficient. The insufficient portion will be compensated by fiscal expenditure.
      Operation: Private company will secure the fare revenue by operation with which the funds is created for repaying initial investment including the operation cost.

   4) Future plans (Expansion plans):
      Expansion toward northwest and southwest has been planned after the initial section of Blue Line is completed. In April 1995, the expansion plans for both directions were approved by the Cabinet. The project scheme will be the same as phase 1. As
for the construction cost, ¥64 billion is estimated for the northwest expansion, and ¥135 billion for the southwest expansion but no detailed financing plan has been decided yet.

Orange and Purple lines are being planned as additional subway projects in addition to Blue Line by MRTA, but the details including financing plan are not determined yet.

(b) SRT Elevated Railway ("Hopewell Community Train")
1) Project summary:
This project is to construct the three level complex structure of railway, consisting of both conventional SRT railway and urban railway, toll road and normal road, over the conventional SRT line (in a part over normal roads and canals). Hopewell Corporation, a private estate agency in Hong Kong, concluded a concession contract with SRT for both construction and operation of above project and the contract was approved by the Cabinet. Total length is about 60 km, and the number of station is 42. The routes consist of South-North and East-West.

2) Operation scheme:
Hopewell Corporation is responsible for all the constructions and operations including the fund raising except the land which will be provided by SRT. To be concrete, it received the concession from SRT to construct and operate the urban railway and toll roads for 30 years based on the concession contract. All the facilities will be transferred to SRT after the contract is over. The conventional railways will be constructed by Hopewell Corporation but operated by SRT.

3) Financing and repayment plans:
The total project costs, about ¥360 billion, are raised by Hopewell Corporation. The system is mainly constructed on the sites to be provided by SRT, and no acquisition land cost is required. The concession contract includes a large-scale real estate development right of SRT lands in addition to the lands for traffic facility use. Hopewell Corporation will repay the initial investment from both a fare revenue of railways and toll roads, and an estate development revenue.

4) Current situation:
The Thai government requested Hopewell Corporation to complete the first section (18.8 km) by Asian Sports Festival (December 1998). But only 20% of the civil substructure has been completed so far at September 1997. Consequently in September 1997, the Thai government announced that it would cancel the contract with Hopewell Corporation because "The construction is behind due to difficulties of their fund raising."

(c) BMA Elevated Railway (Tanayong Elevated Railway Project)
1) Project summary:
This project is to construct an elevated Railway over the road in the city of Bangkok whose capacity is 70,000 people per hour for one direction. Tanayong, a private Thai real estate company, made a contract with BMA of construction and operation of urban railway, and that contract was approved by Cabinet. The railway is now under
construction. It is about 23.5 km with 23 stations. Transfer stations with subway and urban railway are also planned.

2) Operation scheme:
Tanayong Corporation concluded construction and operation of an elevated light railway whose period was 30 years. Land for construction is provided by BMA. Bangkok Mass Transit System Corporation Ltd. (BTSC), established by Tanayong Corporation, is in charge of all the construction and operation. The facilities will be transferred to BMA after 30 years when the contract terminates.

3) Financing and pay-off plans:
The total project cost is ¥195 billion. The breakdown of the funds is available in Table 4-6. Thai financial syndicate led by Siam Commercial Bank provides loans in Thai bahts. Loans in the US dollar will be provided by the international loan syndicate organized by Kreditanstalt fur Wiederaufbau (KfW) of Germany and International Finance Corporation (IFC) which is Private Sector Finance Agency of The World Bank Group. The initial investment and operation expenses will be redeemed from the fare revenue.

<table>
<thead>
<tr>
<th>Items</th>
<th>(million Baht)</th>
<th>(%100 million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Engineering Works</td>
<td>16,825 (39.4%)</td>
<td>768</td>
</tr>
<tr>
<td>Supply of Power, and Machine &amp; Equipment</td>
<td>16,256 (38.1%)</td>
<td>742</td>
</tr>
<tr>
<td>Constructions for Gas, Electricity, and Water</td>
<td>786 (1.8%)</td>
<td>36</td>
</tr>
<tr>
<td>Pre-operation Costs</td>
<td>4,576 (10.7%)</td>
<td>209</td>
</tr>
<tr>
<td>Fund Raising, Interest Costs</td>
<td>4,220 (10.0%)</td>
<td>192</td>
</tr>
<tr>
<td>Total by Fund Usage</td>
<td>42,663 (100.0%)</td>
<td>1,947</td>
</tr>
<tr>
<td>Stocks</td>
<td>16,757 (39.3%)</td>
<td>765</td>
</tr>
<tr>
<td>Loans (Baht)</td>
<td>13,810 (32.4%)</td>
<td>630</td>
</tr>
<tr>
<td>Loans (US$)</td>
<td>12,096 (28.3%)</td>
<td>552</td>
</tr>
<tr>
<td>Total by Financial Resources</td>
<td>42,663 (100.0%)</td>
<td>1,947</td>
</tr>
</tbody>
</table>

(Source : TDRI Data)

Currently three urban railway lines are under construction by different project organizations in Bangkok metropolitan area. Coordination of transfer facility among the lines, introduction of common ticket system, and reorganization of bus routes have been considered under the leadership of OCMLT to ensure mutual benefits and promote operational efficiency of these urban railway projects.

4.1.3 Current Administration System
(1) Organizations relevant to urban railway policy
The Office of the Prime Minister (OPM), Ministry of Transport and Communications (MOTC), and Ministry of Interior (MOI) of the Thai government have the decision-
making authority on traffic policies, regulations, and plans in Bangkok metropolitan region. Bangkok Metropolitan Administration (BMA) under MOI are also involved. The major relevant authorities on urban railway and organizations under them are explained as follows:

![Organizations of Urban Railway in Bangkok](image)

**Figure 4-2 Organizations of Urban Railway in Bangkok**

(2) Major relevant authorities on urban railway policy
(a) Office of Prime Minister (OPM)

Relevant authorities under the direction of the OPM are as follows:

1) Office of the Commission for the Management of Land Traffic (OCMLT):

The Committee for the Management of Land Traffic (CMLT) is a committee consisting of some representatives from the traffic-related organizations; and is in charge of traffic plans, determination and implementation of polices and regulations. The committee members are as follows.

- The Prime Minister
- The Vice Prime Minister
- The Minister of Interior
- The Minister of Transport and Communications
- The Chief of the OPM
- A director of the MOI
- A director of the MOTC
- A director of the Budget Bureau (OPM)
- A director of the National Economic and Social Development Authority
· The Chairperson of OCMLT (chief of the committee as well)
· Six External Experts  OCMLT serves as the secretariat of the committee.

OCMLT is in charge of coordination of nationwide urban transportation plan to assist the Cabinet in prioritizing urban traffic investments. However it has no implementation authority.

OCMLT, formally under the supervision of MOI, has transferred to a position under the OPM, because the importance of coordination among the authorities concerned has been recognized, as traffic congestion becomes worse in Bangkok metropolitan region. Main duties are as follows;

· Proposals on traffic policies and plans
· Evaluation of traffic-related feasibility studies
· Traffic-related data collection
· Proposals on amendments of traffic regulations
· Preparatory works for the Cabinet approval on traffic investments and measures
· Evaluation of urban railway master plans

OCMLT is the only organization authorized to coordinate traffic policies among different governmental organizations. The coordination of plans is usually done by the organization concerned through internal meetings of each organization concerned and inter-ministerial committees if necessary. In addition, other committees, which are in charge of coordination of various organization related to traffic and infrastructure related issues, will be formed according its needs.

2) Metropolitan Rapid Transit Authority (MRTA):
MRTA is established by law in 1992, as an implementing agency of nationwide urban railway projects. (Its function excludes the already started railway projects by BMA/Tanayong and SRT/Hopewell.) MRTA implements urban railway projects after obtaining approvals from the OPM and the Cabinet. It is constructing the first phase of Blue line subway.

(b) Ministry of Transportation and Communications (MOTC)
MOTC, having planning bureau and economic bureau, is in charge of traffic in general, but actual implementation of projects such as railway business is in charge of the following organizations under control:

1) State Railway of Thailand (SRT):

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11 Comparing to Japan Rail, SRT is far more independent and there is no supervision section for SRT in MOTC. SRT is under direct control of Ministry of MOTC through deputy minister in charge, and its project settlement and operation are determined at SRT Board. Coordination within the Ministry is done by a committee whose members are representatives from relevant department and sections as well as operating organizations. This committee is organized on required-base.
SRT is in charge of inter-city railway service approved by MOTC and Cabinet. As mentioned before, SRT and Hopewell Corporation concluded a 30-year concession contract to construct and operate an urban elevated railway.

(c) Ministry of Interior (MOI)

Relevant authorities under the direction of the MOI are as follows:

1) Expressway and Rapid Transit Authority of Thailand (ETA):
   ETA is in charge of construction and maintenance of nationwide highways, and is responsible for tariff and its collection. It legally has the authority to construct and operate urban railways, but none have constructed. ETA is planning to construct a Light Rail using the space under highway.

2) Bangkok Metropolitan Administration (BMA):
   BMA is responsible for construction and maintenance of roads in the city of Bangkok and operation of the mass transit (bus and railway), but since it provides public transport, it requires approvals from Prime Minister and the Cabinet for fare modification and scope of projects. The Bangkok Metropolitan Administration Act of 1985 and other related laws specify the following BMA's responsibilities regarding city development and transport within its administrative districts.
   - City development planning, land use and its regulations, and development regulations
   - Construction, maintenance, and management of roads and water ways
   - Construction of public transport infrastructure, and provision of public transport services\(^{12}\)
   - Decision of public service fees (such as public parking fees)

   BMA has made a contract with Tanayon Corporation, a private sector, for construction of elevated railway in the metropolitan area, which is now under construction. The deputy governor is in charge of the project concession contract and the Public Works Department is playing a role of coordinator.

(3) Problems under the current situation

As already mentioned, the authorities related to urban railway construction of many government ministries and agencies are overlapping. As these ministries and implementing agencies are planning different urban railway project and are implemented individually at the same time, it is difficult to coordinate them.

To solve this problem, transport projects in Bangkok metropolitan area are subject to approval of OCMLT and the Cabinet decision. However, OCMLT has transferred quite recently to OPM and its character being a coordination body ever since its establishment, it has not sufficiently budgeted, and consequently, its authority is weak in the Thai government and is not able to perform thoroughly the coordination function.

\(^{12}\) Public Works Department (PWD) at BMA is in charge of construction of public parking lot and bus basis.
In addition, since no administrative body exists which governs the Bangkok metropolitan area to be served by the urban railway network planned under the current urban railway master plan, it is even more difficult to coordinate urban railway network plans which go beyond one administrative area.

4.1.4 Current Finances and Taxation System
(1) Financial system of central government
The Thai financial policies are characterized by the fact that issuance of deficit-covering bonds is not legally allowed, and that revenue and expenditure are balanced. In this way, Thai has been holding sound financial position between 1988 and 1995 due to stable economic growth except 1996 which was in deficit. The proportion of government budget against GDP, though it grows gradually, is approximately 18% which is relatively small as compared with other Asian countries. (The figures in 1994: Malaysia 26%, Indonesia 17%, the Philippines 18%, Singapore 15%) Table 4-7 shows the outline of the Thai national budget.

Table 4-7 Thai government budget

<table>
<thead>
<tr>
<th></th>
<th>1995</th>
<th>1996</th>
<th>1997 (plan)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amount</td>
<td>Distribution Ratio(%)</td>
<td>Amount</td>
</tr>
<tr>
<td>Agriculture</td>
<td>68,248</td>
<td>9.5</td>
<td>76,660</td>
</tr>
<tr>
<td>Industry</td>
<td>2,222</td>
<td>0.3</td>
<td>2,531</td>
</tr>
<tr>
<td>Transport &amp; Communications</td>
<td>62,934</td>
<td>8.8</td>
<td>86,091</td>
</tr>
<tr>
<td>Trade &amp; Tourism</td>
<td>5,336</td>
<td>0.7</td>
<td>6,737</td>
</tr>
<tr>
<td>Technology, Energy, and Environment</td>
<td>10,375</td>
<td>1.5</td>
<td>14,769</td>
</tr>
<tr>
<td>Education</td>
<td>137,641</td>
<td>19.3</td>
<td>169,561</td>
</tr>
<tr>
<td>Welfare</td>
<td>52,373</td>
<td>7.3</td>
<td>63,452</td>
</tr>
<tr>
<td>Social Welfare</td>
<td>87,910</td>
<td>12.3</td>
<td>120,351</td>
</tr>
<tr>
<td>National Defense</td>
<td>99,732</td>
<td>13.9</td>
<td>107,897</td>
</tr>
<tr>
<td>Public Security</td>
<td>32,154</td>
<td>4.5</td>
<td>40,407</td>
</tr>
<tr>
<td>General Administration</td>
<td>111,345</td>
<td>15.6</td>
<td>106,752</td>
</tr>
<tr>
<td>Liquidation</td>
<td>44,731</td>
<td>6.3</td>
<td>47,992</td>
</tr>
<tr>
<td>Total</td>
<td>715,000</td>
<td>100.0</td>
<td>843,200</td>
</tr>
</tbody>
</table>

(Source : Budget Bureau of the Office of Prime Minister)

About 90% of the central government’s revenue is dependent on taxes as shown in Table 4-8. As a result of the recent economic development, the revenue of corporate and individual income tax is increasing while the indirect tax share is decreasing due to the reduction of import and export tax.
Looking at the Thai government revenue structure from the viewpoint of capturing indirect benefit raised from urban railway, Motor Fuel Tax and Motor Vehicle Registration Tax are collected as national tax. Motor Fuel Tax is imposed on gasoline and other oil products. BMA has authorized to add up to 10 satang/liter onto sales of oil products within its administrative area, but has not executed yet. Motor Vehicle Registration Tax, on the other hand, is obligated to be paid every year when vehicles are registered. The central government collects the tax and allocates it all to the local governments in proportion to the decided ratio. BMA receives its share which is an important revenue source.

Traffic-related budget is submitted to the Cabinet after coordination with Budget Bureau of OPM and Fiscal Policy Office of Ministry of Finance. As a result, almost all traffic measures and budget proposals need the approval of the Cabinet.

Earmark tax system for specific project does not exist in current Thai financial systems. For the special account system, there are only two funds; the Environment Fund for environment control project and the Petroleum Fund established for oil price stabilization in the past, which is almost out of use recently. Therefore budget allotment for urban railway construction is decided by annual congressional deliberation.

### Table 4-8 Annual revenue of Thai government

<table>
<thead>
<tr>
<th></th>
<th>Year 1995</th>
<th></th>
<th>Year 1996</th>
<th></th>
<th>Year 1997 (*)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>amount</td>
<td>ratio (%)</td>
<td>amount</td>
<td>ratio (%)</td>
<td>amount</td>
</tr>
<tr>
<td>1. Ordinary Income</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 Taxes</td>
<td>715,000</td>
<td>100.0</td>
<td>834,200</td>
<td>100.0</td>
<td>984,000</td>
</tr>
<tr>
<td>1.1.1 General sales tax</td>
<td>688,759</td>
<td>96.3</td>
<td>820,803</td>
<td>97.3</td>
<td>955,036</td>
</tr>
<tr>
<td>1.1.2 Specific sales tax</td>
<td>401,075</td>
<td>56.1</td>
<td>511,925</td>
<td>60.7</td>
<td>609,495</td>
</tr>
<tr>
<td>1.1.3 Import-export duty</td>
<td>155,746</td>
<td>21.8</td>
<td>165,615</td>
<td>19.6</td>
<td>190,428</td>
</tr>
<tr>
<td>1.1.4 Others</td>
<td>123,630</td>
<td>17.6</td>
<td>137,064</td>
<td>16.3</td>
<td>149,000</td>
</tr>
<tr>
<td>1.2 Sales of goods and services</td>
<td>6,308</td>
<td>0.9</td>
<td>6,199</td>
<td>0.7</td>
<td>6,113</td>
</tr>
<tr>
<td>1.3 State enterprises</td>
<td>22,284</td>
<td>3.1</td>
<td>23,950</td>
<td>2.8</td>
<td>24,309</td>
</tr>
<tr>
<td>1.4 Miscellaneous</td>
<td>44,000</td>
<td>6.2</td>
<td>49,850</td>
<td>5.9</td>
<td>55,500</td>
</tr>
<tr>
<td></td>
<td>-40,043</td>
<td>-</td>
<td>-51,403</td>
<td>-</td>
<td>-50,845</td>
</tr>
</tbody>
</table>

(Source: The Bureau of Budget, Office of the Prime Minister, (*) = tentative)

(2) Financial system of the local governments

The local governments' roles to impose and collect taxes are limited. The tax rate that the local governments can impose is set very low at the moment and fixed across the country. In consequence, public expenditures that the local governments spend for the local public facilities are also low. The cumulative total of the public expenditure of the local government in the past 20 years, including BMA, does not reach 20% the central government's budget.

