

**Data Collection Survey on Urban Planning
and Transit Oriented Development
in Ho Chi Minh City and Hanoi**

Final Report

February 2022

Japan International Cooperation Agency (JICA)

**Exeldea Ltd.
ALMEC Corporation
Oriental Consultants Global Co., Ltd.
Nippon Koei Co., Ltd.
Tokyo Metro Co., Ltd.**

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Socialist Republic of Viet Nam

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The exchange rates applied in this study referred to the official rates announced by the Bank of Vietnam as of January 28, 2022 with the rates of 1 US dollar to 23,050 Vietnamese dong and to 115.2 Japanese yen.

FOREWORD

Data Collection Survey on Urban Planning and Transit Oriented Development (TOD) in Ho Chi Minh City and Hanoi funded by the Japan International Cooperation Agency (JICA) aims at the formulation of future cooperation projects in Ho Chi Minh City and Hanoi in the areas of urban planning and transit oriented development by identifying the problems and finding the solutions. The report consists of three parts; Part I deals with the issues and solutions of institutional aspects for urban planning and station area development; Part II summarizes the analysis of TOD issues and recommendations for urban planning and TOD in Ho Chi Minh City, and Part III summarizes those in Hanoi. Two sub-teams, one for each city, separately collected information and wrote the reports. The study started in November 2020 and was completed in February 2022.

**Data Collection Survey on Urban Planning and Transit
Oriented Development
in Ho Chi Minh City and Hanoi**

**Final Report
Part I TOD Institution**

PART I

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Abbreviations

B	BOLT	Build – Operate – Lease – Transfer
	BOOT	Build – Own - Operate - Transfer
	BOT	Build – Operate – Transfer
	BT	Build – Transfer
C	CBD	Central Business District
	CPI	consumer price index
D	DPI	Hanoi Department of Planning and Investment
	DPA	Hanoi Department of Planning and Architecture
E	EIA	Environmental Impact Assessment
F	FAR	Floor-to-area ratio
	FIRR	Financial Internal Return Rate
G	GDP	Gross Domestic Product
	GRDP	Gross Regional Domestic Product
H	HPC	Hanoi People's Committee
	HUPI	Hanoi Urban Planning Institute
J	JICA	Japan International Cooperation Agency
	JICA STUDY TEAM	JICA Study Team
L	LVC	Land Value Capture
M	METI	Ministry of Economy Trade and Industry of Japan
	MRB	Hanoi Metropolitan Railway Management Board
N	NBIA	Noi Bai International Airport
	NH	National Highway
P	PMU	Project Management Unit
	PPP	Public Private Partnership
R	ROW	Right of Way
	RR	Ring Road
S	SCR	Station control room
	SPC	Special Purpose Company
T	TOD	Transit Oriented Development
U	UMRT	Urban Mass Rapid Transit
V	VND	Vietnamese Dong

Part I TOD Institution

Summary

Challenges in TOD

In both cities, the advent of the commissioning of the first line of urban railways is now calling for the promotion of TOD to utilize large investments effectively. The main issues of TOD are twofold;

- 1) Modal shift to the use of public transportation with the urban railway as a trunk mode in urban transportation, and
- 2) The establishment of a land value capture (LVC) system to capture increases in land values created by the comparative commercial advantages of the location of station areas where a large number of passenger traffics are generated by mass transportation.

As for the first issue, there have been many plans and proposals for station squares, transfer facilities, access road maintenance, etc.; only a few have been translated into the actual implementation plans. The biggest bottleneck is the considerable land recovery required for public facility development, with the associated capital and negotiation efforts. As pointed out in the analysis in 2.5, if a local government is solely to implement such public investments, the land recovery will consume the majority of the project investment costs. As a strategy to solve the land recovery issue, the first option is the adoption of land readjustment and urban redevelopment schemes that do not require land recovery, and the second is PPP with real estate developers and landowners for high-density multiple land-uses of station areas.

The urban planning administration should reinforce the regulatory power of the current land use controls and building regulations to control the population density of each district to be accommodated by the current capacities and planned near-term capacities of the infrastructures. TOD zones should be overlaid to adjust their own density controls with a view to land value capture. The current urban master plans and urban transportation master plans had not incorporated the TOD method, including strategic positioning of work and residential locations at the time when they were created. It is essential to review the plan to achieve full integration of land use and transport plans by establishing tight linkages between residential and business locations.

The second issue of LVC requires the local stakeholders to overcome multiple challenges before the realization. Many cities around the world depend on property taxes as the primary municipal revenue source. The property tax provides a sustainable source of local government revenue by collecting thinly and continuously from numerous asset holders. The property tax also encourages efficient economic use of land with its correspondence to land values. In Vietnam, the property tax is limited to a minuscule level of land tax. Since an introduction of a new tax belongs to the authority of the central government and not to that of the local government, it is recommended to investigate a special fee system, spatially constricted to the TOD areas, to charge for increased benefits arising from improvements in mobility-related infrastructures. However, in the long run, it is highly recommended to establish a full property tax or city planning tax system. The land readjustment scheme recommended provides a framework mentioned above makes it possible to transfer the increase in land

prices due to public investment to the public side in the form of land reduction of landowners, but this system has not been realized in Vietnam either. Other means include the introduction of an additional floor-to-area ratio auction system to achieve higher-density space utilization and tax revenue improvement in the TOD area and revenue sharing in the construction of a complex facility directly connected to the station with the private sector by PPP.

