

Possibility of Urban Development along Newly Constructed Suburban Railway in Bangkok

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In Bangkok Metropolitan Area, it is expected that railway development will help reduce traffic congestion. The purple line which will be first suburban railway connected the city center and the west bank area of Bangkok is one of such railway and now under construction. However, many small residential areas which have no access route to the rail way station have been developed along the line because of coordination opportunity between railway development and urban planning and looseness of land use control such as Land Subdivision Law. Thus, it is anticipated that even many people will settle at the area along purple line, they may not stop driving a car and traffic congestion can become more serious. In this study, current situation of urban development along the Purple line was firstly observed. Thus, possibility to carry out land readjustment project to provide urban facilities such as an access road to the station, a station square, etc. in order to encourage urban development was examined based on the experience of urban development along the railway in Japan. To achieve our purpose, we conducted the residents for land readjustment project. The result shows that half of residents agree to have land readjustment project. Finally, the problems to carry out land readjustment project were summarized.

Key Words: Land readjustment, urban planning, railway development, land use

1. INTRODUCTION

As a solution for a serious traffic congestion problem according to rapid urbanization in Bangkok, Thailand in recent years, The Bangkok Mass Transit executed a plan to connect the city outskirts to city center with railway system. The Mass Transit plan is settled on the regulation of land-use by the Urban Planning and Zoning Act. However, there is no consistency in these policies, and it is feared that the conversion of demand from using cars to the railway doesn't advance. Especially in the urban development along the railway of Bangkok's suburbs, there is no urban planning according to the railway development. The urban planning is only up to the

private real-estates developers. The roads access to the station was not prepared because it is only up to the real-estate developer to plan their own projects, and this pattern is sprawling around Bangkok's suburbs. It is important to consider the areas development to be according to the railway development as priority.

So in this study, the systems (urban planning, land use, and land ownership) related to the case with Japan's development of areas along railway and urban development in Thailand will be put in adjustment. Furthermore, the goal is to study the behavior of land use around the urban development along the railway and the travel behavior of area's residents to be a guideline of urban development possibilities.

This study aims to examine the ideal urban development method that focus on the railway development in the Bangkok's outskirt areas.

2. THE DEVELOPMENT OF AREAS ALONG RAILWAY IN JAPAN

Up to now, the railway has contributed to the development of the city by advancing the railway development with consideration of city planning by building roads according to railways in urban development along the railway.

(1) Arrangement of urban development along the railway

The development in suburbs uses the land readjustment project to execute large-scale urban infrastructure improvement in the areas along railway development. In this case, the railway development and housing development are done at the same time. This is done mainly by a lead of private Railway Company, the railway company funds the land readjustment project in order to go under the condition that they get the reserved land from the projects. The railway company then earns profits by developing the land or sells the land to private company to invest in businesses such as housing. The land readjustment project is financed by the revenue obtained by train fare revenue generated from stabilized population and real estate. Private railway Companies such as TOKYU Railway use this unique Japanese approach called "income internalization".

(2) Mechanism of areas along railway development in Japan

In Japan, Many of private railway companies such as JR are doing various businesses related to areas around the station and not only the railway business, such as a residential development, station complex development, and a feeder traffic business. These businesses widely affected the urban planning of area along railway by improving urban infrastructure of areas along railway. The land readjustment project is then being put to use.

3. INSTITUTIONS INVOLMENT IN URBAN DEVELOPMENT PLANNING IN THAILAND

(1) Decision process of urban development plan in Thailand

Thailand's National Economic Social Development Plan (NESDP) is settled on as five-year plan as

shown in **Fig.1**. This is the most significant plan to show the long-term vision of the nation. It corresponds to NESDP, and in all various plans of Thailand, infrastructure development plan is undertake by Office of Transport and Traffic Policy and Planning (OTP). The city planning is the responsibility of Department of Public works and town & country Planning (DPT). (DPT is responsible for the city planning of Bangkok metropolitan administration (BMA)).

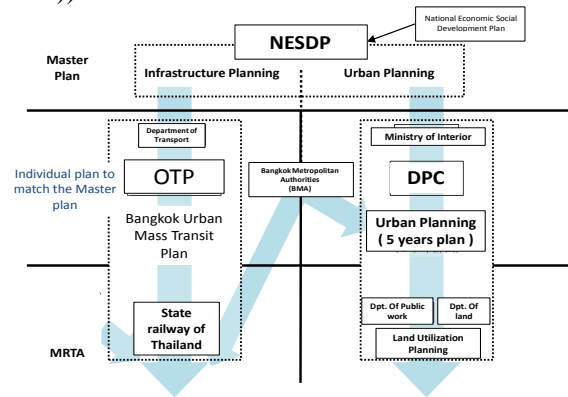


Fig.1 Flow chart of various plans in Thailand

(2) Various systems related to urban development of Thailand

a) Railway development plan of Bangkok

The maintenance plan of the city suburban railway was planned for Bangkok in 1994 by land motor commission office (OMCL) which is the predecessor organization of OTP. Figure 3 shows all seven routes of the suburban railway planned by OMCL, the BTS Green Line (BTS), MRT blue line (MRT), and SRT red line (SRT) are now completed and operating. Many of completed routes are operating in the Bangkok central area. Many suburban railways that connect to city outskirts have become the focus of this project and are expected to be opened in 2014 and later.