There are three kinds of tax revenues in the local governments: (a) taxes to be directly imposed by the local government (a house and building tax, land development tax, etc.); (b) surcharges on the central government's taxes (surcharge on value-added tax,

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13 It was 3 billion bahts, 12% the BMA's revenue in 1994.
surcharge on business tax, etc.); and (c) an allocation to the local governments from the collected local taxes by the central government\(^4\) (motor vehicle tax, additional tax on rice export, etc.).

These accounts for more than 60% the total revenue of the local governments. As other revenue sources, there are a subsidy from the central government, real estate revenue from the local-government-owned properties, fines, and public service charges. Local governments are totally dependent on subsidy from central government except for BMA.

Problem in local tax is that ability of local government to collect taxes is lower than that of the central government. Even BMA, which receives the largest amount among local governments, only collects 20% (in 1995)\(^5\) of its budget revenue. Especially real estate-related tax is not collected properly from many corporations. In order to improve the tax collection, proper and effective real estate evaluating technique enhancement of compelling force to impose and collect fines are necessary.

On the other hand, the city of Bangkok where key industries are concentrated produces about 80% of the national tax revenue. Therefore the revenue structure of BMA is different from that of the other highly subsidized local governments (See Table 4-9).

However, in addition to the fact that local tax is not fully collected, national tax collected from the administrative area of BMA is treated as tax revenue of MOI which then poured into a general fiscal revenue of the central government. The tax once kept in the National Treasury and then re-allotted to BMA as budget under MOI. Comparing to national tax revenue of the central government, this amount of budget allotment is very small.

As a result, local governments including BMA are forced to rely on the central government financially. Under such circumstances, it is impossible to construct urban railways only with local fiscal revenue.

There is, however, a movement for decentralization of financing authority. For example, a bill to enable each local government to adopt its own house and building tax rate has been under examination at Ministry of Finance. Another bill to give an authority to the local governments to determine fees and charges is going to be examined. It is necessary to strengthen the local governments' taxation authority in order to collect part of their investment fund from estate owners and land developers who receive benefits from public transportation construction projects.

\(^4\) The central government collects local taxes and allocates all to the local governments.
\(^5\) JICA (1997)
Table 4-9  BMA annual revenue

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tax Revenue</td>
<td>8,600.00</td>
<td>9,140.00</td>
<td>10,256.00</td>
<td>11,840.00</td>
<td>14,170.00</td>
<td>17,000.00</td>
<td>20,400.00</td>
</tr>
<tr>
<td>1.1 Local Tax</td>
<td>7,695.50</td>
<td>8,299.50</td>
<td>9,144.50</td>
<td>10,590.50</td>
<td>12,819.00</td>
<td>15,348.00</td>
<td>18,285.60</td>
</tr>
<tr>
<td>1.2 Land &amp; House</td>
<td>593.20</td>
<td>493.70</td>
<td>714.72</td>
<td>770.39</td>
<td>821.90</td>
<td>1,019.74</td>
<td>1,443.10</td>
</tr>
<tr>
<td>Rents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3 Services</td>
<td>219.69</td>
<td>247.42</td>
<td>292.55</td>
<td>334.17</td>
<td>363.95</td>
<td>444.06</td>
<td>432.20</td>
</tr>
<tr>
<td>1.4 Miscellaneous</td>
<td>73.96</td>
<td>81.48</td>
<td>81.98</td>
<td>121.49</td>
<td>141.20</td>
<td>155.10</td>
<td>195.10</td>
</tr>
<tr>
<td>Revenues</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5 BMA Operation</td>
<td>17.65</td>
<td>17.90</td>
<td>22.25</td>
<td>23.45</td>
<td>23.95</td>
<td>33.10</td>
<td>44.00</td>
</tr>
<tr>
<td>Body Fees</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2. Special Revenues</td>
<td>5,045.97</td>
<td>1,052.50</td>
<td>1,112.00</td>
<td>-</td>
<td>1,333.52</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>13,645.97</td>
<td>10,192.50</td>
<td>11,368.00</td>
<td>11,840.00</td>
<td>15,503.52</td>
<td>17,000.00</td>
<td>20,400.00</td>
</tr>
</tbody>
</table>

Note:  e = estimated
(Source:  Budget Division, BMA)

4.1.5 Environment for Private Initiative Projects

(1) Current private initiative projects

In Thailand, the government has a strong interest in the private sector participation in public infrastructure projects. That is because they have realized during the economic growth in the second half of the 1980's, it is financially difficult for the public sector to meet the increased financial demand for infrastructure; and because of the worldwide trend to improve efficiency by the private sector.

The Thai government is positive about introducing the private sector into public transport infrastructure projects. As mentioned before, the construction and operation of urban railway by private sector are to be promoted in Bangkok. The local governments' fund share is expected to be increased with the decentralization policy of government, and here also the utilization of private sector finance is expected.

(2) Legal system for private initiatives

The Thai government established in 1992 a law which determines the guideline for private sector's participation in public projects.

According to that guideline, the project executing agency (government organizations, public corporations, local governments) submits a report which contains the items required by the National Economic and Social Development Agency to the supervising authorities. After approval by the Cabinet, it makes a public announcement to apply for the participation.

4.1.6 Thai Government's View on Railway Construction Financing

The followings are the views of the relevant government organizations in charge of urban railway projects, especially of the on-going subway construction project under direction of the government on its financing.

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16 Prescribed by the law. For example local governments are under the jurisdiction of the Ministry of Interior.
17 Hearing among the relevant government organizations in March, 1997, Budget Bureau, the Office of Prime Minister,
(1) Method of fund raising

For the fund raising of initial investment, the most concerned matter for all the organizations is how to ensure advantageous loan conditions, besides the government's fund. However, their opinions on repayment differ as follows:

(a) View of the Budget Bureau, Office of the Prime Minister
The Budget Bureau would like to utilize foreign ODA loans and the Thai domestic capital market for the following reasons. The conditions of ODA loan are more advantageous and also make it possible to raise much fund. Fund raising in the Thai domestic market does not involve exchange risks and can contribute to nurture the domestic financial market. The Budget Bureau insists on taking only long-term loans from overseas in order to keep Thai's credit rating and to enforce financial ability for repayment.

(b) View of Fiscal Policy Office, Ministry of Finance
Fiscal Policy Office would like to promote private sector activities. It has been considering an establishment of and independent guarantee organization (the tentative name: Infrastructure Investment Guarantee Fund) to publicly guarantee the private sector loans to promote activities. Both the government and private financial institutions provide the capital to establish the organization, which is expected to help raise the most of the investment fund from the private sector to materialize the current urban railway plan. This system is expected to give incentive to the private sector in a form of reducing the risk of fund raising and to bring along financial institutions' support as well as holding the loan conditions at a reasonable level. The establishment of Infrastructure Investment Guarantee Fund reflects the government policy, which aims both to satisfy the public work demands and to nurture domestic capital market.

(2) Measures to ensure fare revenue

The Ministry of Finance, Office of Fiscal Policy, Budget Bureau, and OCMLT all agree that the most important financial resource is fare revenue. Whether private concessionaire can cover the operation cost and repayment of initial investment such as procurement of rolling stocks.

Fares should be set in accordance with those of other means of transportation to maximize social benefit.\textsuperscript{18}

According to the calculation of the urban railways master plan approved by the Cabinet in 1994, the private concessionaire can cover the operation cost and pay off the loans and bonds for initial investment at a fare of 35 bahts. But the fare of 35 bahts is so high that it is difficult to gain enough passengers without some regulations toward the alternative transportation such as controlled use of self-owned cars and to be accepted. Many finance officers in government recognize that it is impossible to secure an operation cost and to repay an initial investment cost only by fare revenue.

\textsuperscript{18} Fare of the existing express air-conditioned vans is 20 bahts.
(3) Measures to ensure revenues from non-rail business
The MRTA Establishment Act\textsuperscript{19} stipulates that MRTA can implement joint project of
development with private sector. It, however, has only limited authority to land
acquisition. In reality, there exists ample commercial development opportunities by
utilizing station yards, depot, and exclusive right for the space above the rail track.
MRTA considers it desirable to make one bid for the totality of project concessions at
once, in order to certainly capture the benefits deriving from these related businesses.
MRTA’s calculation shows the revenue from non-rail business can account for 5-10% of
the railway operation revenue.

The revised MRTA act which was approved by the Cabinet in 1997 includes the
followings and it make easier for MRTA to promote non-rail businesses.

- the stipulations on the MRTA’s authority on land acquisition are modified, so that it
  has the same authority as the other public agencies
- MRTA can obtain the right to use the underground without changing the private
  land ownership

As an example of the measures for capturing benefits accruing from development, the
recent JICA study\textsuperscript{20} proposed to SRT how to promote the real estate development along
the SRT lines including purchasing and readjusting of lands following the Japanese
example, but SRT finds it risky for itself to get involved in land purchase and
readjustment.

(4) Financial support and its resources
It is becoming evident that further government expenditure is necessary for urban
railway construction, but the financial authority of the government has no clear prospects
for resources. Although Fiscal Policy Office does not deny the possibility to introduce a
new tax or to increase taxes, as it has already studied the introduction of them.
However they need some explanation to the tax payers on what kind of benefits they can
get through urban railway construction. It also would like to avoid a new tax and
increase taxes as much as possible since it is not easy to get an approval from the Cabinet.

Fiscal Policy Office thinks finance of urban construction can be covered, in the long run,
by an increased tax revenue naturally generated in the expanding economy, without a new
tax or tax increase. It thinks also changing the taxation system, establishing a new tax,
or raising taxes should be conducted after the Thai industries become internationally
competitive in the future and that it is enough to improve the capture rate and efficiency
of tax collection at the moment. The reason for that strategy is that the Thai industry
may loose competitiveness.

OCMLT consider that, after tax on gasoline is increased, such increased portion of tax
should be utilized to construct urban railway. However, the increase of tax on gasoline
certainly opens large scale public debate, it thinks it wiser to examine that possibility of

\textsuperscript{19} It prescribes the purposes and reasons to have established MRTA and its authority.
\textsuperscript{20} JICA, “Study for Metropolitan Railway Transportation Reinforcement Plan Unified with Urban Development”, in
October 1995.
tax increase for securing a sources of repayment, only after having acquired the financing for construction.

MRTA thinks it should be the most acceptable, among motor-related taxes to raise gasoline tax and motor vehicle registration tax since area licensing system\textsuperscript{21} and congestion tax were unsuccessful in the past.

The Ministry of Finance also views that they can raise a fund which will be needed in the future only from gasoline tax and motor vehicle registration tax.

Among the officials within the Thai government, under the policy of decentralization, there is a consensus on greater responsibility of BMA related to tax collection and fund raising, since it is BMA which concretely benefit from the urban railway. If Thai government pursue decentralization, BMA's tax base, income and asset evaluation system and tax collection system needs to be improved and enhanced. Though the current BMA Act approves the local governments to impose gasoline tax, it has never been implemented due to the political opposition. Tax increase is not a easy task, but there is still some room for improvement to increase tax revenue even under current taxation system.

(5) Earmarked tax, special account
The relevant authorities of urban railway projects find it necessary to establish a earmarked tax and special account system for financial resources for urban railway construction, that has not reached the stage to be discussed widely with in a government. The Ministry of Finance shows disapproval of earmarked tax by saying it fixes expenditure and diminishes the financial flexibility.

\subsection*{4.1.7 Resources for Urban Railway Construction}
In the various cases of urban railways in some countries in the world, described in Chapter II, the examples that vehicle and property related taxes are applied to the railway construction beside the fair revenue are observed. In Bangkok also, as explained already, there exists vehicle and property related taxes which can be used as investment resources. The followings are the description of tax systems and its collection records, and the problems related to taxation. In addition, the current situation of system on reversion of profit accruing from construction is examined as another financial sources for urban railway construction.

(1) Motor-related taxes
(a) Motor fuel tax
A national tax is imposed on gasoline and other oil products in Thailand. The national tax rate is now as follows:

\footnote{\textsuperscript{21} Toll required for passing designated areas. It is expected to control traffic congestion at the same time to increase fiscal revenue.}
• Regular gasoline  3.35 bahts/liter
• Unleaded gasoline  3.05 bahts/liter
• Diesel oil  2.35 bahts/liter

The central government adds 10% the above taxes and allots the portion of tax revenue directly to each region according to the population ratio. BMA has the authority to add up to 10 satang/liter onto oil products sold within its administrative area, but has not executed it yet.

(b) Motor vehicle registration tax
This tax is obligated to be paid every year when vehicles are registered. Though it is a local tax, the central government collect it and allocate it all to the local governments in proportion to the certain ratio. BMA also benefit from this allocation and it is one of the important revenue source. (It received 3 billion bahts, 12% the BMA's revenue in 1994.)

(2) Real estate-related taxes
(a) House and building tax
BMA imposes this tax on real estate rental value within the area and directly collects it. However self-residential estate, government's buildings, schools, hospitals, temples, and buildings which have not been used for one year and more are exempted from this tax. The tax rate is 12.5%, and the tax revenue was 2.15 billion bahts in 1994, which was about 8% the total revenue.

Too often, the lent has been set intentionally low among rental real estates, consequently, the tax revenue is lower compared to the real floor area developed.

(b) Land development tax
This tax is imposed on lands for its value excluding the structures and crops on it. BMA directly imposes and collects the tax same as house and building tax. However, many are exempted from the tax such as self-resided and self-cultivated lands under a certain size, most of the government's lands, lands for religious use, and lands with structures on which house-and-building tax is imposed.

It takes a progressive tax rate in proportion to the land area, but the revenue is low comparing with general land values assumed as tax basis. Importance of this tax is not so high as a revenue resource, which was about 0.1 billion bahts, 0.5% the whole revenue, in 1994.

(3) Other taxes
(a) New taxes
There is a possibility to introduce a new tax like environment tax, but the idea to have an earmarked tax for urban railway construction has not reached at the examination stage yet.

(b) Land readjustment act
Land readjustment bill has been examined to apply, in general manner, reversion of profit accruing from development. Outright-purchase of land is the only method to apply for right-of-way acquisition for public project in Thailand, which was one of the reasons why infrastructure could not be improved by the government with a limited budget at the pace of city expansion. In order to cope with this, a land readjustment method has been examined the method which develop urban areas with land owners' burden without buying off the sites in principle.
4.2 Urban Railway Projects in Jakarta

4.2.1 Economic and Social Environment and Current Situation of Urban Traffic

(1) Economic Environment

Between 1990 and 1994, GDP grew rapidly in Indonesia, averaging 6.9% per annum (Table 4-10). The wealth is largely concentrated in Jakarta, where per capita GDP reached US$2,864, compared to US$909 for the entire country in 1994. However, the drastic devaluation of rupiah started in the middle of 1997 has put a severe brake on the economic development of Indonesia at least for the short term, similar to other South East Asian countries. The Government has seriously considering the postponement of large scale projects and it is inevitable for the urban railway network construction to be negatively affected.

| Table 4-10 Economic growth of Indonesia and Central Jakarta |
|---------------------------------|-----|-----|-----|-----|-----|-----|
| Indonesia Substantial Growth 1) | (%)  | 7.5  | 7.2  | 7.0  | 6.5  | 6.5  |
| Central Jakarta Substantial Growth 2) | (%)  | 9.7  | 8.6  | 7.8  | 8.3  | 7.3  |


(2) Population trend

As Table 4-11 indicates, population growth in the city of Jakarta (the administrative area governed by DKI Jakarta: hereinafter referred to as DKI Jakarta) has slowed since 1980 while the population of the surrounding region\(^{22}\) exceeded that of DKI Jakarta by 1990 and continues to increase. There are several future population predictions for Jakarta metropolitan area including the one presented in Table 4-12, all indicate that the population growth rate of the surrounding region will continue to exceed that of DKI Jakarta. In Japan, during the period of rapid population growth (1950-1975) in Tokyo for example, its annual increase in population also averaged 3% in central Tokyo while its surroundings marked higher rate, implying that Jakarta metropolitan area is following Tokyo in its pattern of population growth after 30 years.