At present, the development policy of the Vietnamese government has leaned toward PPP with regard to TOD. The proposed options using PPP to realize land value capture in TOD are as follows:

Public-Private Partnership

There are three possible ways to develop the station and its surrounding area through the use of PPP.

- i. Construction and operation of the entire station building by private investment;
- ii. Provision of an access corridor from the building around the station to the station premises; through private investment
- iii. Construction and operation of intermodal transfer facilities by the feeder transit operator; and
- iv. Auction of development rights of publicly assembled land near stations.

The fourth option of ‘development right auction’ requires the leadership of the public side to generate public land lots with the adoption of land readjustment schemes for the auctioning.

JICA Cooperation Possibilities

There are two possibilities in ODA loans; first, a policy loan to be executed according to the policy-action matrix; second, a sector loan aiming at the improvements of station access, intermodal transfer, and passenger volume enhancement by developing public facilities such as access roads, grade separation, artificial pedestrian decks, station squares, intermodal transfer facilities, parks. There are two possibilities for technical cooperation; 1) Institutional Development for TOD: capacity development for land assembly and land value capture; 2) Revision Assistance of TOD-oriented Urban Plans. The introduction of property tax, proposed as the fundamental reform issue in land value capture in this study, needs to follow up on the possibility of technical cooperation with the Ministry of Finance.

JICA Study Team proposes a program loan that is based on the adoption of some policy reforms recommended in this study. At the same time, the Decree 114/2021/ND-CP, “On Management and Use of Official Development Assistance (ODA) and Concessional Loans Provided by Foreign Donors,” Article 9 stipulates the requirement of approval by the prime minister for the policy related loan. This new decree may inhibit the program loan to be executed by the ministerial level. The promotion of the program loan requires future research for the adoption of a program loan at the ministerial level.

1. Study Framework

1.1. Outline

Part I focuses on the institutional issues and solutions for urban planning and station area development as part of Data Collection Survey on Urban Planning and Transit Oriented Development (TOD) in Ho Chi Minh City and Hanoi funded by the Japan International Cooperation Agency (JICA)

In this Part I, following this outline chapter, the second chapter analyzes the institutional issues of urban and transit oriented development (TOD), including the planning system, public finance, Overseas Development Assistance (ODA) borrowing constraints, land value capture (LVC), and land assembly. Chapter 3 focuses on the issues of land value capture (LVC). Finally, Chapter 4 discusses the action plan to solve the issues and the direction of JICA's support measures.

1.2. Issues of TOD

In both cities, the advent of the commissioning of the first line of urban railways is now calling for the promotion of TOD to utilize large investments effectively. The main issues of TOD are twofold;

- 1) Modal shift to the use of public transportation with the urban railway as a trunk mode in urban transportation, and
- 2) The establishment of a land value capture (LVC) system to capture increases in land values created by the comparative commercial advantages of the location of station areas where a large number of passenger traffics are generated by mass transportation.

1.3. Study Sector and Corresponding Organizations

The areas covered by this survey are diverse, including planning, law, finance, and land, so many organizations are involved. The organizations that serve as contact points for each field are shown below.

Table 1-1 Sector of Study and Corresponding Organizations

Sector	Organization	Abbreviation	Duties
Overall Urban Administration	Ho Chi Minh People's Committee Hanoi People's Committee	HCMCPC/ HPC	Overall planning and public financial management
Overall planning management	Department of Planning and Investment	DPI	Responsible for plan management and coordination across departments (contact point for this survey)
Urban Planning/architecture	Department of Planning and Architecture	DPA	Formulation of city master plan (general construction plan), land use regulation, and building permission
Urban Transportation	Department of Transport	DOT	Planning and management of roads and public transportation as well as transport master plan

Sector	Organization	Abbrevia- tion	Duties
Urban Railway	Management Authority for Urban Railways of Ho Chi Minh City Metropolitan Railway Management Board of Hanoi	MAUR MRB	Planning/construction of urban railway systems
Municipal Finance	Department of Finance	DOF	Management entity. Confirmed intentions regarding the needs and possibilities of projecting public transportation improvement projects and transportation-related facility development, including bus improvement and MaaS studies.
Investment promotion	Department of Planning and Investment Ministry of Planning and Investment	DPI MPI	Private investment license and ODA loan application
Land Registry and Prices	Department of Natural Resources and Environment	DONRE	Land management, including publicly announced land value assessment.
Tax	Ministry of Finance	MOF	National finance in general and new tax system

Source: JICA Study Team

2. Urban Development System

2.1. Urban Planning

1) Urban Planning System

Vietnam's urban planning system consists of three-tiered plans: a general construction plan, zoning plan, and detail plan, as stipulated by the Law on Urban Planning.¹

The legal basis for urban planning is as follows:

- Law on Urban Planning 2009 (LAW ON URBAN PLANNING(No. 30/2009/QH12))
- Decree 37/2010/ND-CP on formulation, appraisal, approval, and management of urban planning and its revisions
- Circular 09/2015/TT-BTNMT, which provides technical and economic norms for formulation and adjustment of land use planning and plan
- Circular 29/2014/TT-BTNMT: Decision Issuing The Regulations On General Urban Planning And Architecture Management Of Ho Chi Minh City
- No. 70/2014 / QD-UBND: Decision Issuing The Regulation On Management Planning, Architecture Ha Noi

The law mainly requires the development of the following three layers of planning: The formulators, contents, and management. The outline of each plan is as follows:

¹ The legal system of Vietnam has three layers as shown in this figure with the law enacted in the National Assembly, Decrees issued by the executive branch of the government and circulars issued by ministries. Most of the technical standards are defined by circulars.