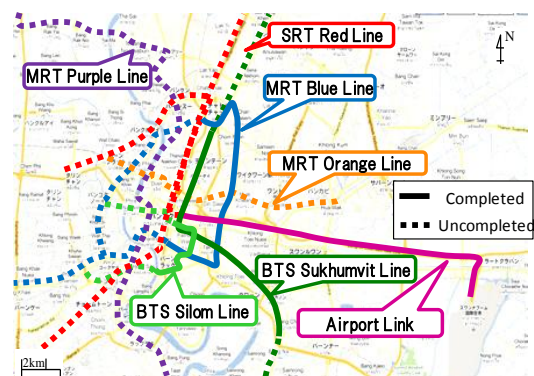


Fig.2 Route Map of Bangkok suburban rail network plan

b) The urban planning and zoning regulation of Thailand

An actual city planning of Bangkok is enacted by BMA in 1992, and the policy is announced that the sprawl of the city extension will be controlled by using building restrictions simultaneously with the regulation of land-use. However, in reality Thailand's urban planning law have no binding force such as Japan. The ministerial ordinance does not work because these zoning regulations and building regulations are very loosely regulated, regulations have become advantageous for developers and landowners.

c) The land use system of Thailand

In Thailand in year 2004, as an integral policy improvement of traffic conditions and land use, the readjustment of town lots law is enacted. Because regulations concerning the improvement of urban infrastructure of the land reallocation etc. do not exist in the urban planning and zoning Act of Thailand, the readjustment of town lots is the only method concerning improving urban infrastructure in Thailand.

(3) Problem concerning urban development plan in Thailand

From the country development planning process, there are lacks of consideration on how to integrate and combine each individual plan. For the urban planning of BMA, the aspect of land use was developed unparallel to the aspect of traffic planning, especially the railway development plan which was never been considered as a part of urban planning process. Unlike in Japan, urban planning of BMA didn't considered building density, zoning or floor and area ratio. Therefore, it is difficult to implement railway development plan into a part of Bangkok's traffic network. By the support from Japan, there is a collaboration plan focus on Traffic planning considering the land use. But to be able to put this plan in to use, this conformed plan has to be proven necessary for the development of Bangkok.

4. FIELD SURVEY

For this study, in order to analyze the problem occurring from railway development and to find issues or key factors that affect the development of railway development in BMA, the field survey is conducted.

(1) Survey objective

For this field survey, the survey will be conducted along the MRT purple line (scheduled to be complete in 2014) which connect Bangkok's inner city with

outer skirt Nonthaburi district. The survey locations are shown in **Fig.3**.

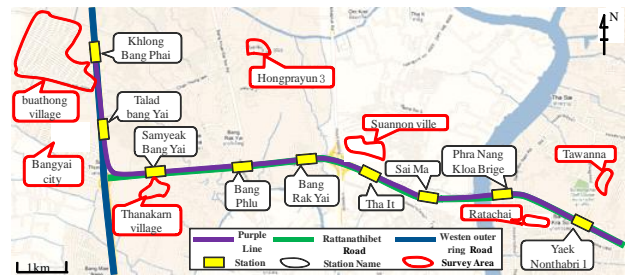


Fig.3 Locations of survey

(2) Methods of survey

4th-6th November 2010. The interview survey was conducted on 300 residents in 7 residential areas located along MRT Purple line, these residential areas are isolated from the main road.

In addition, GIS and satellite photos were used for the verification of the road situation and land use, for areas along MRT Purple line.

Table 1 Content of interview

Main Topic	Sub Topic
Purpose of using PL	1. Nearest Station (Transport Mode)
	2. Work Place (Transport Mode)
	3. Reason for residing around Purple line
Knowledge about Land Readjustment	-
Agreement to Land Readjustment Project	Supporting Reasons
Participate or No Participation	Reason

(3) Results of survey

a) Current state of urban infrastructure

As shown in **Fig.4**. From using land subdivision by permission from the authority, multiple land owners or housing project owner make road to give access to their land without the considering nearby areas. This resulted in unorganized road network of Sois (Soi is what Thais call a blind alley) where residents have to travel from their house to the main road in order to use public transport.