<table>
<thead>
<tr>
<th>Table 4-11 Population and increasing rate of Jakarta metropolitan area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Increasing Rate by Year (%</td>
</tr>
<tr>
<td>Jakarta</td>
</tr>
<tr>
<td>Jakarta metropolitan area</td>
</tr>
</tbody>
</table>


\(^{22}\) In this report, Jakarta metropolitan area is the name given to the region composed of DKI Jakarta and its surrounding 3 counties: Bogor, Tangerang, and Bekasi. The surrounding region is the appellation of Jakarta metropolitan area except DKI Jakarta.
Table 4-12  Population estimates of Jakarta metropolitan area

<table>
<thead>
<tr>
<th></th>
<th>JMDPR, Phase III Planning Report (estimates)</th>
<th>Jakarta 2005 (estimates)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jakarta</td>
<td>974</td>
<td>1049</td>
</tr>
<tr>
<td>Jakarta metropolitan area</td>
<td>1353</td>
<td>1610</td>
</tr>
</tbody>
</table>

(Source: Jakarta Metropolitan Circle New Overall Development Project (JMDPR) Phase III Planning Report and Jakarta 2005 Project)

(3) Current situation of urban traffic
The development of road network could not keep pace with the rapid increase in vehicles resulting from economic growth. As a result, serious traffic congestion has spread not only DKI Jakarta but also throughout Jakarta metropolitan area and is creating significant economic inefficiencies for the region.

Table 4-13 illustrates the share of trip in DKI Jakarta and the surrounding region by transport modes. It can be seen that buses account for the majority of trips, followed by private cars and taxis. There are three railway lines, West and East Line, surrounding west and east side of the city, and Central Line which runs north-south between these two lines. However, the facts West and East Lines do not make a complete circular line, and the lines grade-cross the Central Line, make it difficult for railway to realize a circular operation. Also, comparing to its city size, railway facilities are overwhelmingly small in number\(^{23}\), which causes extremely low ridership share of the railway in the city. The railway does however carry some 8% of trips between DKI Jakarta and the surrounding, playing small but certain role to serve commuting demand between the city center and the outlying suburbs.

Table 4-13  Number of daily trips and rate per head by traffic mode (1995)

<table>
<thead>
<tr>
<th>Traffic Modes</th>
<th>Jakarta No of Trips</th>
<th>Rate (%)</th>
<th>Jakarta and metropolitan area No of Trips</th>
<th>Rate (%)</th>
<th>Total No of Trips</th>
<th>Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railway</td>
<td>21,237</td>
<td>0.3</td>
<td>53,960</td>
<td>7.9</td>
<td>75,197</td>
<td>1.0</td>
</tr>
<tr>
<td>Bus</td>
<td>3,428,139</td>
<td>52.7</td>
<td>392,901</td>
<td>57.9</td>
<td>3,821,040</td>
<td>53.1</td>
</tr>
<tr>
<td>Privately Owned</td>
<td>2,887,601</td>
<td>44.3</td>
<td>209,470</td>
<td>30.9</td>
<td>3,097,071</td>
<td>43.1</td>
</tr>
<tr>
<td>Automobile/Taxi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>175,695</td>
<td>2.7</td>
<td>22,391</td>
<td>3.3</td>
<td>198,086</td>
<td>2.8</td>
</tr>
<tr>
<td>Total</td>
<td>6,512,672</td>
<td>100.0</td>
<td>678,722</td>
<td>100.0</td>
<td>7,191,394</td>
<td>100.0</td>
</tr>
</tbody>
</table>

(Source: Data from Surface Transport General Bureau (PHBD), Indonesia Railways (PERUMKA))

In DKI Jakarta, extensive bus route network and its frequent service, and low (government regulated) fares help to keep the bus share high. However, such operating

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\(^{23}\) Railway extension in Metropolitan Tokyo (6407 sq/m) is 2046 km, while that of Jakarta metropolitan area (6816 s/m) is 160 km, and in Tokyo special wards (596 sq/m) is 618 km while in DKI Jakarta is only 111km. Covering area per station in Tokyo special wards is 1.27 sq/km while 16.85 sq/km in DKI Jakarta.
practices as allowing boarding and alighting at places other than bus stops and terminals tends to make traffic congestion problems even worse. Bus transportation is a serious negative factor of the traffic problem. The present bus service also imposes inconvenience on passengers with precluding predetermined schedules and with operation delay due to traffic congestion.

During the ten year period from 1985 to 1994, the number of vehicles in DKI Jakarta doubled, reaching 680,000 from 340,000 as there has been a relative decrease of vehicle’s price by income growth and no convenient alternative means of transportation. The vehicle population will exceed 950,000 by the year 2000 if the annual rate of increase remains at 8%. Road traffic speeds average 15 to 16 km per hour during business hours in DKI Jakarta, peak hour speeds are as low as 7 km per hour within 10 km of the city center. Without drastic measures, traffic congestion will only get much worse.

<table>
<thead>
<tr>
<th>Year</th>
<th>Passenger Car</th>
<th>Bus</th>
<th>Truck</th>
<th>Motor Cycle</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>534,210</td>
<td>191,973</td>
<td>208,851</td>
<td>860,056</td>
<td>1,795,090</td>
</tr>
<tr>
<td>1992</td>
<td>572,149</td>
<td>206,459</td>
<td>216,662</td>
<td>916,889</td>
<td>1,912,159</td>
</tr>
<tr>
<td>1993</td>
<td>617,565</td>
<td>226,320</td>
<td>228,569</td>
<td>991,036</td>
<td>2,063,490</td>
</tr>
<tr>
<td>1994</td>
<td>673,146</td>
<td>246,689</td>
<td>249,140</td>
<td>1,080,229</td>
<td>2,249,204</td>
</tr>
<tr>
<td>1995</td>
<td>733,739</td>
<td>268,891</td>
<td>249,140</td>
<td>1,080,229</td>
<td>2,249,204</td>
</tr>
<tr>
<td>1996</td>
<td>799,765</td>
<td>293,091</td>
<td>296,004</td>
<td>1,283,419</td>
<td>2,672,279</td>
</tr>
</tbody>
</table>

(Source: Central Bureau of Statistics, "Statistical Yearbook of Indonesia 1996.")

(4) Urban development plan and traffic policy

Development plans in Indonesia are elaborated by national or local (state/provincial) levels on long, medium and short terms, and are consists of two major plans. The one is "comprehensive plan" which has strong nature of economic development plan and which does not refer to national land structure or regions. The other is "spacial planning", a plan regarding maximum possibility of space utilization in the targeted region, also referring to conservation district, industrial district and improvement of infrastructures. City development plan is a part of "spacial plan".

Development of metropolitan area including DKI Jakarta is based on "Jakarta megalopolis region development plan" elaborated by Jakarta Metropolis Coordinating Committee under the direction of Ministry or Interior in 1980. Jakarta metropolitan area consists of two regions; DKI Jakarta, a city but at the same time the first class local government of state, and Bogor, Tangerang and Bekasi, the surrounding counties which are the second class local governments. Jakarta Metropolis Coordinating Committee plays a role of coordinator among these local governments with different administrative positions. On the other hand, DKI Jakarta, having its state Governor with strong political power appointed by the President, is only the city that plans an original city development in the metropolitan area.

25 Measures for Promoting Urban Improvement in Bangkok, OECD Research Papers No.11 Chapter 2 p.15
This development plan is called "DKI Jakarta regional comprehensive structure plan". Within a frame of the "Jakarta megalopolis region development plan", the plan aimed to:

- encourage development in eastern and western part of the city,
- prohibit development in southern part of the city,
- locate industrial and residential area so as to disperse population,
- construction of traffic facilities to accommodate travel demand, and
- develop the area comprehensively in coordination with the surrounding regions.

However, urban improvement has not been realized in accordance with the above plan for following reasons that (1) the plan did not cover overall Jakarta metropolitan area and (2) an extraordinary condition of being a capital city, many project were planned individually by various governmental organizations, and (3) no coordination was found among the above mentioned project plans including integration between land use plan and traffic improvement plan, and (4) centralization to the area was more than predicted.

On the other hand, "Basic plans for urban development of Jakarta coastal regions" was elaborated in 1995 including a reclaiming project of the northern seaside region. This plan shows a contradiction to the policy of "DKI Jakarta region comprehensive structure plan" aiming at control of development in northwestern part of the city.

Unlike the system in Japan, urban development of Indonesia does not have legal binding force. The nation of deciding individual project following the superior plan, which corresponds to hierarchal structure in administration, is not so much evident.

The final decision for implementation depends on whether the project is included in 5-year-plan settled by BAPPENAS or not. As a result, new projects not included in "DKI Jakarta regional comprehensive structure plan" have been planned and implemented.

The followings are main projects stated in the "DKI Jakarta regional comprehensive structure plan".

- construction of comprehensive traffic network following the development of the city which is oriented toward both east and west
- improvement of the existing traffic network
- implementation of appropriate traffic controls
- construction of special road for proper object
- improvement of public road-based transportation mode such as public bus service
- construction of public rail transport

Regarding the construction projects of public railways, various projects have been planned as stated in clause 4.2.2, but none of them have been implemented.

The following measures have already been taken by the DKI Jakarta government to cope with traffic congestion at present:

- Three-in-one regulation: vehicles with two or fewer passengers are forbidden from passing through certain areas in the city center from 6:30 to 10:00 a.m., Monday through Saturday.
- Parking regulation: On-street parking space is being reduced, and parking fees has been raised.

Tax collection from vehicles in congested district are now under consideration by DKI Jakarta.

4.2.2 Current Status and Future Plan of Urban Railway

(1) The attempts in the past and the current situation of urban railway

The existing railway network in Jakarta metropolitan area is called Jabotabek Railways, and is operated by Indonesian Railway Public Corporation. It is composed of the following three lines: the one which cuts north to south in the center of the city and, two other lines which make quasi-circular surrounding the city center. The quasi-circular lines are connected to its extension lines toward suburban area. These railways were originally built to transport long distance travelers and freight to and from the harbors. Therefore, the number of passenger is limited due to infrequent service, lack of feeder services, and poor access to the district with high traffic demand.

Construction of Jabotabek railway is based on the study performed by the Japan International Cooperation Agency (JICA) in 1981. In 1982, the Indonesian government approved a 17-year plan (master plan) as a national project for the modernization of railways in the Jakarta metropolitan area. This plan was then revised by Japan Railway Technical Service (JARTS), especially in priority of investment, and resulted in the Jabotabek Railway Master Program (JRMP) in 1985 (Table 4-15).

<table>
<thead>
<tr>
<th>Line</th>
<th>Section</th>
<th>Route Extension (km)</th>
<th>Single/Double Track</th>
<th>Electrified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Line</td>
<td>JKT Kota-Jatinegara</td>
<td>11.8</td>
<td>D</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>JKT Kota-Tg.Priok</td>
<td>8.1</td>
<td>D</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Tg.Priok-Kemayoran</td>
<td>4.2</td>
<td>D</td>
<td>O</td>
</tr>
<tr>
<td>Central Line</td>
<td>LKT Kota-Manggarai</td>
<td>9.7</td>
<td>D</td>
<td>O</td>
</tr>
<tr>
<td>Western Line</td>
<td>JKT Kota-Kp.Bandan</td>
<td>2.7</td>
<td>D</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Kp.Bandan-Duri</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tanah Abang-Manggarai</td>
<td>14.3</td>
<td>D</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Manggarai-Jatinegara</td>
<td>2.9</td>
<td>D</td>
<td>O</td>
</tr>
<tr>
<td>Tangerang Line</td>
<td>Duri-Tangerang</td>
<td>19.3</td>
<td>S</td>
<td>X</td>
</tr>
<tr>
<td>Merak Line</td>
<td>Tanah Abang-Serpong</td>
<td>23.3</td>
<td>S</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Parung Panjang-Rangkasbitung</td>
<td>49.5</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>Bogor Line</td>
<td>Manggarai-Depok</td>
<td>2.2</td>
<td>D</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Depok-Bogor</td>
<td>22.7</td>
<td>S</td>
<td>O</td>
</tr>
<tr>
<td>Bekasi Line</td>
<td>Jatinegara-Bekasi</td>
<td>14.8</td>
<td>D</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Kerawang-Cikampek Purwakarta</td>
<td>76.2</td>
<td>D</td>
<td></td>
</tr>
</tbody>
</table>

(Source : ARSDS,TNPR,JMTSS)

26 Railway in the region is called Jabotabek Railway, taking initial letters from Jakarta, Bogor, Tangerang and Bekasi.
These master plan and program, having a same basic idea regarding railway construction, targeted to modernize the railway which includes improvement on transport capacity of the existing lines, on its function as a urban railway, and passenger on transport services. Based on these basic plans, individual projects such as improvement of infrastructure facilities (railway track, signals and stations) and introduction of new cars, are under way while a short-term (target year 1999) plan have already been partly completed. Table 4-15 describes the Jabotabek railways as of late 1997. As a result of these modernization projects, the total number of Jabotabek railway passengers quadrupled in seven years from 1990 to 1997 and annual revenues showed average growth rate of 46% from 1991 to 1996.

The Jabotabek railway recently becomes more important as suburban railway between DKI Jakarta and its surrounding region, rather than an inner city railway. The proportion of railway among public passenger transport was 0.6% in 1993 for the whole Jakarta metropolitan area, whereas the one between DKI Jakarta and its surrounding regions was 28.2%. These figures increased to 1.0% and 45.8% respectively in 1997\footnote{The Overseas Economic Cooperation Fund of Japan, Review of Jakarta Urban Traffic Plan, (Phase 2) Final Report, September 1996. p.2-19.}, and the share for suburban railway has drastically increased. However, there are still many problems from the point of view of passenger services, such as incompleteness of rail track which permit to provide frequent circular service with circular line, lack of feeder services and long distance between facilities of transfer. Because of these problems, as shown in Table 4-13, the share of Jabotabek railway in the all traffic mode in DKI Jakarta is only 0.3%.

Aside from Jabotabek Railway Modernization Program, the government has carried out the following three public transport studies in order to identify the most suitable and efficient urban public transport system.

- Integrated Transport System Improvement by Railway and Feeder Services (ITSI, 1991)
- Transport Network Planning and Regulation Project (TNPR, 1991)
- Jakarta Mass Transit System Study (JMTSS, 1992)

These studies predict the future demand for public transport in the Jakarta metropolitan area and suggest the most suitable mass transport systems to accommodate them. Each study is targeted towards a different year: IST1 is for 2005, INPR is for 2010, and JMTSS is for 2015. Although the calculations for each of the three studies were based upon different assumptions, the proposed urban railway network in each study utilized the concept combining light rail and standard railway both of which utilize the existing track.
In 1992, a inter-ministerial working group headed by Ministry of Communications and composed of the managers of Bina Marga, Badan Penelitian Pengembangan dan Teknologi (BPPT), DKI Jakarta, BAPPENAS has been set up and implemented Jabotabek Urban Mass Transit Preparation Programme (JUMTP), in order to integrate the results of three studies mentioned above. JUMTP proposed a net urban railway work consisting of the existing suburban railway and light rail transit which utilizes a part of existing rail truck and named it "Consolidated Network Proposal". Figure 4-3 and Table 4-15 shows the candidate 5 light rail transit lines and 2 regional rail transit lines.

**Table 4-16 Outline of 'Jakarta urban railway' on light rail transit (LRT) and regional railway transit (RRT)**

<table>
<thead>
<tr>
<th>Route</th>
<th>Section</th>
<th>Route Extension</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.1</td>
<td>Tangerang-Duri-Pasar Baru-Kemayoran-Pulau Gandung-Bekasi</td>
<td>43.2km&lt;br&gt;19.2km(existing route)</td>
</tr>
<tr>
<td>No.2</td>
<td>Ciedug-Kebayoran Lama-Blok M-Mampang</td>
<td>16.7km</td>
</tr>
<tr>
<td>No.3</td>
<td>Serpong-Kebayoran Lama-Tanah Abang-Managarai-Senen-Kota</td>
<td>37.8km&lt;br&gt;34.6km(existing route)</td>
</tr>
<tr>
<td>No.4</td>
<td>Cipete-Blok M-Sudirman-Thamrin-Kota</td>
<td>19.0km</td>
</tr>
<tr>
<td>No.5</td>
<td>Pasar Minggu-Mampang-Setiabudi-Tanah Abang-Duri-Kota</td>
<td>23.1km&lt;br&gt;9.4km(existing route)</td>
</tr>
<tr>
<td>No.6</td>
<td>Bogor-Depok-Pasar Minggu-Managarai-Kota</td>
<td>55.0km&lt;br&gt;55.0km(existing route)</td>
</tr>
<tr>
<td>No.7</td>
<td>Cikarang-Cibitung-Bekasi-Managarai-Kota</td>
<td>44.3km&lt;br&gt;44.3km(existing route)</td>
</tr>
</tbody>
</table>

(Source: This Survey)

This proposal calls for using existing facilities for 63.2 km of the 140 km proposed LRT system, together with some improvements including grade separations, overpasses, and underpasses. The total length of elevated portion and grade separation including lamp is 55.1 km.

In the absence of any serious initiative to act upon the "Consolidated Network Proposal" as suggested by the inter-ministerial working group, other suggestions such as a subway, a "triple-decker" road and rail project, as described later, have been brought forward by the private sector.