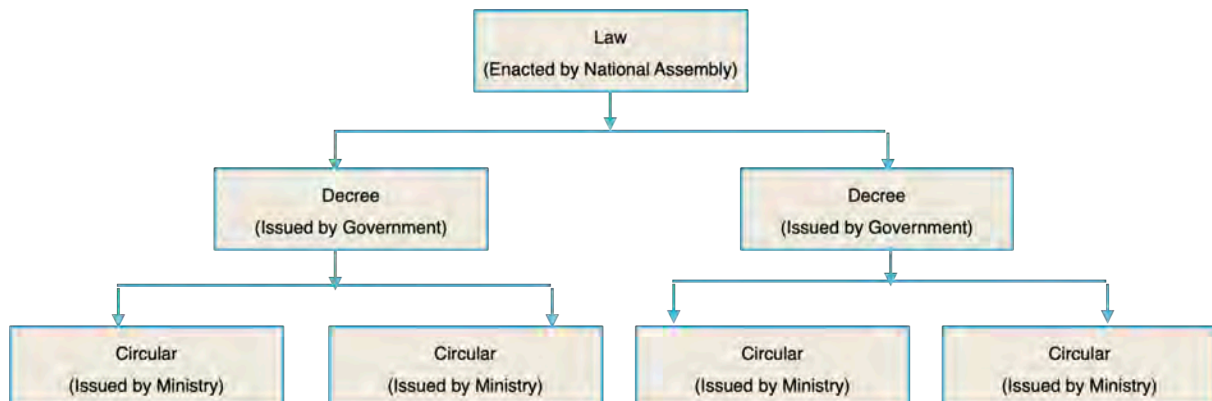


Table 2-1 The Outline Of Three Layers Of Planning

	General Construction Plan	Zoning Plan	Detail Plan
Planning Body	People's Committee of Cities	People's Committee of Cities	Large-scale investors/developers
Authorization Body	Prime Minister	People's Committee of Cities	People's Committee of Cities
Scale	1/25000-1/50000	1/2000-1/5000	1/500
Planning Scope	Population size Urbanizing area Development direction and axis Facility Plan by Economic and Social Activity Parks Basic infrastructure facilities Major Investment Plan Environmental Assessment	- District Land Use Plan - District Population - District infrastructure network - Social Infrastructure - Strategic Environmental Assessment	- Area land use plan - Area population - Area architecture - Social infrastructures - Public facilities - Strategic Environmental Assessment

Source: Law on Urban Planning 2009

Table 2-2 Adoption of Urban Plans in HCMC and Hanoi

	HCMC	Hanoi
General construction plan	- Established in 1993 - Legal approval: Decision 24 / QD-TTG 2010 approving the adjustment of general planning of Ho Chi Minh City construction until 2025	- Established in 2011 - Legal approval: Decision 1259 / QD-TTG 2011 approving the master plan on Hanoi capital construction up to 2030 with a vision to 2050
Zoning Plan	CBD areas adopted in 2013	Adopted gradually between 2013-2021
Detailed district plan	Submitted by investors.	Submitted by investors.

Source: JICA STUDY TEAM interviews

The approval process of urban plans is time-consuming in some urbanized areas. In the case of the four inner-city districts, i.e., Hoan Kiem, Ba Dinh, Dong Da, and Hai Ba Trung of Hanoi, it was March 2021 to announce the zoning plans.

2) Effectiveness of Land Use Controls and Building Regulations

In large cities in Vietnam, master plans set the boundaries for development uses and zoning plans assigns the building regulations, including building densities, in each district in terms of land use controls. The investor submits the detail plan for the investment for which the authority examines the compliance to the upper-level plans and decides on the issuance of approval.

Despite the strict rule for the compliance within the planning framework and the approval procedure, the building regulations in Vietnam fall short in effective development control. The current regulations warrant a high degree of freedom to the developer to construct high density buildings as exhibited in Part III, Hanoi. One of the fundamental purposes of land use controls is to maintain harmony with the surrounding environment and to control excessive demands including traffic generations on the existing infrastructures. A city-wide land use plans and controls should be adjusted to restrain private vehicle traffic generations. At the same time, lax land use/building regulations deprives the

city government of negotiation power for land value capture from the investor.² The city-wide land use control mechanism should be reviewed from an effectiveness point of view.

3) Revision of Urban Plans

Article 46 of the Law on Urban Planning stipulates that the plans should be updated every five years for general construction plans and zoning plans and every three years for detailed district plans.³ However, in the case of Hanoi, the plan has not been updated since its enactment in 2011. In HCMC, the General Construction Plan was updated at about 10-year intervals according to the following decisions.

- Decision 24/2010/QĐ-TTg approving the adjustment of the general planning of Ho Chi Minh City construction up to 2025
- Decision 430/2020/QĐ-TTg approving the partial adjustment of the general planning of Ho Chi Minh City construction up to 2025

One of the reasons behind the delayed revisions of master plans despite the legal requirement is the extraordinary efforts required for the planning approval process. Therefore, planning reviews at this frequency are perceived as administratively impractical, at least in HCMC and Hanoi.

At the same time, given the fact that Vietnam is a rapidly developing economy with rapid urbanization, there are urgent needs to adapt urban plans to the changing realities of urban agglomeration to promote and regulate development by reviewing urban plans at a shorter interval. As a pragmatic solution, it is necessary to develop a partial revision mechanism to modify key planning parameters, tables, and maps, including development areas and population/employment distributions, while retaining the general framework such as urban vision.