Fig.4 The current situation of areas along purple line

From **Table 2**, it can be seen that the land use around the development of the MRT Purple line, almost 70% of the area is undeveloped. So it can be assumed that the development of the MRT Purple line will not reach its full potential as expected if the residents around the area have difficulty accessing the station.

Table 2 Access roads of areas along MRT Purple line

Land Area Rate of Subdivision & Road (%)			Road Construction Rate (%)			Access Road (lines)		
Station sphere of influence (500m)	Station sphere of influence (1km)	Averages	Sub-division of dev. Area	Sub-division out of dev. Area	Averages	Direct connection to station	Station's sphere of influence	Averages
70.6	71.4	71	28.7	7.11	11.4	2.2	5.7	10.4

Shown in **Fig.5** is the travel behavior of residents of the area along MRT Purple line related to destination stations and transport modes used. Bike taxi and Bus are the most popular mode to go to MRT Purple line stations.

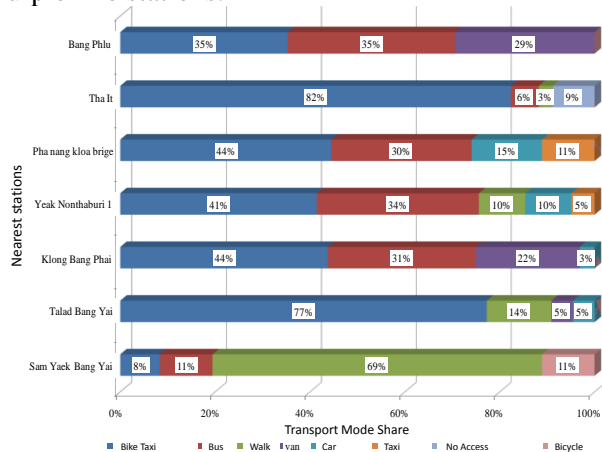


Fig.5 the travel behavior of residents of the area along MRT Purple line

b) Resident's attitude toward land readjustment project

Fig.6 shows the residents' opinion toward the development of MRT purple line. Around 40%-50% of the residents support and agree toward the development because they see it as a social improvement.

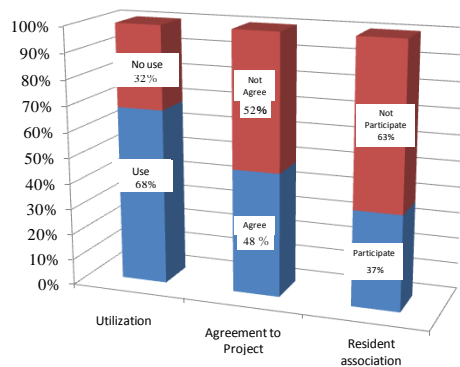


Fig.6 Result from interview survey

5. IDEAL URBAN DEVELOPMENT OF AREAS ALONG RAILWAY IN BANGKOK

From the study in previous chapters, the urban development of Bangkok needs to focus on the de-

velopment of railway as main consideration factor.

From the interview survey, Para-transit and bus become the preferred transportation mode to go the nearest station. The development of the station square becomes essential to provide space for these feeder transports. There is some distance between stations and residential areas and the roads that connected them cannot be use efficiently. Therefore, in terms of urban planning, it is necessary to improve the access to the stations and make use of station's surrounding areas for infrastructure improvements.

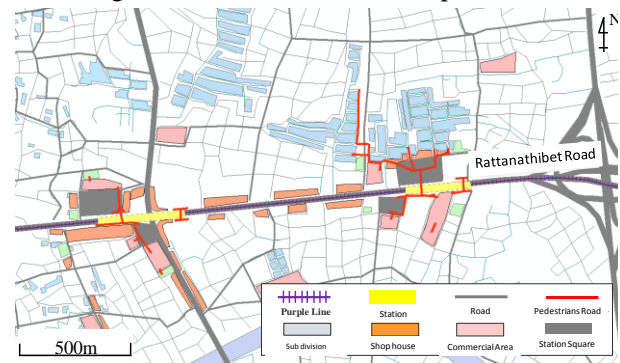


Fig.7 Land readjustment by GIS

Based on the contents stated above, in the same area as shown in Figure 5, the readjustment was conducted with GIS. The result is shown in **Fig.7**.

6. CONCLUSION

In this research, from studying the current urban development policy of BMA based on railway development plan as a guild line for urban development of areas long railway, it can be assumed that, most of residential areas are far from the stations and the access roads that residents are using to get to the stations are not being use efficiently. From the conducted survey, residents tend to use para-transits and bus to go to the stations. S the free space in front of the stations is essential to support these feeder transportations.

So in conclusion:

1) By investigating the residents' access to the stations, the free space to be use as pick-up and drop-off point is necessary.

2) Realized by this study, urban planning of BMA from now on should focus on finding an ideal regulation to deal with an unorganized and loosen land use method of private companies and private land developers while continue to focusing on railway development as the main consideration

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