In Jakarta metropolitan area, as mentioned above, separate plans of existing railways, new railway network plan, and individual railway plan are independently prepared and promoted at the moment. Those projects are planned independently by different implementing agencies and the local governments in Jakarta metropolitan area excluding DKI Jakarta are not involved in the process of elaborating these plans. Also, those plans have not been reviewed carefully in strict harmonization with the city development plan of Jakarta metropolitan area.

(2) Outline of current projects
Summaries of the Jabotabek Railway Modernization Project, the Jakarta Subway Project, and the "Triple-Decker" Project are presented below.

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-110-
(Source) Consolidated Network Proposal
(Note) Route between Kota-Cipete is considered to be Heavy Rail transit.

Figure 4-3 Jakarta urban railway projects routes
(a) Jabotabek Railway Modernization Project

1) Project Summary:

This project is based on the Jabotabek Railway Master Plan (JRMP) and is for upgrading the infrastructure and rolling stock to improve commuter railway services. There are three implementation periods: short term (by 1999), middle term (by 2005), and long term (by 2010). The following projects have been implemented or under implementation so far:

1. Improvement of tracks, automating level crossing facilities
2. Double tracking
3. Purchase of diesel cars and new electric cars
4. Construction of depot
5. Elevation of tracks in the urban region
6. Electrification and double tracking of suburban lines
7. Improvements of signaling facilities
8. Renovation of stations

These projects cover a wide range of items involving several lines, stations, related facilities, and equipment.

2) Implementation Scheme:

There are two main implementing bodies for railway modernization project; the Directorate General of Land Transport in Ministry of Communication and the Project Management Group under Steering Committee whose chairman is Minister of Communication. The former conducts elaboration and reexamination of the basic plan, budget adjustment, and general control. The latter, elaboration of implementation plan and construction supervision. Indonesian Railway Public Corporation (PERUMUKA) is responsible for all aspects of project implementation.

3) Financing:

Shown in Table 4-17, capital costs are provided by loans from the Overseas Economic Cooperation Fund of Japan (OECF)(74%), by France (13%) and by the central and local governments in Indonesia (13%) (the central government's share includes the loan from OECF, however). The loans will be repaid from the government's general revenues.

<table>
<thead>
<tr>
<th>Total Projects Cost</th>
<th>Loan from OECF, Japan</th>
<th>Loan from French government</th>
<th>Expenditure from Indonesian Central/ Local government</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,346.7 (100%)</td>
<td>992.5 (74%)</td>
<td>178.9 (13%)</td>
<td>175.3 (13%)</td>
</tr>
</tbody>
</table>

(Source: Made from Technical Study Report No.5, November 1994)

Note: Total projects cost is calculated based on contract amount from 1982 to March 1995, excluding land cost etc.)
(b) Jakarta Metro Project

1) Project Summary:

The 14.5km subway with 14 stations is planned, in direction of north and south in DKI Jakarta. Its total cost is estimated at $230 billion.

Although construction was initially scheduled to start in April 1997 with the beginning of service in 2001, the project have now been started as planned and the project is under reexamination.

2) Implementation Scheme:

The implementing agency is still under consideration but, Jakarta Metro Corporation (JMC), which is a joint venture between the Indonesia government and private sectors (Japanese, European and Indonesian companies), probably would become the implementation agency. The company is to be divided into three independent functional entities: a construction corporation, a managing and operating corporation, and a land development corporation for the adjoining area in the future.

The capital investment ratio of JMC has not been finalized yet, but it is envisaged that 40% comes from Japan and Europe and 30% from the Indonesia government, 30% from Indonesian company group).

This project has been initiated by DKI Jakarta and the association of private companies and it has been approved by the central government Steering Committee in September 1996. It now awaits a presidential degree to make it a national project. To promote this project, Project Management Unit (PMU) has been set up as a task force of the Steering Committee.

3) Financing:

Although capital costs were originally planned to be funded by the implementing agency without any government guarantee, most of the concerned parties do demand for the government to take financial burden, especially to DKI Jakarta. Details such as total project cost and share of burden are still under consideration. In addition to fare revenue, revenues form real estate development, traffic congestion taxes, subway area parking taxes, and other local taxes by DKI Jakarta are all being considered to cover the construction costs.

In addition, establishment of fund named Jakarta Metro Fund has been proposed in order to secure finance resources from which initial investment will be repaid. Revenue sources for the fund include raising the existing local government fuel tax, street lighting tax, land and building local tax and by establishing new taxes such as tax on provision of parking spaces and a payroll tax.

(c) "Triple-Decker" Project

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28 Established in January 1995 to control the subway development project. Chairman of the committee is the Director of Science and Technology Agency. Members are; Governor of DKI Jakarta, Minister and Communication, Minister of Public Works, Director of BAPPENAS, and Minister of Industry.

Though the subway project is promoted under the direction of DKI Jakarta, the central government involvement is also required for its implementation. The committee was established for effective operation of the project.

29 This President Order has not been announced as of end of January, 1998.

30 Consists of temporary staffs from the authorities comprising the Steering Committee and from DKI Jakarta. Established in 1995.
1) Project Summary:
The project aims to construct three level transport facility in north-south direction of Jakarta with 23.55km of length in total. It serves for road, light rail and toll road. The project is planned by the different private entity from subway project, but a part of its route sections duplicate or in parallel to subway line. It is necessary to coordinate these plans either to construct both projects individually or to reexamine the plan.

2) Implementation Scheme:
Indonesian private corporations, Indonesia Railway Public Corporation and National Highway Corporation is intend to invest and to establish a implementing agency.
It was scheduled to start construction in 1997 with scheduled completion in 2001, but the project has not been started yet.

3) Financing:
The total costs are estimated at about US$2.4 billion, and is expected to funded entirely by the implementing agency with loans (75%), 40% of which comes from bank and direct investments (25%). The project scheme does not foresee subsidy from government by covering the cost of light rail transit with revenue from toll road.

4.2.3 Current Administration System
(1) Organizations of urban railway policy
Authorities related to transport policy, regulation and plan in Jakarta metropolitan region are DKI Jakarta, Ministry of Communications and Ministry of Public Works.
The former two are urban railway-related authorities. Hereunder describes the government organizations in charge of urban transport policy and their relationships (Figure 4-4). Development projects which public sector participates in are eventually controlled by BAPPENAS.
Individual projects planned at regional level are submitted to authorities in charge and finally its implementation is determined by BAPPENAS. In this sense, BAPPENAS do coordinate the planning process of individual development project. For transport project, the Coordination Team for Urban Development (TKPP) functions within BAPPENAS and its major tasks includes,
* elaboration of integrated policies and programs, and
* coordination and monitoring the implementation of these programs.

![Figure 4-4 Organizations of urban railway in Jakarta](image-url)
(2) Major relevant authorities on urban railway policy
(a) The City of Jakarta (DKI Jakarta)
DKI Jakarta is a first class local government, equivalent to a province. In its administrative structure, the following organizations deal directly with urban transport issues.

- Dinas Lalu Lintas dan Angkutan Jalan (DLLAJ), the Highway Traffic and Transportation Office, regulates and manages urban traffic and transportation matters in the city, including bus routes determination and supervision of private operators.
- Dinas Tata Kota (DTK), the City Planning Office, regulates land use in DKI Jakarta.
- Dinas Pekerjaan Umum (DPU), the Public Works Office, regulates construction-related matters.
- Badan Perencanaan Pembangunan Daerah (BAPPEDA), the Regional Planning Board, is the provincial institution equivalent to BAPPENAS at the National level. It determines general guidelines and allocates funds for urban development.

With the Governor Order 413, dated April 1995, DKI Jakarta participates in the subway project and sends its staffs to PMU.

(b) Ministry of Communication
Directorate General of Land Transport under Ministry of Communication controls railway projects in Indonesia. Planning section makes draft project proposed and the projects will be implemented by PMG under control of Steering Committee whose chairman is Minister of Communication.

(c) Indonesian Railway Public Corporation (Perusahaan Umum Kereta Api, PERUMKA)
PERMUKA is a public corporation under the supervision of the Ministry of Communication. It is privatized in 1992 and is responsible for all the railway services in Indonesia. Its new projects will only be implemented after the approval of the Minister of Communication. PERUMKA tends to prioritize inter-city services than urban railway which is less profitable. The Project Management Group which is supervised by Steering Committee chaired by the Minister of Communication, implement Jabotabek railway construction.

Unlike the other public works projects, a Steering Committee was established in Jakarta Subway Project; the committee members consist of Governor of DKI Jakarta, Minister of Communication and others. The PMU functions as its secretariat. That Steering Committee (in practical sense, Minister from the ministry composing Steering Committee) and PMU (representative from each ministry composing Steering Committee) are responsible for the subway project, therefore, no single ministry supervises all.

(3) Problems under the current situation
The hereunder are some problems of Jakarta urban railway improvement project. Many urban railway projects are planned by different entities. Despite an effort to integrate these, a project closely coordinated to the city development plan does not exist at the moment.

Aside from Jabotabek railway modernization project, none of the planned projects has been realized.

The division of roles between the central and local governments in planning and construction of urban railway has not been established.

Each plan proposed between 1991 and 1993 examines fundamentally the general scope of urban transport system, including the future of Jabotabek railway. The future of urban transport in Jakarta will change considerably depending upon whether individual project be implemented. However, it seems that there is no argument on what type of urban transport system be constructed, given the existing plans and the development of the city of Jakarta and its periphery. It is necessary to examine thoroughly, before the new project plan be studied, the future of Jabotabek railway to which considerable investment has been realized. Under such circumstances, private initiated projects are proposed without any connection with long-term city development vision, and the further implementation of new plans are not clear.

Therefore, it is necessary for both the central and local government to discuss the future of Jakarta urban traffic system and settle a plan in accordance with development vision, and then, to decide what institution and how to implement the individual projects.

4.2.4 Current Finances and Taxation System

(1) Financial system of central government

Table 4-18 shows the composition of revenue of the central government. In 1995/96 fiscal year, 18% of government revenue is from oil and gas, 70% from tax revenue and service charges. 30 years ago, the central government revenues was largely from taxes and the profits of the government corporations dealing with oil and gas. Nowadays, revenues come primarily from taxes and service charges. Key national taxes in Indonesia are outlined below:

- Corporate and Individual Income Tax
- Land and Building Tax
- Value Added Tax
- Customs Tax (not handled by the Ministry of Finance)

National tax revenues have been increasing at about 25% annually for the past few years. This increase reflects both economic growth as well as improved tax collection and law enforcement. Revenues for fiscal year1996-1997 are estimated to increase by 17%. The Ministry of Finance expects a budget surplus in current fiscal year, and does not anticipate the need for new taxes in near future. A budget for traffic infrastructure facilities including urban railway improvement has been allocated to related authorities
according to BAPPENAS's plan. These budget allocation originals in general account since no special fund or special account currently exist in the Indonesian financial system.

Table 4-18 Annual revenue of Indonesia government

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>amount</td>
<td>ratio (%)</td>
<td>amount</td>
<td>ratio (%)</td>
</tr>
<tr>
<td>Ordinary Revenue</td>
<td>61,370</td>
<td>84.8</td>
<td>71,558</td>
<td>86.5</td>
</tr>
<tr>
<td>Oil and Gas Receipts</td>
<td>13,399</td>
<td>18.5</td>
<td>14,849</td>
<td>18.0</td>
</tr>
<tr>
<td>Gas/Non Oil and Gas Receipts</td>
<td>47,971</td>
<td>66.3</td>
<td>56,709</td>
<td>68.5</td>
</tr>
<tr>
<td>Income Tax</td>
<td>18,350</td>
<td>25.4</td>
<td>20,520</td>
<td>24.8</td>
</tr>
<tr>
<td>VAT on the sale of luxury goods</td>
<td>14,087</td>
<td>19.5</td>
<td>18,350</td>
<td>22.2</td>
</tr>
<tr>
<td>Import Duties</td>
<td>3,218</td>
<td>4.4</td>
<td>3,248</td>
<td>3.9</td>
</tr>
<tr>
<td>Excise Duties</td>
<td>3,001</td>
<td>4.1</td>
<td>3,668</td>
<td>4.4</td>
</tr>
<tr>
<td>Export Duties</td>
<td>120</td>
<td>0.2</td>
<td>201</td>
<td>0.3</td>
</tr>
<tr>
<td>Other Tax</td>
<td>303</td>
<td>0.4</td>
<td>510</td>
<td>0.6</td>
</tr>
<tr>
<td>Land Tax/Taxes on Land and Buildings</td>
<td>1,632</td>
<td>2.3</td>
<td>1,924</td>
<td>2.3</td>
</tr>
<tr>
<td>Non Tax Receipts</td>
<td>5,997</td>
<td>8.3</td>
<td>7,801</td>
<td>9.4</td>
</tr>
<tr>
<td>Other Oil Receipts</td>
<td>1,263</td>
<td>1.7</td>
<td>487</td>
<td>0.6</td>
</tr>
<tr>
<td>Development Receipts</td>
<td>10,983</td>
<td>15.2</td>
<td>11,170</td>
<td>13.5</td>
</tr>
<tr>
<td>Total</td>
<td>72,353</td>
<td>100.0</td>
<td>82,728</td>
<td>100.0</td>
</tr>
</tbody>
</table>


(2) Financial system of local government

There are two types of local revenues: taxes that are paid by all residents and charges that are paid for direct services. These revenues are collected by the local government and go to the local government’s general revenue account. Other local government’s revenues is land and building tax and income tax, both individual and corporate, that are collected by the central government and allocated to the local government.

Local taxes and service charges can be imposed both at the provincial and municipal level. Presently five authorized provincial taxes, 58 authorized provincial service charges, 36 authorized municipal taxes, and 134 authorized municipal service charges are authorized (although these taxes are expected to be simplified with the new tax laws currently under discussion).

As Table 4-19 illustrates, DKI Jakarta's financial foundation is firm relative to most local governments. It finances about 60% of its expenditure by itself, compared to only 10-40% in the other municipalities in outside of Java. This rate reaches 70% when including central government grants to governments.

The key taxes of DKI Jakarta are as follows:

- Vehicle registration tax (about 47% of the tax revenue of fiscal year 1995/96)
- Vehicle transfer tax (about 22% of the tax revenue of fiscal year 1995/96)
- Real estate development tax (about 15% of the tax revenue of fiscal year 1995/96)
- Entertainment tax (about 6% of the tax revenue of fiscal year 1995/96)
- Street lamp tax (about 5% of the tax revenue of fiscal year 1995/96)
- Advertising tax (about 4% of the tax revenue of fiscal year 1995/96)

DKI Jakarta has the authority to collect taxes independently from the central government, but it needs central government’s approval for introduction of new taxes.

Although being the biggest financial resources of DKI Jakarta, motor vehicle registration tax is used as general revenue and therefore allotment for traffic-related investment is limited.

<table>
<thead>
<tr>
<th>Table 4-19 Revenue of DKI Jakarta</th>
<th>(Unit: thousand Rupia)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Items</strong></td>
<td><strong>Actual</strong></td>
</tr>
<tr>
<td>Carried Forward</td>
<td>96,221</td>
</tr>
<tr>
<td>Own Revenue</td>
<td>618,553</td>
</tr>
<tr>
<td>Tax Revenue</td>
<td>470,674</td>
</tr>
<tr>
<td>Charges etc.</td>
<td>105,353</td>
</tr>
<tr>
<td>Profit from Public Enterprises</td>
<td>7,207</td>
</tr>
<tr>
<td>Revenue from Public Departments</td>
<td>4,722</td>
</tr>
<tr>
<td>Other Revenues</td>
<td>30,597</td>
</tr>
<tr>
<td>Allocation from Central Government</td>
<td>57,834</td>
</tr>
<tr>
<td>Tax Revenue</td>
<td>51,617</td>
</tr>
<tr>
<td>Non-tax Revenue</td>
<td>6,217</td>
</tr>
<tr>
<td>Subsidy from Central Government</td>
<td>192,358</td>
</tr>
<tr>
<td>Subsidy from Ordinary Expenditure</td>
<td>138,846</td>
</tr>
<tr>
<td>Subsidy from Development Expenditure</td>
<td>53,512</td>
</tr>
<tr>
<td>Loan for Development</td>
<td>22,194</td>
</tr>
<tr>
<td>Loan of Local Government</td>
<td>22,194</td>
</tr>
<tr>
<td>Total</td>
<td>987,160</td>
</tr>
</tbody>
</table>

(Source: DKI Jakarta Financial Bureau)

4.2.5 Environment for Private Initiative Projects

(1) Current private initiative projects

As for the future development, the government’s policy is to make more public investment in provincial area, mainly in the eastern part of the country, than in Jakarta
metropolitan region. Since the amount of public investment is limited, the government thinks it necessary to introduce positively private financing to cover the huge investment need for infrastructure improvement. In fact, private sector involvement in public project has been encouraged throughout the country since 1984, and this ongoing initiative has increased private sector participation from 1.4 trillion rupiah in 1984 to 6.2 trillion rupiah in 1996.