4) Establishment of a New Upper-level Plan: Provincial Plan

In 2017, Law on Planning was enacted. The Law on Urban Planning will continue to be responsible for city-level planning, but it will need to be consistent with the new upper-level plans. In terms of urban planning, the most relevant plans to comply with are 1) national land use plan, 2) regional plan, and 3) provincial plan. 1) and 2) are planned by the central government, while 3) are planned at a provincial level.

In the case of Hanoi and HCMC, the most comprehensive plan at the city level will be the Provincial Plan. The law requires that the Urban Master Plan, Urban Transport Master Plan, and other sector plans already in place be included and integrated into the Provincial Plan. Both cities are in the process of revising the city master plan as the first stage of the Provincial Plan.

² As later explained, land value capture is implemented by negotiating on the contribution by the investor in exchange for the relaxation of building density restriction.

³ In the law, the article reads " General planning and zoning planning shall be reviewed once every five years and detailed planning once every 3 years, counting from the date they are approved.."

5) Legal Framework for TOD

The review of the legal foundation for the incorporation of TOD in urban plans are as follows:

The urban transportation master plan of Hanoi City, the "Decision 519/QĐ-TTg/2016 On Approval For Transportation Planning Of Hanoi Capital By 2030, With A Vision To 2050", defines the concept of TOD in Section 6 "Public Passenger Transportation" as follows;

"c) connecting in sync the types of public passenger transportation at stations in combination with residential development planning, central urban commerce, and services with the stations on urban railway routes (TOD)."

In HCMC, the urban transport master plan of HCMC, the "Decision 568/QĐ-TTg /2013 Approving The Adjustment Of Transportation Development Planning Of Ho Chi Minh City By 2020 with a Vision After 2020", has no clause mentioning issues related to development around urban railway stations. However, on January 13, 2021, the Department of Transportation and the Department of Architecture and Planning of HCMC signed an agreement to jointly carry out urban development planning in line with the development of public transportation (according to various newspapers reports).

Article 70, Paragraph 1 of the Railway Act, which provides legal foundations for urban railways, has been amended by "LAW 35/2018/QH14 On Amendments To Some Articles Of 37 Laws Concerning On Planning." The revised article stipulates as follows:

'Development of urban railways must be conformable to the regional planning, provincial planning, and urban planning, and facilitate urban development.'

The Railway Act complies with the Urban Planning Act. This should be interpreted that the urban planning laws and the urban railway law have made it mandatory for the agencies concerned to carry out TOD-based coordination with urban railways and urban planning in a broad manner.

Despite the opinion that the TOD lacks the governing law, the above facts support the legal foundations required for the promotion and implementation of TOD.

6) Revision of Master Plan and Zoning Plan

The current general construction plans or urban transport master plans have not fully incorporated TOD planning methods yet. Consequently, the plans are not designed to generate synergy between land use and public transportation planning. As these plans tend to become overdue for legally required revisions, a technical cooperation program for the incorporation of TOD planning methods should have a long-standing impact on the expansion of public transportation.

In particular, urban public transport will only be considered as an important transport mode option for citizens when the network has a certain level of coverage over a wide area. In both HCMC and Hanoi, the first section of the urban railways will soon be operational. When only the first section is operated, traffic demand may not grow as planned. The effectiveness of the urban railways will depend on the scope of connectivity to major destinations of the city. Therefore, prioritization of the first few lines is crucial in building sufficient momentum for the development of urban railway network expansion.

7) Detail Plan Approval

The detailed plans within TOD areas, if the development is of a large scale, would be developed by the investor and approved after verifying its consistency with the higher-level plans such as the zoning plan or master plan. Zoning plans often mandate a very comprehensive redesign of districts with large-scale road widening. However, there is no definite timeline, and it is not clear when land-use regulations such as density regulations come into effect. It is questionable whether a high-density development plan could be approved over the current street networks.

While it is possible to change the higher-level plan due to the need arising from the detailed plan, such a change would be quite difficult and time-consuming. If a reform of the planning system to make it capable of revising and adjusting both detailed plans and the corresponding zoning plan simultaneously and comprehensively could contribute to the rapid implementation of TOD.

8) Issues Related to Urban Planning

The issues in urban planning from the perspective of TOD promotion can be summarized in the following four categories.

- Lack of spatial planning of employment areas in master plans
- Lack of district planning standards that incorporate TOD in zoning plans
- Inter-plan consistency requirements and adjustment of higher-level plans
- The processing time required for plan development and revision

Above mentioned four points are explained more in detail as below:

Master plan level: spatial planning of employment areas:

In terms of TOD, one of the most important elements in TOD is missing in the urban plans of Hanoi and HCMC. It is the lack of spatial distribution of the working population (this point is analyzed in detail in Part II Hanoi: 1.3). The current urban plans deal with the spatial allocation of the residential population, at least at the district level but no job distributions. Lack of spatial employment distribution planning deprives the development of transport plans based on scientific and accurate demand forecasts. Among transportation systems, the urban railway system specializes in passenger transportation, making it difficult to plan without specifying the starting point (place of residence) and destination (place of work) of commuting.

Currently, the central business districts (CBD) in both HCMC and Hanoi are concentrated in the old parts of the city. Hanoi's general construction plan does not identify any clear development targets for future employment areas. In HCMC, the concept of a development corridor exists, but there is a need for specific numerical targets for population and employment by the area. Urban planners should be aware that improving overall accessibility to work should be one of the major goals in enhancing the efficiency of the urban economy of the megalopolis that urban planning can design.