In the Sixth Five-Year Development Plan, the Government of Indonesia emphasizes to increase overall efficiency levels of investment efficiency through greater competition among public enterprises. It also recommends expanding the capacity of the transport system as a whole in the face of rapidly growing demand. It looks for a major portion of needed investment coming from the private sector, but no project has been realized so far in the field of urban railway project.

The policy objectives related to private sector initiative under the Sixth Five-Year development plan are as follows:

- to encourage private sector participation and competition with regard to construction and service of transport infrastructure and to reduce regulatory barriers
- to grant more autonomy of financially-autonomous state enterprise that provide profitable services and to improve their financial performance
- to try to fix public service tariffs at the level which permits cost recovery, and to cut down distortions to be created by subsidies and cross-subsidy.
- to strengthen controls on public investment and to improve planning procedure and financial management
- to raise efficiency of administration

(2) Legal system for private initiative

No laws for private sector participation in public services have been established yet. There have been some presidential orders on related to this matters, but a part of which is not consistent.

As Indonesian law requires the public sector to provide public services, the proposal of private participation to public project must be prepared as a joint investment. Foreign companies also have right to invest with government, but in such case, the company must be registered in Indonesia. Implementation of private participation project starts from the submission of proposal by private sector to the relevant governmental ministries and departments.

4.2.6 Indonesian Government's Views on Railway Construction Financing

This section presents a summary of the present views of Indonesian government officials and bureaus on establishing financial resources for railway construction projects.\textsuperscript{31}

\textsuperscript{31} Hearing was made among the following organizations in January, 1996; Planning Dept. of Ministry of Communication, BAPPENAS, Regional Planning Dept. of DKI Jakarta, Budget Bureau and National Tax Dept. of
(1) Method of fund raising
Considering the need for development investments in each Indonesian regions other than Jakarta, BAPPENAS finds it difficult to justify central government investment in a large-scale urban traffic project in Jakarta. BAPPENAS and other government officials think it is desirable for urban railway to be funded entirely by the private sector. However, they consider it is not possible for the government to guarantee private loans given the foreign debt accumulation of the government.

(2) Measures to ensure fare revenue
There is presently no consensus on a proper fare structure for new urban railways and appropriate fare revenue since the proposals are still at an early stage. PERUMKA's commuter services on the Jabotabek railway has been kept very low level intentionally. MOC understands that fares and other measures should be determined taking into account the fact that the private operations need to ensure profits. But it thinks also fares for lower-income passengers need to be kept at low level.

(3) Measures to ensure revenues from non-rail business
DKI Jakarta intends to participate in real estate development around the station area of it's urban railway. MOC is also of the opinion that, in the case of private initiative projects, private railway company should capture the benefit from development as the price of land increases as a result of being located alongside the railway route, and that the government should increase tax revenue.

(4) Financial support and its resources
Concrete measures for financial support have not been considered yet, as private initiated urban railway project is still at a planning stage. In the case of the proposed subway project, the private companies expect the government to cover 85% of the total infrastructure construction costs. Whereas the private company examines the application of reversion of profit accruing from railway construction under current project finance scheme. Concerning this idea, DKI Jakarta consider to secure finance of their portion by loans and introduction of following new taxes and charges:

- congestion charging,
- tax on provision of parking spaces, and
- street lighting tax

There are three forms of government financial support to 100% government owned public corporation: subsidies, loans, and investments. Public corporations established by the central government can receive financial support in forms of loan and investment while corporations owned by local governments can only obtain loans from the central government.

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Ministry of Finance.

32 After PERUMKA's reorganization to a public corporation, fares are determined by the corporation excluding that of third class for lower-income passengers.
According to BAPPEDA, there are two ways for the subway project of DKI Jakarta to invest in infrastructure. If DKI Jakarta becomes an operational entity, it may pay off the loans for construction from its general account. The other way is that DKI Jakarta does not become an operating entity, DKI Jakarta may provide subsidies to cover a revenue shortfall.

(5) Earmarked tax, special account

Current fiscal system in Indonesia does not include neither earmarked tax nor special account.

A fund named "Jakarta Metro Fund" was been proposed in the financial proposal of the subway project. The fund will administrate centrally revenues from new taxes shown in the proposal. The fund will be utilized for infrastructure improvement projects - not only for Jakarta subway project but also for other transport infrastructure improvements in general. However, the fund is no more than an idea of a private company.
4.3 Urban Railway Projects in Manila

4.3.1 Economic and Social Environment and Current Situation of Urban Railway

(1) Economic environment

Compared with recent rapid economic growth of other ASEAN countries, economy of the Philippines did not show a good performance. Per capita GDP grew an average of 1.0% per annum from 1980 to 1990, and 2.3% between 1990 and 1995. As indicated in Table 4-20, GDP per capita actually decreased between 1991 and 1993, but recovered since 1994. In 1995 GDP per capita averaged 27,131 pesos for the entire country and 67,894 pesos (US$ 2,650) in the Manila Metropolitan area (Metro Manila). Metro Manila plays major role in production activities in the Philippines, and accounts for about 32% of the country's GNP.

<table>
<thead>
<tr>
<th>Table 4-20 Economic growth of the Philippines (Substance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP National Growth Rate (%)</td>
</tr>
<tr>
<td>3.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GDP Growth Rate per Person of the Country (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GRDP Growth Rate per Person of Metro Manila (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.4</td>
</tr>
</tbody>
</table>

(Source: 1996 Philippine Statistical Yearbook)

(2) Population trend

Generally, the name "Manila" often indicates the Metro Manila region comprising 17 cities and towns including the City of Manila and it constitutes the capital region of the Philippines. The population of Metro Manila has increased threefold over the past 30 years, from 2,500,000 in 1960 to 7,900,000 in 1990 (Table 4-21). As of 1995, the Metro Manila population had reached 9,450,000, implying that approximately 14% of the nation's population were living on 0.21% of its territory (Manila metropolitan area totals 636 square kilometers in area). Population density in this area averages approximately 13,900 persons per square kilometer, which is about the same as Jakarta, but over 3 times than that of Bangkok.

The population growth rate of Metro Manila has been decreasing, however, in recent years. It was 6.9% per annum during 1970-75 but has fallen to 3.1% during 1990-95. The population trends in the metropolitan area shows slow down in the central area, whereas the suburban area where development attracts immigration, show rapid increase. Approximately 2 million immigrant from the county side are expected to flow into Metro Manila area. Consequently total population is estimated to exceed 10 million (Table 4-22).

31 1996 Philippine Statistical Yearbook, National Statistical Coordination Board
Table 4-21  Changes on population, increasing rate, and density of Metro Manila

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (thousand)</td>
<td>3,966.7</td>
<td>5,925.9</td>
<td>7,948.4</td>
</tr>
<tr>
<td>Increase rate (%)</td>
<td>4.9</td>
<td>3.6</td>
<td>3.0</td>
</tr>
<tr>
<td>Density (person/km²)</td>
<td>6,236.9</td>
<td>9,317.4</td>
<td>12,947.5</td>
</tr>
</tbody>
</table>

(Source: NCR Profile, National Capital Region, Republic of the Philippines, National Statistics Office)

Table 4-22 Population estimates of Metro Manila

<table>
<thead>
<tr>
<th></th>
<th>Estimates of National Statistic Bureau ¹</th>
<th>Estimates of Ministry of Transport, UTDP Project²</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>10,037</td>
<td>9,771</td>
</tr>
<tr>
<td>2010</td>
<td>-</td>
<td>11,329</td>
</tr>
</tbody>
</table>

²Department of Transportation and Communications, Metro Manila Urban Transport Development Plan (1990-2000) Project: Strategic Studies)

(3) Current situation of urban traffic
The urban structure that absorbed the rapid population increase by means of the expansion of the suburbs brought about a rapid increase in transport demand. However, no adequate public mass transport system has been developed to accommodate the demand.

In Metro Manila, the insufficient road network against the increasing number of automobiles has resulted in a high degree of road traffic congestion. In 1993 there were a total of 3,091.3 kilometers of roads in the region, comprising national roads (907.5km), city roads (1,282km), and municipal roads (901.8km), making a road network “density” of 4.8 kilometers of road per square kilometer of land. This is only half the corresponding figure for the Jakarta Metropolitan area but about 2.5 times greater than that of Bangkok.

For the characteristics of traffic mode, public transport presently accounts for approximately 70% of all motorized trips in the region - well above that of Bangkok and Jakarta. Especially para-transit occupies a high share in the public transport and the urban structure depends heavily on road based transport means. LRT and other railway accounts for only 2% of trips (Table 4-23).

Table 4-23 Transport share of Metro Manila (1990)

<table>
<thead>
<tr>
<th>Transportation</th>
<th>Private Transportation (Private Owned Cars, etc.)</th>
<th>Jeepney</th>
<th>Bus</th>
<th>Railwa (including LRT)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share</td>
<td>30.4%</td>
<td>44.1%</td>
<td>23.6%</td>
<td>1.9%</td>
<td>100%</td>
</tr>
</tbody>
</table>

There are an estimated 50,000 para-transit vehicles called "jeepneys" in metropolitan area. This vehicle has around ten passengers capacity, set up 597 routes in metropolitan area and serves more than 6 million passengers trips per day, that is approximately 60% of total public transport demand in Manila. 3000 buses operate in primary trunk roads with 309 routes, and there exists another 24 mini-bus routes; a part of bus and mini-bus routes are duplicated and 90% of bus routes are duplicated with jeepney routes. In addition, the distribution of road network concentrates in the certain area, so that the road-based public transport serves only 20% of total road network.

Bus services have been integrated into about ten companies after the commencement of LRT service in 1984. For a short time, public corporations monopolized routes on the metropolitan ring road, but it was opened to the private bus companies after the protest from these companies. These companies have recently been merged into a few companies including the public corporation to improve services by the efficient use of facilities.

(4) Urban development plan and traffic policy

There is no definite city development plan for Metro Manila. Financed by a loan from the World Bank, Metro Manila Transport and Development Planning was prepared by Metro Manila Commission (MMC) in 1976. The planning was considered as a harmonized city development plan. However, after the Aquino administration, MMC was dissolved and its authorities of executing urban development in metropolitan area were all transferred to the central government offices. As a result, a section which implements and controls the Metro Manila Development Plan in a comparative way, was no longer existing, and each individual project included in the plan were to be executed by the central government agency independently. Consequently, the point of view of developing the whole area of Metro Manila in planned manner was lost.

On the other hand, development promoted by private sectors in some specific areas also interrupted a harmonious development of the whole city. In Metro Manila, public sector have never played a leading role in urban development.

Land use plan of Metro Manila is decided by each local government consisting the metropolitan region and approval by Housing and Land Use Regulatory Board (HLURB) is required for its determination. However, this regulation in reality followed the actual development rather than to regulate and lead land development. This fact made the planned development difficult. For example, a housing district developed by private corporation for high-income brackets disturbed construction of trunk road network because vehicles of non-residence were not allowed to drive in the area.

Currently, with approval by the president, "Urban development structural plan 1996-2016" has been elaborated and implemented by Metro Manila Development Authority.  

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34 MMDA is former Metro Manila Authority which was a coordinating organization for 17 local governments within the area. It was established in March, 1995 to deal with administrative problem comprehensively. It is now a comprehensive administrative entity of local governments in Metro Manila Region.
(MMDA), the organization administratively controls the whole Metro Manila region. It plans the urban structures which enforces the use of urban railway; both existing suburban lines of PNR and LRT are to be vitalized, and rationalization of road-based transport and integration of routes are also examined. However, despite the MMDA’s authority to plan, the elaborated plan does neither have legislative power nor budget to implement. Consequently, the organizational arrangement for the implementation of the plan has not been established.

Construction of public rail mass transit systems and road improvements as its complementary function have been considered as basic transport policy strategies in Metro Manila. "The Updated Traffic and Transport Management Plan for Metro Manila elaborated in 1993-1998" by a working group consists of representatives from National Economy Development Agency (NEDA), Department of Public Work and Highways (DPWH), Department of Transport and Communication (DOTC), Philippines National Railway (PNR) and MMDA focused on the following policy items:

- Achievement of a high degree of coordination among organizations concerned with policy-making, planning and implementation, and integration of regional development plan and transport master plan
- Promotion of private investment and participation in urban transport infrastructure construction and operation
- Modernization of existing transport facilities and services
- Construction of rail transport modes to accommodate the demand for traveling

To promote the efficient operation of public transport systems, rationalization of road-based public transport modes such as buses and jeepneys and integration of different transport modes, such as introduction of unified tariff system have also been examined.

Short-term transport measures which have already been attempted are restriction for vehicles entering the central area as well as the introduction of the area traffic signal system. However, these measures have not been able to solve fundamentally the problems of rapidly escalating traffic congestion. MMDA, with assistance from JICA is undertaking "Metro Manila Urban Transportation Integration Study (MMUTIS)" and it is expected to complete in 1999.

4.3.2 Current Status and Future Plan of Urban Railway

(1) The attempts in the past and the current situation of urban railway

Traffic network within Metro Manila is based on Urban Transport Study for Metropolitan Manila Area (UTSMMA), realized by JICA as a comprehensive traffic plan in 1971 and roads being composed of radial and ring roads have been constructed.

35 For organization of urban railway, refer to 4.3.3
36 Started from June 1996 on week days from 7:00 a.m. to 7:00 p.m., the scheme restricts vehicles to enter the Metro Manila trunk roads by using car registration number (odd or even depending upon the day of a week).
As for railway, two lines of Philippine National Railway (PNR) reach the Metro Manila from both north and south of the city. These lines are not able to provide sufficient service, because of its original nature as long distance services, their overage facilities, and occupation by squatter along the lines. Therefore, these lines have not been given much importance as means of commuting. However, as a result of an expansion of housing districts to the outskirts of Metro Manila, usage of these PNR lines for commuting purpose begun to increase. Track rehabilitation and some other improvement of railway facilities are currently underway in Commuter South Line with a loan from OECEF.\textsuperscript{37}

In the 1980's, in consequence of serious traffic congestion caused by increasing number of jeepneys and tricycles which used to be major means of transportation, the Philippines government established Light Rail Transit Authority (LRTA) and constructed Light Rail Transit (LRT), entirely financed by a loan from the Belgium government.

LRT Line has started without a sufficient feasibility study and a traffic improvement master plan. It is a 14 kilometer elevated railway with 18 stations, and runs over Taft and Rizal Avenues from Baclaran to Monumento. This existing line called LRT Line 1, being proud of high reliability and passengers ridership, from the beginning, carries an average of 350 thousand passengers each day\textsuperscript{38}. However, as the current capacity has reached its maximum, capacity expansion project including procurement of rolling stocks, improvement of signal, communication and power facilities, has been implemented with financing from the OECEF\textsuperscript{39} (for the routes, please refer to Figure 4-5).

(2) Outline of current projects

(a) LRT Line 2

1) Project Outline:

   Line 2 will operate as a 14 kilometer elevated (partially underground) double track railway, running from east (Recto) to west (Santolan where depot will be constructed) by complimenting the existing north-south Line 1. Project is divided into three parts: civil works such as elevated tracks, facilities such as depot and electrical-mechanical works. Construction is scheduled to start in 1997 and to be completed at the end of 2000. The total project cost is estimated at ¥103 billion. Though the line is called LRT Line 2, the plan is not LRT in fact but planned as a Heavy Rail Transit\textsuperscript{40} for larger capacity transportation.

2) Project Scheme:

   LRT Line 2 will be financed by foreign fund and constructed by LRTA, a public corporation, in a fashion similar to that used for LRT Line 1. The operation will be entrusted to a different company.

\textsuperscript{37} Improvement and Modernization of Commuter Line South Project, approved in July 1991.

\textsuperscript{38} In LRT project, constructing and operating entities are separated and each makes its cost clear. The line is operated by a 100% LRTA subsidiary, Metro Transit Organization Inc., which covers its operational cost by fare revenue, while LRTA is reimbursing the construction debt.

\textsuperscript{39} Metro Manila LRT Line 1 Capacity Expansion Project, approval in December, 1994.

\textsuperscript{40} A railway system equipping with heavy tracks for larger rolling stocks which enables to expand transport capacity.
Figure 4-5 Manila urban railway projects routes

3) Fund Raising and Repayment Plan:

Construction will be financed by OECF loan⁴¹, while a central government's subsidy is expected for the remaining funds. It is planned to enact the LRTA Capital Increase Act⁴² which allows the central government to inject additional funds to the capital of LRTA to improve its financial strength and to give LRTA a right to raise fund in the capital market, for the purpose of repaying the debt. However, LRTA will also be able to engage in station area development business such as real estate development in order to ensure means of repayment.

(b) LRT Line 3

1) Project Outline:

Phase I of LRT Line 3, or EDSA MRT III, runs from north street in Quezon City to Taft avenue in Pasay City along Epifanio Delos Santos Avenue⁴³ (EDSA, the main belt highway in Metro Manila). The 16.8 kilometer railway will be in double track and partially elevated. LRT Line 3 is the first case of the private sector participation in the construction of railway in the Philippines. The concession contract will lease whole railway facilities to the government. Phase I of the project is expected to cost approximately US$650 million. Construction has already commenced and is expected to complete in 1998.

2) Project Scheme:

Department of Transportation & Communication (DOTC) plans the project and supervises operation. Metro Rail Transit Corporation (MRTC), a 100% subsidiary of MRTC Hong Kong established by Philippines private consortium, is in charge of construction of whole railway facilities including procurement of equipment such as rolling stocks. The project is being developed under a Build, Lease, and Transfer (BLT) arrangement whereby the railway is to be built by a private company, will be leased to the central government for 25 years, and then to transfer to the government at the end of the lease period. LRT Line 3 will be operated either directly by DOTC or by a separate contract with a private company

3) Fund Raising and Repayment Plan:

Of US$650 million total cost, US$190 million will be invested by a private consortium and the remainder will be financed by loans except for the cost of rolling stock, which will be financed by the equipment and machinery supplier. US$ 290 million is confirmed by the Export - Import Bank of Japan and private financial institutions. DOTC understands that it is necessary for private companies to secure financial resources for debt repayment in order to obtain a loan on favorable terms. No direct government subsidy will be given to the construction of Line 3. However, the BLT scheme enables private company to reduce the loan interest rate by securing the stable revenue source in the form of the leasing charge from the government that can be utilized for debt repayment. In addition, MRTC has been given a commercial

⁴¹ Metro Manila Strategic Mass Rail Transit Development (Line 2) Project, approval in March 1996 and in March 1997
⁴² As of January 1998, this act has not been adopted by the Cabinet.
⁴³ Major ring highways within Metro Manila.
development right which allows the collection of commercial revenues from real estate development by using surface right over railway stations, yards, and depots. In addition, the central government has come up with a new policy for securing financial resource for repayment of railway construction debt by joint project participation from railway construction and real-estate development companies. In addition to concession contract of the MRTC project, the government provides land for real estate development so that the above mentioned commercial development could be promoted. In order to capture the revenue from non-railway business, MRTC will be established a real estate development company separately from the construction. In case that operation of LRT Line 3 is to be commissioned to a private company, the contracts stipulates that it must keep the fare and other service levels at predetermined ones for the first 6 years. In return, DOTC will guarantee the return on the investment by the operating company by means of three kinds of government subsidies including a compensation for the fare revenue shortfall, a grant corresponding to the service level, and a dividend guarantee. After the 6th year, the government and the company share the profit equally.

(c) LRT Lines 4, 5 and 6
LRT Lines 4, 5, and 6 are planned as mid-term projects in "The Updated Traffic and Transport Management Plan for Metro Manila, 1993-1998". LRT Line 4 runs in parallel to Quezon Avenue, Line 5 along Shaw Boulevard, and Line 6, as extension of Line 1, starts from Baclaran and end at Zapote are under planning. Project cost and period once have been settled, none has been implemented the original plan. Though detailed project schemes have not decided yet, the government is considering to introduce private sector investment for construction and operation of these three lines.

As for these new LRTs, to secure convenience of passengers, the government tends to consider introduction of a common fare system effective for all urban railways and transfer facilities.

(d) Philippine National Railway (PNR) , North Line Improvement Project
1) Project Outline:
The project aims a private operator to invest in the track and rolling stock of southern line of PNR, in order to operate commuter train service every fifteen minutes at peak period. The total length is 56 km and its total cost is estimated at US$ 480 million. Currently track improvement is undertaken in the southern suburban section of Metro Manila by OECF loan. The project will improve much longer track section and provide commuter services on the route. At this moment, this project is still under planning stage at PNR and has not obtained the governmental approval.

2) Project scheme
This project will be realized based on operation concession for 25 years. The government will pay fixed reimbursement to the operator every year. Railway operator secure all the fare revenue for the first 7 years from operation and recover the operation and maintenance cost. In case of fare revenue shortfall, the government will provide subsidy. From 8th year, operator is expected to make profits and is
obligated to share its profits between the government and the operator at 60% and 40% respectively.

3) Fund raising and repayment plan
   The total project cost of US$ 480 million is expected to be covered by loan (80%) and private capital (20%) of its loan is from commercial banks. Within two years after operation, a subsidy from the government will be the source of repayment, a private operator will recover the initial investment through fare revenue.

(c) Philippine National Railway (PNR), North Commuter Line Improvement Project

1) Project outline
   The project is to rehabilitate the PNR's northern line at large scale, and to use it for commuter services. The planned route connects Clark air base, which will be developed as a new international airport by year 2003, and Manila. The first phase will improve the 95 km of the existing track between Tarabon and the new international airport, and expected to be completed in June 1998. The second phase is the construction of the 15 km underground section between Tarabon and the For Bonifacio. This subway section connects to PNR's long distance services and line 1-4 of LRT. A project proposal has been submitted to NEDA/ICC.

2) Project Scheme:
   The proposed project is a joint venture of PNR, Base Conversion Development Authority (BCDA), Spanish National Railway, and Philippine private companies. The railway operator is expected to have the authority to determine the fare level subject to the approval of the central government and execute this BOT project. The government will collect lease fees from the operator for the use of PNR right of way. Two subsidiaries of the operator will be established, the one to own and operate the railway and the other to specialize in commercial businesses.

3) Fund Raising and Repayment Plan:
   The expected cost is US$ 450 million for Phase 1 and US$ 1,500 million for Phase 2. Although the details are not known, it is said that private companies will raise funds for construction, and no direct subsidies by the central government are planned. However, PNR expects that a central government guarantee will likely be required for borrowing.

4.3.3 Current Administration System

(1) Organizational of urban railway policy
   Organization relevant urban railway policy-making in Metro Manila are Department of Transportation and Communications (DOTC) and Metro Manila Development Authority (MMDA), and for executing agencies, Light Rail Transit Authority (LRTA) and Philippine National Railway (PNR). Figure 4-6 shows the relevant organizations.
Coordination among urban railway related organizations is carried out in the following manner. A specific railway plan (including BOT) proposed by an agency such as LRTA and PNR needs to first be approved by its board of directors, and scrutinized by Investment Coordination Committee (ICC). This committee comprises representatives from the National Economic and Development Authority (NEDA), Department of Finance, Department of Budget Management (DBM), DOTC, Department of Environment and Natural Resources, and Department of Agriculture. ICC evaluation is conducted by several committees including the ICC Technical Committee and the ICC Cabinet Committee. The technical committee evaluates economic, financial, and technical aspects of the plan and prepares a recommendation. The final step is a Cabinet review of the plan.

NEDA also approves proposals, requests their revisions, and forwards them to committees such as the Investment Coordination Committee (ICC). NEDA can take the lead in the discussion of coordination among public organizations concerning transport policy, but in actual practice, it tends to respect ideas by the proposing agency while to avoid voluntary policy made by itself.

(2) Major relevant authorities on urban railway policy
(a) Department of Transportation and Communications (DOTC)
Railways, including the Philippine National Railway (PNR) and the Light Rail Transit Authority (LRTA), fall under the control and supervision of DOTC. The Secretary of DOTC is the chairman of their boards of directors as well.

The planning department in DOTC is in charge of preparation of projects including project formation, feasibility studies, data collection, and securing of NEDA's consent.

(b) Philippine National Railways (PNR)
PNR has been operating railway systems on Luzon Island as a state-owned enterprise since 1892. PNR operates a north-south long distance railway with Manila at its center (The North Line is now out of operation) as well as commuter railways in the metropolitan area, utilizing the same lines. PNR is legally authorized in drafting, construction, and operation of railway project in the country.

(c) Light Rail Transit Authority (LRTA)
LRTA is a central government affiliated agency established in 1984 to implement the LRT Line 1 Project. It has authority for planning, construction and operation of new LRT project. Its 100% subsidiary, Metro Transit Organization Inc. is in charge of is in charge of daily operations.

(d) Metro Manila Development Authority (MMDA)
MMDA was established by a congressional resolution in March 1995 to supersede the former Metro Manila Authority (MMA). The new MMDA has largely taken its staff from the old MMA, and is under the direct control of the Office of the President. The director of MMDA is on an equal level with members of the Cabinet. MMDA is an organization of central government, not regarded as Local Governmental Unit (LGU), because MMDA is administratively responsible for the projects over cities in Metro Manila. MMDA’s authority about urban transport is traffic control such as management of road transport and mass transit in Metro Manila.

MMDA is practicing Metro Manila Urban Transportation Integration Study (MMUTIS) with support of JICA. In addition, MMDA is not only an organization for traffic control management but also a coordinating organization for all transportation projects in Metro Manila. However, project executing agencies as PNR and LRTA are both under the supervision of DOTC, it is necessary for MMDA to discuss and coordinate with DOTC upon preparation and implementation of these projects.

(3) Problem under the current situation
Urban railway projects are proceeding satisfactorily ideally in Manila comparing to that of Bangkok and Jakarta, as the project has been planned in accordance with urban development plan. However, there is no institutional framework for integrating individual projects comprising a whole project. If executing agencies of these projects continue to implement them individually under this situation, a result could be the same as a case that railway project has not taken in coordination procedures with urban development plan.

MMDA, integrating each city in Metro Manila, cannot be in a position to take leadership, while as DOTC is the actual organization to make the urban railway plan, planning mechanisms under coordination with MMDA and DOTC beyond existing urban railway plan is not still established. From a point of view of Metro Manila urban development plan, it is necessary for MMDA to have stronger authority as a coordinating organization, and then, an institutional framework strengthening coordination between MMDA and DOTC for urban railway project should be established.
4.3.4 Current Finances and Taxation System

(1) Financial system of central government

Table 4-24 outlines national budget. Central government revenues depend approximately 80% on tax revenues. As Table 4-25 indicates, income/profit taxes, commodity/service related taxes, and trade/transaction taxes are the main sources of tax revenues. Transportation-related taxes, including motor vehicle registration tax and motor fuel tax, are statistically classified as other tax revenues and have only small share in total revenues.44

<table>
<thead>
<tr>
<th>Table 4-24 Outline of Philippine government's budget</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>1995</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>Revenue (A)</td>
</tr>
<tr>
<td>Expenditure (B)</td>
</tr>
<tr>
<td>Ordinary Expenditure</td>
</tr>
<tr>
<td>Investment expenditure and Net Lending</td>
</tr>
<tr>
<td>Expenditure on Communication, Traffic</td>
</tr>
<tr>
<td>Balance (A) - (B)</td>
</tr>
<tr>
<td>Loans (Repayment)</td>
</tr>
<tr>
<td>Inside the country</td>
</tr>
<tr>
<td>Outside the country</td>
</tr>
</tbody>
</table>

(Source: Budget of Expenditures and Sources of Financing, DBM)

Table 4-25 Annual revenue of the Philippines' government

<table>
<thead>
<tr>
<th></th>
<th>Year 1993</th>
<th>Year 1994</th>
<th>Year 1995*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>amount</td>
<td>ratio (%)</td>
<td>amount</td>
</tr>
<tr>
<td>Tax Revenue</td>
<td>230,170</td>
<td>88.4</td>
<td>271,305</td>
</tr>
<tr>
<td>Income tax, Profit tax</td>
<td>74,795</td>
<td>28.7</td>
<td>91,886</td>
</tr>
<tr>
<td>Property tax</td>
<td>223</td>
<td>0.1</td>
<td>383</td>
</tr>
<tr>
<td>Goods and Service taxes</td>
<td>65,938</td>
<td>25.3</td>
<td>76,025</td>
</tr>
<tr>
<td>Custom and Transaction taxes</td>
<td>82,691</td>
<td>31.8</td>
<td>82,318</td>
</tr>
<tr>
<td>Other taxes</td>
<td>6,523</td>
<td>2.5</td>
<td>20,693</td>
</tr>
<tr>
<td>Non-tax Revenue</td>
<td>30,235</td>
<td>11.6</td>
<td>64,855</td>
</tr>
<tr>
<td>Total Revenue</td>
<td>260,405</td>
<td>100.0</td>
<td>336,160</td>
</tr>
</tbody>
</table>

(Source: 1996 Philippine Statistical Yearbook) *estimated

44 Comprehensive Tax Reform Program

The Philippine government has been carrying a Comprehensive Tax Reform Program (CTRP) since 1995. This program is in its third year and is expected to be completed in 1998. The objectives of this Program is to expand the tax collection basis and increase the tax revenue by rationalizing the current tax systems including introduction of a taxable land register and a tax administration reform. Since special accounts does not exist in the financial system in the Philippines, budget allocation for urban railway development depends on annual deliberation at the Congress. CTRP is expected to increase financial resources.
(2) Financial system of local government

In average, four local governments in Metro Manila cover over 65% of revenue through their financial sources. The main tax revenues are a fixed property tax and an corporate tax. On the other hand, distributions of tax revenue and subsidies from the central government has exceeded about 20% of their revenues and has become a substantial source of revenue.

Table 4-26 Revenue of 4 major cities in Metro Manila

(Unit: thousand Peso)

<table>
<thead>
<tr>
<th></th>
<th>Year 1992</th>
<th></th>
<th>Year 1995</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>amount</td>
<td>ratio (%)</td>
<td>amount</td>
<td>ratio (%)</td>
</tr>
<tr>
<td>Own Revenues</td>
<td>4,698,644</td>
<td>68.6</td>
<td>9,999,234</td>
<td>65.4</td>
</tr>
<tr>
<td>Property Tax</td>
<td>2,095,262</td>
<td>30.6</td>
<td>4,127,594</td>
<td>27.0</td>
</tr>
<tr>
<td>Corporate Tax and Permission Fee</td>
<td>1,211,592</td>
<td>17.7</td>
<td>3,246,915</td>
<td>21.2</td>
</tr>
<tr>
<td>Business Income</td>
<td>69,312</td>
<td>1.0</td>
<td>149,776</td>
<td>1.0</td>
</tr>
<tr>
<td>Others</td>
<td>1,322,478</td>
<td>19.3</td>
<td>2,474,949</td>
<td>16.2</td>
</tr>
<tr>
<td>Other Resources</td>
<td>2,148,691</td>
<td>31.4</td>
<td>5,302,178</td>
<td>34.6</td>
</tr>
<tr>
<td>Allocation from Central Government Tax Revenue</td>
<td>1,301,730</td>
<td>19.0</td>
<td>3,709,635</td>
<td>24.2</td>
</tr>
<tr>
<td>Subsidy</td>
<td>186,227</td>
<td>2.7</td>
<td>360,976</td>
<td>2.4</td>
</tr>
<tr>
<td>Loan</td>
<td>221,857</td>
<td>3.3</td>
<td>1,230,510</td>
<td>8.0</td>
</tr>
<tr>
<td>Transference between Local Government</td>
<td>438,877</td>
<td>6.4</td>
<td>1,057</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>6,847,335</td>
<td>100.0</td>
<td>15,301,412</td>
<td>100.0</td>
</tr>
</tbody>
</table>

(Source: Annual Financial Report of the Local Government)

In terms of public investment in the Philippines, the central government has been playing a key role. The central government bears nearly 90% of investment expenditures across the country. The burden ratio of local governments has been increasing gradually but it is only just over 10%.

According to the governmental promotion for decentralization, the basic policy for local governments is self-financing, as much as they can for the development projects in their urban areas. But according to NEDA, the local governments in Metro Manila will never bear a part of the construction cost such as LRT in place of the central government.

As it is estimated that the ratio of own financial resources differs between local governments in Metro Manila and those in other regions, the amount of own financial resources of local governments may, in other regions, also differ with each other.

Although the local governments will eventually be in charge of the supervision of projects, most of the investment funds are expected to be provided by the central government. Moreover, in most cases, for loans from financial institutions, central government’s guarantees for repayment may be required.
4.3.5 Environment for Private Initiative Projects

(1) Current private initiative projects

The Philippine Mid-term Development Plan (1993-1998) has also been promoting private participation projects including BOT as one of its fund raising methods in order to respond to an increasing need for public projects, especially infrastructure projects.

Department of Transportation and Communications (DOTC) intends to encourage private sector participation in urban railway construction as much as possible. LRT lines 3-6 will be constructed and operated by private entities. Also for South Line of PNR, after its repair completes, it is planned to be operated by private sector.

In accordance with the BOT law, bidding by public agencies or submitting proposal by private project entity are two possible procedures for private participating project. For an example, in case of private participation in urban railway project implemented by the central and local government, firstly a bid announcement is made by the head of the government, secondly qualified private companies submit the bids, and via competition, finally contract will be concluded. A private company who won the contract submit project proposal to DOTC. Approval by DOTC will be followed by deliberation by ICC and the Cabinet.