Zoning Plan Level: District planning standards specific to TOD

The current detailed district plans of Hanoi and HCMC do not clearly specify the requirements for TOD in the station areas. Thus the approval of the detailed district plan is done in terms of consistency to the upper-level plans. This also means that there are no clear evaluation criteria for the selection of investors, which is a factor that delays the planning and implementation of projects.

Clear approval and evaluation criteria will also reduce the amount of backtracking and speed up the project implementation process for investors. This will ultimately reduce pre-investment costs, which is expected to improve financial performance.

Table 2-3 Planning Requirements In TOD Areas

Requirements		I. Criteria
TOD requirements	Traffic requirements	- Contribution to the shift in public transport demand due to the increase in the living and working population - Pedestrian access environment to the station - Effects of traffic congestion due to traffic stop in front of the station - Securing transfer parking and bicycle parking capacity
	Economic requirements	- Investment profitability - Regional economic spillover effect
	Socio-environmental requirements	- Minimization of negative social and environmental impacts
	Land value capture requirements	- Recovery of public infrastructure investments - Fiscal revenue enhancements
District planning general requirements	Urban infrastructure load	- An increase in vehicle/motorcycle traffic does not exceed the capacity of access roads - Parking and bicycle parking for residents and workers are secured.
	Social infrastructure load	- Do not exceed the capacity of educational or medical capacities - Meet the living needs of new residents (shopping, etc.).
	Other general requirements	- Consideration for the landscape - Harmony with the surrounding environment, etc.

Source: JICA Study Team

Inter-plan consistency requirements and upper-level planning changes

Currently, there are three layers of urban planning in cities, and there are other sector-by-sector plans such as the transportation master plan. Inevitably, these plans need consistency between themselves. In addition, in order to comply with the Law on Planning of 2017, it must ensure consistency with land use plans of higher levels national and regional areas.

Detailed plans form the lowest level of the urban planning hierarchy. The investors are required to formulate detailed plans for the verification of its consistency with the zoning plan, which is a high-level plan. In order to promote TOD, high-density development at a level close to the upper limit of infrastructure capacity assumed by the zoning plan is desirable, but if the setting of the upper plan zoning plan is too low, it will need to be changed. In general, any revision of the higher-level plan to accommodate the lower-level plan is a substantive challenge. A subordinate plan is likely to be taken as tipping, but if you are determined to promote TOD, you will need to be flexible in responding to these bottom-up changes.

The following options exist when changing the parenting plan:

- i. Review the population distribution of the target zones in the upper-level plan and balance the total district population by offsetting the increase in the target detailed plan population with the decrease in other districts.
- ii. Evaluate the infrastructure capacity of the district and add population allocations up to its capacity limit.

- iii. For population allocations that exceed the district's infrastructure capacity, recommend infrastructure capacity expansion and concurrently revise the upper plan.

It is highly likely that changes to the zoning plan for a TOD detail plan will not even be recommended, even if they are originally desired changes, due to avoid complexity and administrative costs. In order to avoid this problem, it is necessary to consider designating the TOD district as a special designation at the time of the revision of the general construction plan and establishing land use and building standards that apply only to TOD districts so that uniform revisions can be made to all related zoning plans at once. Another option is to designate a TOD district as a special district at the level of zoning plans under the authority of the People's Committees of Hanoi and Railway without amending the general construction plans and the urban transport master plans. This is possible under the current system legally. This issue should be the subject of future discussions between the JICA Study Team and the two cities.

Strategy to Incorporate TOD Plans Into Existing Planning System

As an administrative culture, Vietnam generally conducts careful confirmation work, such as informing related organizations and confirming social responses; thus, it takes a long time to formulate a plan. For instance, H1 and H2 districts of existing urban areas along Hanoi City's UMRT Line 2 officially adopted their zoning plans in early 2021, which will also be considered in Part III. It took ten years since the master plan was formulated. Changing land-use regulations in zoning plans is likely to require even more time than was required to formulate new ones.

It has been 50 years since the modern legal framework for city planning was established. The current land use plans in Japan are mostly based on the plans established around 1970. During the 1990s, there was a common recognition of the need for urban renewal as a way to overcome economic stagnation. However, it was politically very difficult to change the land use regulations once they were established. The fundamental reason for this was that many local governments found it difficult to justify changes in urban planning and judged that it would be politically risky. To solve this impasse, the Japanese government has experience in creating a legal framework for regulatory review through a nationwide net called the Urban revitalization Special Measures Law (2.2.)

The system of organized hierarchy of urban planning and the tight consistency between plans in HCMC and Hanoi shows a high level of integrity of the planning system. At the same time, such a high level of integrity in the planning system presents a major hurdle in the adoption of local specialization in planning approaches such as TOD. Since the command area of TOD does not extend beyond the radius of 500 to 1000 meters but at the same time, TOD areas will exist in a number of zoning plans along the corridor of the urban railway. The fitting of small but uniquely planned areas into many zoning plans is not implementable due to the size of sheer administrative costs involved. The only solution may be to adopt city-wide TOD plans as another layer of the planning system as adopted in Japan for urban renewal.

2.2. Designation of TOD Special Districts

As urban development in Vietnam is carried out in accordance with laws and regulations, regulatory power exercised over development activities is quite substantial. It also increases the risk of losing the profitability of the urban development project by stalling and delaying the implementation time. It is very difficult to remove these regulatory restrictions once adopted, such as zoning plans, even though modification is needed to promote TOD. A possible solution is to designate a geographically

limited area around the stations as a special district, which removes the regulatory framework. A reference example of this is the "Urban revitalization Special Measures Law" of Japan, as described below.