Private funds is considered to be important for implementing these urban railway projects. However, government officials believe that it will be difficult to cover all costs through fare revenues and thus necessary to provide government subsidies.

Under the present BOT law, the central government cannot provide direct or indirect subsidies for projects unsolicited by the government even if they need the support. Even though some of the approved projects are unsolicited by the government, they will not all be financially feasible without financial support from the government, and will need some sort of measures in near future.

(2) Legal system for private initiative

"The Law to Approve Investment, Building, Operation and Maintenance by Private Sectors for Infrastructure Projects" (The BOT Law) was passed by the Philippines Congress in 1990. Consequently a BOT Center was established by Presidential Order to promote BOT projects. The BOT Center has four functions as follows:

(a) Preparation of governmental policies regarding BOT
(b) Technical support (Preparation support of tender documents)
(c) Holding study and training meetings for BOT related organizations
(d) Public relations for BOT projects

However, The BOT Law was revised in 1994 due to the lack of successful BOT projects up to that point. The main revisions are as follows:

- Approval of ROT (Rehabilitate, Operate, Transfer) and BLT (Build, Lease, Transfer) in addition to BOT;

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45 BOT Law, Article 5
Approval of commercial facility (district) development (Develop, Own, Transfer) along with transport facility construction;
• Provision of favorable tax conditions and profit protection for BOT projects (to be negotiated in the contract stage);
• Financial support by the central government to improve private investment incentives; and
• Facilitation of the contract process.

4.3.6 **Philippine Government’s Views on Railway Construction Financing**

Policy for urban railway construction of each division of central government is as follows.46

(1) Method of fund raising

The central government has been considering the privatization of PNR and LRTA, or reorganizing them as public entities. Public corporations must be self-supporting and therefore must take a different approach to recovering their costs from other governmental institutions. As for the present railway project, the central government supports all track and facilities construction costs and owns them while separated governmental agencies are responsible for operations in order to improve project efficiency. In some cases, private companies are in charge of operation. Also private participation for construction fund has been introduced. The above mentioned operation system as well as introduction of private funding are to be considered continuously.

In terms of new investments in urban railway construction, NEDA proposed a project and indicated fund raising plans in their mid-term development plan. NEDA cites three methods for raising the funds necessary to develop urban railway:

(a) Extending the capital ratio of LRTA through supporting by the central government
(b) Complete cost recovery through fare revenues; and
(c) Preparation of incentive to introduce private funding.

(2) Measures to ensure fare revenue

The current fares of PNR and LRTA are controlled by Land Transportation Franchising Regulatory Board (LTFRB) of DOTC. The fare structure of the future urban railway network has not yet to be determined, but a distance-based fare system is most likely. DOTC and LRTA are currently planning to introduce a common fare system across all lines with a compatible standard automatic ticket system. LRTA has begun a project under financial and technical support by the French government to change the present token-based fare system.

(3) Measures to ensure revenues from non-rail business

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46 Based on hearing to the relevant governmental organizations in January, 1997; NEDA, DOTC, LRTA, PNR, DBM, and DOF.
LRTA was not legally permitted to enter into "value capture" projects such as railway-related real estate development. However, under the proposed new articles of the LRTA Law, LRTA will be able to participate in business development along the future lines.

However, LRTA's involvement in station area land development is expected to be limited. In particular, development projects along LRT Lines 1-3, which run through developed urban areas, will be of a small scale except same sections due to the shortage of land. LRTA has been considering construction of transfer facilities for other modes, such as urban railways and buses, in new suburban stations.

After the approval of LRTA's new articles of association, LRTA is able to establish subsidiaries for land development projects. In addition, after LRTA's capital increase, LRTA plans to promote the capital participation of financial sector by holding the stocks of the subsidiary of real estate development.

There is an act in the Complementary Bill to the BOT Law\(^\text{47}\) which imposes a special tax collected on negotiation base from land owners who benefits from urban railway projects under BOT scheme. Some local government regulations already approve of such taxes which would be added to local government revenues.

(4) Financial support and its resources
The basic policy of Department of Budget Management (DBM) regarding the support on operation of public transport is to reduce the financial burden of the operating organizations by governmental equity investment in those organizations and to give incentive for the efficient operation rather than to provide directly financial support for the operation.

The "Net Lending" strategy is available when public corporations are hard to repay their debts for overseas. Through this method, The Bureau of Treasury raises funds in order to give public corporations some time to raise revenues. The public corporations then repay the debts for Bureau of Treasury following a schedule determined at that time. If the public corporation is unable to repay their debts, the public corporation may request the central government to convert its loans into governmental equity investment in the corporation itself through the approval of Congress.

(5) Earmarked tax, special account
The central government continues to pursue a policy of not establishing earmarked financial resources and special accounts since 1997. The Department of Finance has examined the possibility about tax increase including car-related new taxes and prepared several legislative bills (one of them regarding a vehicle registration tax). However, none of these bills involve earmarking of the tax revenues for dedicated purposes.

\(^{47}\) Complementary Bill to the BOT Law, AN ACT PROVIDED FOR A SYSTEM OF COMPENSATION TO BUILDERS AND CONTRACTORS OF BUILD-OPERATE-TRANSFER(BOT) PROJECTS WHICH ENHANCE THE VALUE OF PROPERTY, TENTH CONGRESS, First Regular Session, HOUSE BILL NO. 7344
Considering the issues described above, however, DOTC and LRTA are considering to establish a special fund for public transport. According to DOTC, transport-related tax (motor vehicle registration tax and motor fuel tax) revenues exceed transport-related government expenditures, and a special account for transport would be a good way to ensure capital funds for transport-related infrastructures. LRTA would like revenues such as a vehicle registration taxes to be earmarked for project construction and operation of LRT.
4.4 ISSUES ON URBAN RAILWAY CONSTRUCTION FOR THREE MAJOR CITIES IN SOUTH EAST ASIA

In each city, Bangkok, Jakarta and Manila, present situation summarized from viewpoints of Chapter 3 is as follows:
Table 4-27 shows the present situation and issues in each city.

4.4.1 Operation Organization
As indicated in Table 4-27, in urban railway development of Bangkok and Manila, public corporations, which were newly established for a particular purpose and directly controlled by the central governments, have been responsible for urban railway construction and operation.

In these urban railway construction, method of separating the organization of infrastructure building and operation has been adopted. Urban transportation infrastructure is financed by public investment and operated by separated organizations in a self-supporting system. In above three cities, besides the projects mainly invested in by public corporations, there are on going or planned franchising projects in which the central and local governments conclude the concession contract of construction and operation.

Considering the above, it is understood that the central and local governments have been involved in all urban railway projects. As the study cases in the developed countries showed, the central and local governments have been inevitably involved in all urban railway constructions and operations.

The public involvement is also indispensable in Bangkok, Jakarta and Manila for urban railway construction. On the other hand, regarding urban railway operations, private sector participation has been introduced with the operation costs being financed by fare revenues. This method of operation has been coming into general use. The introduction of private sector participation is stated as below 4.4.5.

4.4.2 Administration System
Since urban railway construction requires the consistent application of long term plans, local government should take the lead in urban railway construction and operation, ensuring that the railway conforms to the wider urban plan especially with regard to factors such as land use, regional development and other transport infrastructure. While the local administrations found in Bangkok, Jakarta and Manila have, in theory, the necessary authority to plan large scale infrastructure projects, the reality is that many such projects have not been carried out because the local governments lacked the necessary authority and financial power.

In Europe and the United State, when urban railways are constructed in more than one administrative district, the government, which administers the entire district of the project area for urban railway construction, or the government with the same authority are generally involved in the planning.
In Thailand, Indonesia and the Philippines, the related departments and agencies in the central governments, and the executing agencies individually plan and develop transportation infrastructure in the metropolitan area. As a result, in any of those countries, the unified project implementation system has not been established for cooperation between road and railway development, and urban planning. Therefore, an unified system needs to be developed to coordinate urban planning in addition to all transportation infrastructure plans.

There are public projects developed by the central government (the Department of Transportation and executing agencies) as well as other projects developed by local governments, which administrate the capital cities, and private companies on contract base for construction and operation. There are no unified systems to govern authorization for railway projects. In addition to urban railway construction being coordinated with urban planning, a system should be established to adjust fare determination methods and safe standards for the future.

4.4.3 Financing System

In urban railway construction, based on the principle that beneficiaries should pay for its benefit, the beneficiaries burden the project costs with the respect to the amount of direct and/or indirect benefits generated from urban railway construction. This contributes to the realization of sustainable project construction and operation. This system is especially significant when the indirect benefit captured by the government is allocated to urban railway construction.

In terms of this, all three countries have established earmarked tax systems related to vehicle and real estate to capture the direct and indirect benefits generated from urban railway development.

However, there are differences among the three countries when considering vehicle related tax and real estate tax as either national tax or local tax. Depending on the degree of items, which fall under local taxes, the ration of own financial base of local governments changes greatly. On the other hand, in terms of points in common of these countries, the financial resources of local governments, which administrate the capital, consist of their own financial base and subsidies by the central government. The budget for large scale infrastructure development such as highway and urban railways within the administrative district of the capital cities is directly allocated to national executing agencies but not to the local governments.

The budget allocation system discourages local governments from developing large scale projects. As a result, each local government has never had an experience of executing large scale infrastructure projects so far, then capability of plan and implement such large scale infrastructure projects by themselves have to be improved in the future.

In addition, since in the national budget of the three countries, there are no earmarked tax and special account systems, the financial resources for urban railway development
are drawn from a general account. Therefore the project budget must be determined each fiscal year after deliberation of congress, which includes the uncertainty to secure the financial resources. Because development of urban railway requires huge investment in long term viewpoint. In order to achieve effectiveness, urban railways need to be developed as transport networks requiring huge investment. Naturally national consensus with investment is needed, and a system for sustainable investment is expected to be mainly established by local governments, which administrate the project area of urban railway, based on the existing tax and financing systems and having the beneficiaries aware of principle that the beneficiaries should pay for its benefit.

From the point of view of "equal fitting" of road and other transport infrastructure, introducing ODA funds such as ODA loans for urban railway infrastructures is justified. This is especially considered as having a positive environmental impact (an indirect benefit generated from urban railways) utilizing ODA funds for urban railways is of great significance.

4.4.4 Value Capture
As stated in above 4.4.3, since a tax system to capture direct and indirect benefits generated by urban railway development has been established in all three countries, capturing the benefits is theoretically feasible. However, the current tax system such needs to be improved. In consideration of this, a fund raising system for urban railway construction has not been established based on the principle that the beneficiaries should pay for its benefits.

In Thailand and the Philippines, the system, in which railway development agencies capture the revenues, has not been considered in urban railway projects with the method of separating the organization of infrastructure building and operation. However, in Thailand, a law for public corporation establishment was recently revised and in the Philippines it has been under discussion. This revision encourages these railway development agencies to capture revenues from railway-related business. However, a substantial effect for value capture by urban railway construction in the hear of major cities can't be expected due to limited land being available for new development.

On the other hand, in private participation projects, value capture schemes are considered at the inception of plans.

4.4.5 Introduction of Private Participation
All three countries have been trying to introduce private participation in urban railway projects. However, the BOT Law for the above policy is in effect only in Thailand and the Philippines. In Indonesia, this policy differs due to the presidential orders, so coordination is necessary.

In all three countries, it is common that private participation is not introduced in operation projects with the method of separating the organization of infrastructure building and operation, and that in case urban railway projects are proposed as a private
initiative project from its inceptive stage, the central and local governments are involved in some extent on the procedure of project approval.

There are different forms of government involvement in each of the three countries, including provision of land, investment on implementing organizations and revenue guarantee in the operation period without any public involvement during the construction period. In addition, some projects are constructed and operated by the same company and the construction and operation are separately carried out by different companies.

Currently, in these three countries, there is no urban railway project with private participation in which construction has been completed and operation started. Consequently, it is too premature to determine the most valuable method for project success as well as a desirable involvement by both the government and private sector.

4.4.6 Urban Structure and Urban Railway Plan
In general, urban railway plans are not coordinated with urban structure and urban planning. Since in the three countries, a mechanism for the sufficient coordination by the planning bureau, and other departments (ministries) and agencies and local governments has not been established.

The issue of the planning process in which planning is not prepared in consideration of the projects planned by each agency, has been pointed out. On the other hand, departments (ministries) and agencies, and its executing agencies for infrastructure development tend to prepare master plans by themselves, for example, for their sectors. In the planning process, there is no system for coordinating urban planning and other sector development plans as well.

Moreover, the issue of the lack of sufficient legal system is raised which contribute to function existing urban development plan efficiently. Also substantial regulations and guidance have been not provided due to the insufficient management ability of local governments.

Coordination at the administrative level is required in urban planning and urban railway plans. As already mentioned, a substantial mechanism is necessary to be established at a proper administrative level within the central and local governments for controlling urban development in metropolitan areas.
<table>
<thead>
<tr>
<th>City</th>
<th>Owner</th>
<th>Financial Sources</th>
<th>Legal Framework</th>
<th>Coordination with Urban Development Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangkok</td>
<td>MRTA &amp; private companies</td>
<td>National taxes on car registration, excise duty on motor vehicles, and road tax</td>
<td>- MRTA coordinates while of transport plan in metropolitan area.</td>
<td>No coordination between urban development plan and OCMLT.</td>
</tr>
<tr>
<td>Jakarta</td>
<td>Ministry of Communication &amp; Transportation</td>
<td>National taxes on motor vehicles, excise duty on motor vehicles, and road tax</td>
<td>- Land acquisition and development is possible by revising the MRTA law.</td>
<td>No coordination between urban development plan and OCMLT.</td>
</tr>
<tr>
<td>Manila</td>
<td>PNR &amp; private company</td>
<td>National taxes on car registration and property tax</td>
<td>- Participation to real estate will be possible if the LRTA law is revised.</td>
<td>MMDA responsible for coordination.</td>
</tr>
</tbody>
</table>

Note: OCMLT = Other Cities Metropolitan Development Corporation; BOT = Build-Operate-Transfer; MMDA = Metropolitan Manila Development Authority; LRTA = Light Rail Transit Authority.
CHAPTER 5

RECOMMENDATION ON SECURING FINANCIAL RESOURCES FOR URBAN RAILWAY CONSTRUCTION IN BANGKOK

5.1 Basic Concept for Recommendations

This chapter makes recommendations for securing financial resources for urban railway construction in Bangkok, utilizing the concepts learned from the existing examples of urban railways in various countries and the current status of urban railways in three Asian cities. The basic concept drawn from the analysis of section 4.4, Chapter 4 are the followings.

5.1.1 Principles that Beneficiaries Should Pay for its Benefit

Direct and indirect benefits are generated by urban railway construction. In order to secure the financing resources of urban railway construction, the principle that beneficiaries should pay for its benefit shall be applied. In addition to fare revenue which is the direct benefit, capture of indirect benefit and government subsidy are appropriate sources of financing and are needed to be examined in that order.

In order to increase fare revenue, it is not only the fare level should be set at appropriate level based on the price elasticity but also networks of urban railway and bus transportation should be established to improve the convenience aiming at multiplier effect.

In order to capture the indirect benefits, it is necessary to collect a tax from car user within the area which is influenced by the project and from real estate developer or owner around the station and along the lines of urban railway.

5.1.2 Positive Involvement of the Thai Government and BMA

Local governments leads construction and operation of urban railways in many cities in Europe and the US, as it provides direct and indirect benefits to the area where urban railway is constructed. However, in Thailand, development projects are promoted by the central government with ministries and specialized institution, in the same way as the other developing countries. Unlike in the countries in Europe and the US, where local governments have the capacity to plan and implement infrastructure projects, the local governments in the developing countries are not capable to do the same, and are not backed financially.

The urban railway network in Bangkok serves the whole metropolitan area, covering not only BMA administrative area but also that of peripheral local governments. Only BMA has special statue among the local government composing metropolitan area, and its legal position is completely different from that of other local governments. Given
such situation, it is only the Thai government which situates above the area administrated by individual local government. The most appropriate institution for capturing indirect benefit and for cycling it to urban railway construction, based on the equal burden sharing is the Thai government.

Even within the existing tax system, BMA has its own financial resources with its own collection and budget allocation. Therefore, BMA should capture indirect benefit through its own tax system within the BMA administrative area and allocated it to urban railway construction.

5.1.3 Examination of Improvements through Introduction of the Private Sector Initiative and Know-how

Introduction of private initiative and know-how contributes to efficient construction and operation, thus reduction of necessary fund. However, attention should be paid on the fact that private sector initiative complicates the project schemes and takes more time and money until opening. In addition, private sector will not be interested in less profitable lines which is a part of network.