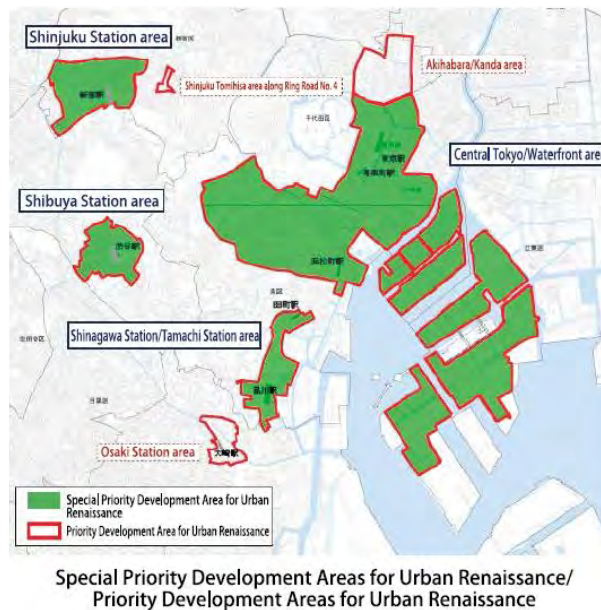
Law of Special Measures for Urban revitalization in Japan

The Japanese "New City Planning Law" enacted in 1968 mandates the integrated development of city plans, including the geographical division of cities into "urbanization areas" and "urbanization control areas" to promote and control development. The city plan is required of setting land-use plan with thirteen categories of land uses and associated building regulations in urbanization areas, and capital development plans such as roads, parks, and land readjustment schemes for the formation of urban districts. A series of revisions of the law added complexity in regulations with additional plans such as master plans and district plans. Japan's economic downturn in the 1990s demanded major reforms in the field of urban planning, and the Law on Special Measures for Urban Revitalization was introduced in 2002 to meet the new policy goals of revitalizing urban vitality and improving the international competitiveness of major cities.

This law has two major characteristics. First, in large cities with their dynamic changes, it is possible to designate special urban revitalization areas and review existing land use regulations in each region on a zero basis. Second, within the special urban revitalization areas, the law introduced a proposal system that promotes not only the proposals for development projects but also proposals for the review of land use regulations themselves at the suggestion of private businesses. The local governments are now mandated to complete the review of the proposed modifications within six months. The regulations subject to review are as follows.

- Land use designations (only when special exceptions to the land use regulations are required)
- Maximum and minimum floor-to-area ratio limits (400% or more)
- Maximum building-to-land ratio
- Minimum limit of building area
- Maximum height limit
- Setbacks

The Special Urban Revitalization Districts in the central and sub-central areas of Tokyo designated in Tokyo according to this law are indicated in the map of Figure 2-1.



Note: The areas designated as Urban Revitalization Areas were basically the urban railway station hubs of the old city center of Ootemachi and Ginza, sub-centers of Shinagawa, Shibuya, Shinjuku, and Ikebukuro, and the newly developed Tokyo Water Front City

Source: Ministry of Land Infrastructure Transport and Tourism

Figure 2-1 Urban Revitalization Areas of Tokyo

2.3. Transportation Planning (Urban Railways)

As the transportation plans of both cities, the following transportation master plans have been adopted as the Prime Minister's decision.

- Ho Chi Minh City: Prime Minister's decision No. 568 / QĐ-TTg dated April 8, 2013
- Hanoi City: Prime Minister's decision No. 519 / QĐ-TTg dated March 31, 2016

Plans in the transportation sector incorporate traffic demand forecasts derived from quantitative simulation models based on traffic trip data to determine future traffic networks. In creating this, the most commonly used method (four-step method: a standard method technically established in recent transport planning) is employed based on the demand forecast for each transportation system.

The review of the plans from a TOD approach points to some revisions. The resident population and working population for each district should be given as preconditions for demand forecast. Since master plans do not provide clear data, transport planners were forced to infer the future population and employment data from land uses, giving large freedom for arbitrary manipulations to the modeler of traffic demand forecast.

Given an overdue revision of master plans, the simultaneous revisions of urban and transport plans should be undertaken to promote high-density land uses in TOD areas and to revise at least the public transport sector of transport master plans.

In general, developers follow the principle of maximizing profits by pursuing high-density development. Within the framework of TOD, the public sector also pursues high-density development to generate more passenger traffics for public transit, thereby showing the common goal of high-density development. However, high-density developments possess the risks of imposing excessive loads on

other infrastructure capacities. The excessive burden on the road network could lead to traffic congestion.⁴ Therefore, the traffic impact of each district plan needs to be verified. Such local traffic impact assessment cannot be handled by a city-level traffic model using an OD matrix. Local traffic generation forecast on a district plan level needs to be performed with modal shares between the urban railway and other means of transportation. The US and Japan have manuals for quick forecasting with the application of traffic generation parameters according to land use and city scale.⁵ In Vietnam, there are no regular traffic volume surveys conducted, and there is no source for planning parameters. Traffic generation can only be estimated by empirical rules. In order to objectively evaluate large-scale development and implement infrastructure measures, it is also important to develop such planning tools.

Another possibility is to revise the urban master plan and the transportation master plan at the same time. In such a case, at least the revision should pursue high-density developments in TOD areas together with the revision of public transit plans simultaneously.

2.4. Promotion of Public Transit

One of the most serious environmental problems facing Vietnam's largest cities is air pollution caused by traffic congestion and vehicle exhaust gas emissions. The development of public transport systems has become an urgent issue. It is also necessary to promote coordination between public transport modes, including urban railways and city buses, as well as shared mobility, which has developed rapidly in recent years.

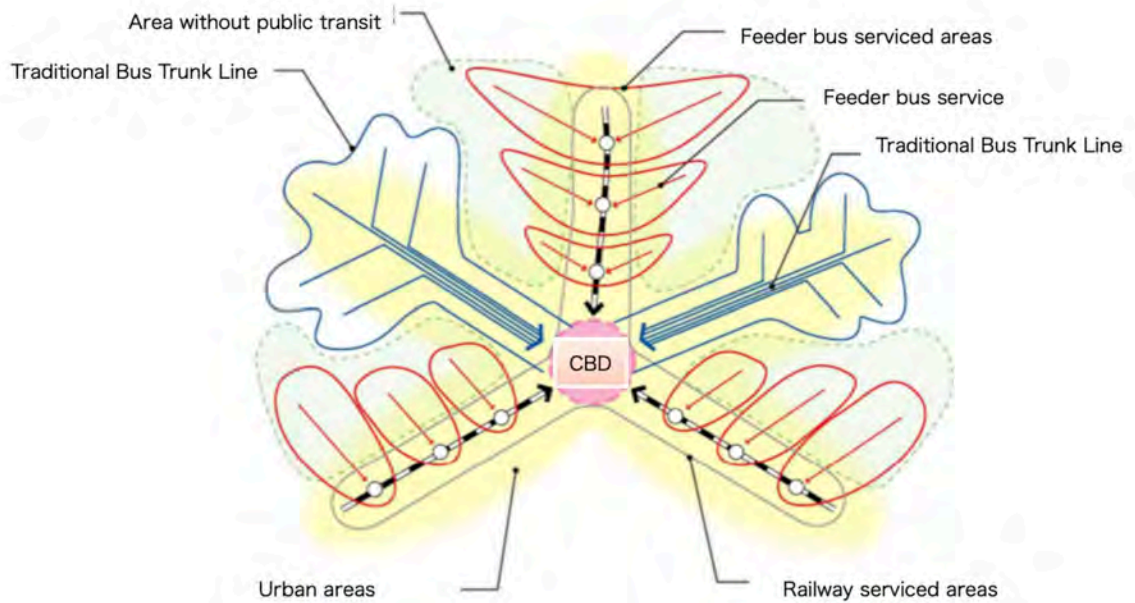
1) Coordination Of Urban Railways And City Buses

The effective combination of the advantages of urban railway and bus, i.e., the mass transit capacity of urban railways and the flexibility of urban bus operation routes, will improve the mobility of the public transport sector, thereby promoting a drastic modal shift from private vehicles.

A general coordination format may be the division of roles with railways serving trunk routes and urban buses serving feeders, as shown in the case of Toyama (Figure 2-2). In the future, the connectivity should be extended to shared mobility.

⁴ Excessive burden on social infrastructures needs to be examined carefully. In particular the capacities of primary schools which should be located in short distances need to be examined.

⁵ In the US, there is "Trip Generation Manual" by ITE. In Japan MLIT publishes "Transportation Planning Manual for Large Scale Development."



Source: the City of Toyama, "Comprehensive Transport Strategy," 2013

Figure 2-2 Concept of Urban Railway Trunk Line and Bus Feeder Lines

2) Collaboration with Shared Mobility

In Vietnam, there has already been remarkable progress in private shared mobility services such as Grab⁶, and there are also moves to introduce on-demand buses. The future development of shared mobility is expected to contribute to the urban environment and improve traffic efficiency in terms of reducing the absolute number of cars on the road.

The typical design of a station in front of a station in Japan today has a certain number of parking spaces provided for taxis and buses in addition to cab and bus berths. The progress of MaaS will lead to further synchronization of multimodal transport connectivity. Intermodal transfer time will be shortened, the size of the waiting passenger population will be reduced, and vehicle parking demand will be reduced. By taking advantage of technological progress, reviewing the traditional design standards for the station square, parking lot, and modal transfer facilities will be necessary.

In order to promote the linkage between shared mobility and public transportation, the development of digital infrastructures will be needed, initially to provide services such as route search and in the second stage for digital payments through smartphones and other devices. The movement to establish such a digital platform has already begun in Vietnam, and there should be public intervention for the development of the digital platform and coordination for the unification of information standards and the development of fare payment systems utilizing smartphones for public transportation.

⁶ A shared ride service offered in the Southeast Asia.

3) Realization of a Walkable City

In pursuit of environmentally friendly and SDG-oriented cities, one of the initiatives in developed countries is to transform cities to encourage walking and bicycling. The reality in Vietnamese cities is still at the stage of developing roads to cope with ever-increasing motorization. As a consequence, pedestrian space is deteriorating due to the encroachment by the parking of motorcycles into the pedestrian space. The realization of the necessity of walking for the last mile to and from public transport-based trips, the prioritization of pedestrians of urban design policy is required for the promotion of public transport.

2.5. Close Linkage Between Urban Development and Urban Transportation

In order to realize close linkages between TOD-oriented urban development and public transportation, effective coordination is necessary for the implementation as well as the planning stage.

1) Review of Transportation Planning and Urban Planning

The transportation plan is a legal plan stipulated in planning law (No. 21/2017/QH14 dated 24/11/2017) and, like the general construction plan, requires a prime minister's decision. Regarding the relationship between urban planning and transportation planning, a common understanding is the city master plan supersedes the transportation master plan by providing a basic framework of the city. However, in cities that continue to expand and grow, there is a dynamic reversal in which new land is formed by the construction of new lines of urban railways and roads. The development cycle may occur in which transport is the main driver of change in urban development in reality. Therefore, in the master plan, it is desirable to have a development strategy that presupposes not only the future image of the transportation axis but also the urban formation process. An iteration of future land use plan options and traffic load evaluation may be repeated to optimize both the transport and land use plans. The iterated optimization process will lead to an integration of transportation and land use plans.