5.2 Proposals of Concrete Individual Measures

Based on the 3 concepts mentioned above, the report recommends the following measures for securing financial resources. Some of the policies are expected to be difficult to introduce, these recommendations are, therefore, divided into three categories in accordance with the possibility of introduction.

In the following description, “short term” suggests that the measures needs immediate consideration and can be realized in short term, “medium term” suggests the one which needs to be examined from now on as a future orientation, and to be realized in medium term, and “medium and long term” measures are the ones which are difficult to introduce at this time but are necessary to examine in medium and long term.

5.2.1 Proposals of Direct Measures for Securing Fund
(1) Measures to Increase Fare Revenue

In order to increase fare revenue, which is a direct benefit, the following measures need to be implemented in order to increase facility and number of passengers.

(a) Provision of facility for transferring to other urban railway lines and to other mode of transport (short term)

The measures to increase the usage of urban railway such as construction of transfer facility with different lines and that of terminals of other mode of transport such as buses at railway station, will increase the passengers. If these measures are administratively taken, OCMLT needs to take leadership and should guide MRTA so as to introduce them even at the planning stage.

(b) Enforcement of feeder services (short term)
Related to the above mentioned (a), in order to increase the number of passenger of urban railway through the expansion of accessibility to railway, it is necessary to consider the promotion plan of feeder service such as construction of bus terminal.

It is necessary to consider from the view point of comprehensive transportation system, thus OCMLT have to take a initiative to make a plan and guide MRTA.

(c) Coordination with suburban residential and commercial development plans (medium term)
If the extension of urban railway is planned in order to provide transportation for the passengers commuting between city center and suburban area, the railway project must be harmonized with redevelopment of city center, residential area development and city sub-center development. In the city development plan currently under elaboration by BMA, coordination with urban railway master plan needs to be thoroughly examined.

(d) Control of vehicle ownership and usage through taxation (medium and long term)
If the measures to control the ownership or usage of automobile are taken in accordance with the development of urban railway, it leads not only to promote the use of urban railway but also alleviate the traffic congestion and increase the tax revenue. This measures is considered to be difficult to realize in short term as it accompanies increase of tax and introduction of new taxes. But this measure should be considered in long-term. OCMLT, Ministry of Finance and BMA all these should discuss, divide individual role and implement it.

(2) Proposal of Measures for Reversion of Indirect Benefit
As mentioned before, indirect benefits generated by construction of railway are captured through property tax and the motor-related tax. Seeing Thai tax system from this point of view, it exists already house and building tax and local development tax as property tax and motor vehicle registration tax and motor fuel tax as motor-related tax.

Here, we propose treat a part of revenue from these taxes as earmarked tax, and allocate them for urban railway construction in Bangkok metropolitan area (Table 5-1).

The tax rates utilized here are hypothetical, but we tried to be realistic. In addition, from the point of view of environmental consideration, introduction of environmental tax is examined. Since the areas which benefit from the construction of urban railway are considered to be limited, the portion of tax revenue, which only relates to real estate around stations is taken into account.

As these are either increase of tax rate or introduction of new tax, its introduction in short term is not a easy task. However, once urban railway construction has been completed, it is considered that the whole society benefits from urban railway construction. It is therefore appropriate to introduce these taxes at the time of completion. For the implementation of these measures, OCMLT, MOF and BMA should consult each other, and implement them by dividing each role.
### Table 5-1 Policy measures to capture the indirect benefit

<table>
<thead>
<tr>
<th>Measures</th>
<th>Current Rate</th>
<th>Realistic Assumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>(e) Increase of the car registration tax in BMA area</td>
<td>Average 2,500 bahts/car/year</td>
<td>Average 3,000 bahts/car/year (Additional taxation of 500 bahts)</td>
</tr>
<tr>
<td>(f) Increase of the gas tax in BMA area</td>
<td>Average 2.98 bahts/liter</td>
<td>Average 3.13 bahts/liter (Additional taxation of 0.15 bahts/liter, equal to outside BMA area)</td>
</tr>
<tr>
<td>(g) Introduction of environmental tax (new tax)</td>
<td>New tax (only on gas sales in BMA area)</td>
<td>0.1 bahts/liter (Total 3.23 bahts/liter)</td>
</tr>
<tr>
<td>(h) Ear-marking of a part of house &amp; building tax that is considered to be benefited from railway development</td>
<td>12.5 % of house &amp; building tax amount appraised</td>
<td>5% of increased tax revenue from the area within the circle with 500 m diameter of newly opened railway station</td>
</tr>
<tr>
<td>(i) Ear-marking of a part of land building tax that is considered to be benefited from railway development</td>
<td>New tax (This tax currently exist, but its collection is insufficient.)</td>
<td>New taxation of 500 bahts/m² on newly developed buildings of the area within the circle with 500 m diameter of newly opened railway station</td>
</tr>
<tr>
<td>(j) Introduction of charges for transport inducement</td>
<td>New Charges</td>
<td>Charges to shopping mall, department store, hotel, facilities for sightseeing etc., which are supposed to induce transport demand</td>
</tr>
</tbody>
</table>

### 5.2.2 Proposals of Support Measures for Fund Raising

In this section, we propose the supportive measures, although they do not lead directly to lead fund raising.

**k) Strengthening of OCMLT's authority (short term)**

It is necessary to strengthen the administrative authority of OCMLT, currently considered as being insufficient, in order to establish a system which allows to capture the indirect benefit and to allocate it to railway construction and which leads each project to a railway network, when fare increase measures and the new railway line are being examined. Excessive administrative involvement on fare modification may make lose private sector's incentives on investment. A system which avoid it needs to be established and to be understood by private investors. Strengthening of OCMLT's authority can be done only with the decision of the Thai government, thus in short term.

**l) Introduction of private sector initiative (short term)**

In order to introduce the private sector initiative activity in the effective operation and maintenance, procurement and operation of facility, support measure, it is necessary to establish a system for private sector to have incentive to invest. MOF and investment committees are responsible for the introduction of private sector.
initiative, but OCMLT should be included in the examination process, if the project in question is a urban railway project.

(m) Coordination with Suburban Residential and Commercial Development Plans (medium term)
As same as (c) above, the extension line plan should take into consideration the development of residential and commercial area alongside of it, in order to ensure passengers. The future city development plan should be harmonized with master plan.

(n) Connection fee for the underground passage between the metro station and the real property to be charged to the property owner (short term)
As employed in the subway in Tokyo, this measure strengthen the usage of subway by providing facilities for the passengers; the underground passage between subway station and commercial facilities such as department store is constructed at the expense of real property owner. This method needs the negotiation with real estate developer, so that MRTA should do it actively.

5.3 Measure Introducing Scenario
Considering the progress of the on-going urban railway construction and the time necessary to introduce each of the measure related to secure financial resources, short, medium, and long term scenario has be examined as follows.

5.3.1 Short Term Measures (Measures which have high possibility of realization with existing framework or which has high necessity, to be implemented within 5 years)
(1) Measures to Increase Fare revenue
   (a) Securing the facility to inter-change among urban railways and the other mode of transport
   (b) Enforcement of feeder services

(2) Reversion of Indirect Benefit
   (a) Increase of the car registration tax in BMA area
   (b) Increase of the gas tax in BMA area
   (c) Introduction of environmental tax

(3) Measures to support securing the financial resources
   (a) Strengthening of OCMLT’s authority
   (b) Introduction of Private Initiative
   (c) Connection fee for the underground passage between the metro station and the real property to be charged to the property owner

5.3.2 Medium Term Measures (its future introduction should be started to examine at this time; to be implemented within 6 to 10 years)
(1) Measures to Increase Fare revenue
(a) Coordination with suburban residential and commercial development plans

(2) Measures to support securing the financial resources
   (a) Coordination with suburban residential and commercial development plans

5.3.3 Medium and Long Term Measures (those are difficult to introduce at this time but are necessary to examine in medium and long term)
(1) Measures to Increase Fare revenue
   (a) Restriction of car purchase and use by taxation and charges

(2) Reversion of Indirect Benefit
   (a) Ear-marking of a part of house and building tax (to be imposed on the fixed assets except residence)
   (b) Ear-marking of a part of land development tax (newly introduced for urban railway construction)

5.4 Magnitude of the Measures to be Introduced

5.4.1 Routes and Preconditions of Simulation
In this section, we summarized the result of simulation of some cases. This simulation has been done in order to examine the effectiveness of the measures to be employed for the construction of urban railways in Bangkok, described in previous section.

(1) Project scope:
   MRTA (a public corporation) is in charge of civil works for Blue Line, Orange Line, and Purple Line while the private sector is in charge of electric and machinery facilities constructions and operation and maintenance of the system for 25 to 30 years.

(2) Precondition of simulation:
The precondition of simulation are the followings:

(a) Loan conditions:
   • Long-term commercial loan: 25-year repayment with 10% interest p. a.
   • Short-term commercial loan: 10% interest p. a.
   • OECF loan: 25-year repayment (7 years grace period) with 2.7% interest p. a.
   • Government guaranteed bonds: 10-year repayment with 10% interest p. a.

(b) Fund raising for the total subway construction cost:
   • Case 1: Construction cost of subway Blue Line is provided by OECF loan and government guaranteed bonds; all other lines will be financed by commercial loans.

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Total subway construction cost includes the construction cost, interest under construction, payment of interest and repayment of principle.
• Case 2: Construction cost of Blue Line and the rest of the lines is financed by OECF loan.

(c) Repayment method:
The repayment period is 34 years, assuming the first loan is extended in 1997 and the last one is 2007. The annual financial requirement for the construction will be borrowed by the government, and its repayment is assured from the earmarked tax revenue. The difference in the necessary amount and the revenue from the tax will be assured from the expenditure from the general budget. Utilization of earmarked tax is up to the break even point of investment requirement and repayment, and after that, operating expenses will be only covered by the fare revenue.

(d) Fare revenue:
Fare revenue is set at 15 bahts for the first ride and 1 baht per kilometer is added afterwards. All the fare revenue becomes the revenue of the operator of urban railway, and will be the source of operation and maintenance fee as well as the investment for electrical-mechanical works. The difference between the fare revenue and operator’s expense, if it exists, the difference (equals to benefit) will be divided into two between the private operator and MRTA, i.e., the operator pays the 50% of its benefit as concession fee.

(e) Patterns for introduction of measures:
The following 8 patterns are calculated for each of Case-1 and Case-2:
1) The case which the operator can obtain fully the expected fare revenue based on the passenger forecast, and can pay concession fee as expected:
   ① 100% of the revenue from all the recommended earmarked tax is secured
   ② 100% of the revenue from car registration tax only is secured
   ③ 100% of the revenue from both gas tax and environmental tax only are secured
   ④ 100% of the revenue from gas tax, environmental tax and land development tax only are secured

2) The case which the operator cannot obtain the expected fare revenue based on the passenger forecast, and can assure only 50% of the expected fare revenues:
   ① 100% of the revenue from all the recommended earmarked tax is secured
   ② 100% of the revenue from car registration tax only is secured
   ③ 100% of the revenue from both gas and environmental tax only are secured
   ④ 100% of the revenue from gas tax, environmental tax and land development tax only are secured

5.4.2 The Results of Simulation
The results of the test calculations are presented as follows:
(1) Total subway construction costs
   - Case 1: about 562.1 billion bahts
   - Case 2: about 345.1 billion bahts

(2) The result
   Seen from the proportion of the revenue from earmarked tax against the total project cost, effect of implementing individual measures are as follows:

<table>
<thead>
<tr>
<th>Measures</th>
<th>Ratio to the total project cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Case 1</td>
</tr>
<tr>
<td>Additional tax on car registration tax</td>
<td>19.4%</td>
</tr>
<tr>
<td>Additional tax on gas tax</td>
<td>7.3%</td>
</tr>
<tr>
<td>Introduction of environmental tax</td>
<td>4.9%</td>
</tr>
<tr>
<td>A portion of house and building tax increase</td>
<td>0.7%</td>
</tr>
<tr>
<td>Introduction of land development tax</td>
<td>4.0%</td>
</tr>
</tbody>
</table>

Motor vehicle registration tax effects the most against the total project cost. There are, however, no examples in the developed countries to have it for the financial resources of urban railway construction fund, except an example of motor fuel tax to be for an earmarked tax. It implies that introduction of taxes on use of vehicle is more reasonable than that on possession of vehicles for urban railway improvement fund. A similar example can be seen in environment tax to control vehicle use from a point of view for environment protection. On the other hand, the effect of estate-related taxes such as house and building tax (property tax) and land development tax is small since it is difficult to specify the benefits and it needs a wider area on tax collection.

(3) Financial share of the Thai government
   Taking the above thoughts and uncertainty of fare revenue, which depends on the number of passengers into consideration, the result of the simulation is as follows(Table5-2).

   Considering the difficulty and potentiality of introducing the measures, motor fuel tax and environment tax are the most effective of all the suggested measures and should be prioritized to examine for the implementation. For a project cost which could not be recovered by fare revenue and earmarked tax, financial share of the government becomes necessary. Adding land development tax to this situation, the financial share of the Thai government is 83% in Case 1, and 74% in Case 2 (on condition that the fare revenue reaches only 50% the expected figures).

   The central and local governments will have to take the financial share for urban railway construction. It is necessary to examine new government funds like the above to reduce financial share of the government below the figures currently assumed.
<table>
<thead>
<tr>
<th>Case</th>
<th>Project Cost</th>
<th>Revenue from Concession Fee (%)</th>
<th>Revenue from the Implementation of Recommended Policies (%)</th>
<th>Fiscal Burden of Thai government (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case-1</td>
<td>562.1 billion bahts</td>
<td>100% of expected fare revenue</td>
<td>29 100% of all measures</td>
<td>24 47</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>29 100% of car registration tax only</td>
<td>13 58</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>29 100% of gas tax, environmental tax only</td>
<td>8 63</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>29 100% of gas tax, environmental tax, land development tax only</td>
<td>11 60</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50% of expected fare revenue</td>
<td>3 100% of all measures</td>
<td>30 67</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 100% of car registration tax only</td>
<td>17 80</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 100% of gas tax, environmental tax</td>
<td>10 87</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 100% of gas tax, environmental tax, land development tax only</td>
<td>14 83</td>
<td>100</td>
</tr>
<tr>
<td>Case-2</td>
<td>345.1 billion bahts</td>
<td>100% of expected fare revenue</td>
<td>40 100% of all measures</td>
<td>34 26</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>40 100% of car registration tax only</td>
<td>34 26</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>40 100% of gas tax, environmental tax only</td>
<td>12 48</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>40 100% of gas tax, environmental tax, land development tax only</td>
<td>16 44</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50% of expected fare revenue</td>
<td>5 100% of all measures</td>
<td>46 49</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5 100% of car registration tax only</td>
<td>26 69</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5 100% of gas tax, environmental tax only</td>
<td>16 79</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5 100% of gas tax, environmental tax, land development tax only</td>
<td>21 74</td>
<td>100</td>
</tr>
</tbody>
</table>
5.5 Conditions for Introducing the Recommended Measures and Further Issues

(1) National consensus
The single important feature for raising the necessary financial resources for future urban railway construction is that a national consensus to introduce a taxation system based upon the principle that the beneficiaries should pay for their benefit is achieved. This system must take efficiency and fairness into consideration in order to realize a fair sharing of the burden among the beneficiaries.

(2) Measures to introduce the private sector participation
It is necessary to clarify the role and responsibility of the public and private sectors in relation to the introduction of private initiative. Clarification is required for a proper maintenance and service standard of the facilities of urban railway constructed and operated by private sector, as well as for establishment of a system to bring about investment from private sector, by avoiding an excess intervention of administration, such as forcing to rise fare level unilaterally.

(3) Capture and cross-subsidization of development revenue
Elaboration of a law on reversion of profit accruing from development is desirable from the point of view of equality. For example, a new law which allows MRTA to sell the land which locates alongside with urban railway line and has been acquired at low price, to the property developer by adding the cost of urban railway construction and thereby cycling the difference between the two for the repayment of initial investment. This is not possible under the current legislation. In addition, relaxation of the authority on right-on-way acquisition and a concession for underground use will accelerate the reversion of profit accruing from the development.

(4) Decentralization and strengthening administrative capacity
It is desirable that urban railway, which brings benefit to where it is constructed, should be administrated by local government of the region.

In the effort of Thai government to decentralize central government functions, it is desirable to gradually transfer many of the authorities and financial resources for urban railway construction to BMA, a local government. In addition to the decentralization of administration system, it is necessary to improve the administrative capacity of local public service officer.

Especially when introducing private sector activities, the ability to understand complicated contracts is indispensable, whereas even the central government officials are actually having difficulties in perfect comprehension. For local public service officer who has no experiences in traditional public works, it is necessary to train them from the early stage to be able to deal with private participation.
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