Taking the legal requirement into account of both master plans and the administrative costs required for the approval procedure, simultaneous revision of both master plans is the only solution for achieving integration.

2) Measuring Effectiveness and Providing Feedback To The Plan

For the promotion of TOD to coordinate urban development and urban transportation, the measurement of performances is vital. In urban transportation, traffic surveys on major roads are conducted on an annual basis, and person trip interview surveys in a decadal interval may be conducted in developed countries. Vietnam has not established such regular traffic surveys. In urban planning, data analysis of the distribution of the working population is lacking. Hanoi city statistics show that in 2016 there was a survey of the working population by the district. However, the geographical divisions are a bit too large to be converted into origin-destination matrices for transportation planning. Employment data in finer districts is vital to assess mobility access to jobs as the foundation of

TOD planning. Scientific measurements will enable the calculation of indicators for land use regulations, such as measuring the correlation between land use, land areas, floor areas in relation to traffic generations.

Beyond traditional surveys, an innovative approach to traffic estimation should be explored, such as the utilization of personal trip data from location tracking by GPS through car navigation systems and smartphones accumulated as big data.

3) Urban Planning for Enhancing Mobility

Enhancing the convenience of intermodal transfer among transportation modes is critical for the promotion of public transport. The traditional approach to the solution is to build a station square to provide parking for cars and pedestrian space. Securing the public space necessitates land recovery, which poses high financial and administrative costs. Figure 2-3 shows the cost estimation results of station square development projects, including land recovery costs at a typical inner-city location in Hanoi (C4-C6 station of urban railway line 2) with typical facility specifications. In the examination, the following three cases were assumed.

Case 1: A simple station plaza with an improvement of accesses such as widening the road to the station

Case 2: In addition to Case 1, the construction of a skywalk for pedestrians

Case 3: In addition to Case 2, underground pedestrian accesses, automobile parking, and bicycle parking

This cost estimation revealed the cost issues as follows;

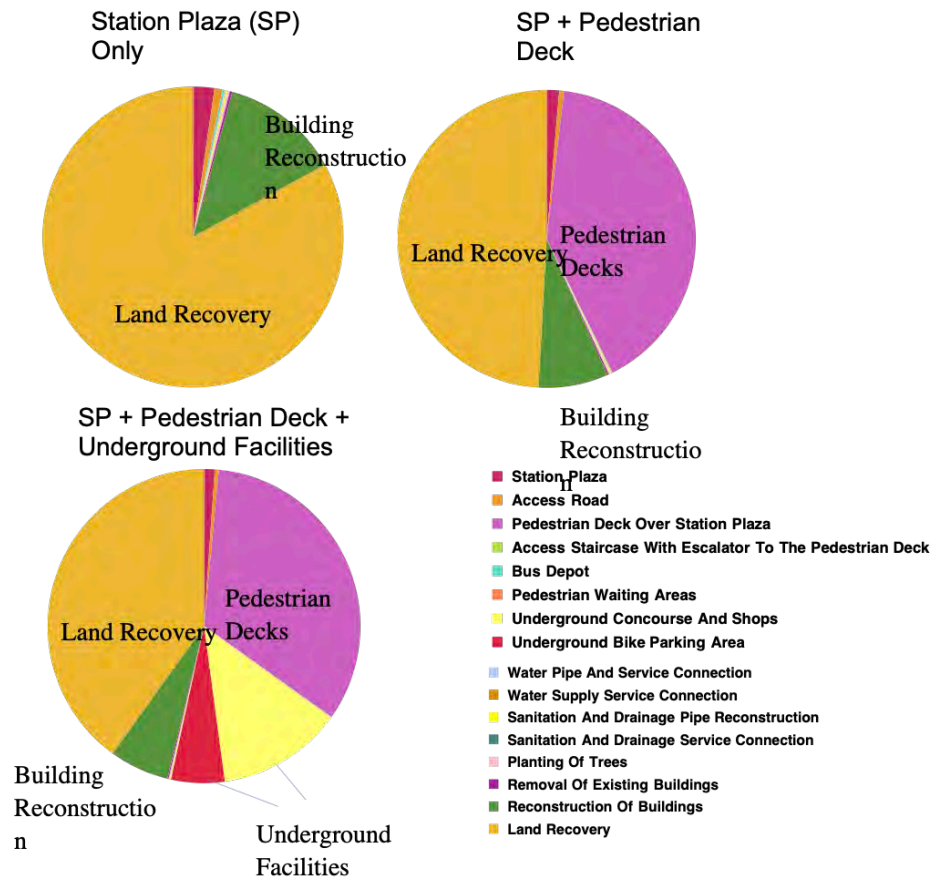
Case 1: Land recovery cost and removal/reconstruction of existing buildings constitute more than 90% of the project cost. Case 2: Land recovery cost and removal/reconstruction of existing buildings constitute 60% for the development of artificial ground and sidewalks for pedestrians, and Case 3: Land recovery cost and removal/reconstruction of existing buildings constitute close to 50% of the total project costs. It is evident that this ratio will increase further if the development site is selected in a more central location of the city. The high compensation cost ratio in urban development projects proves the difficulty of establishing economic rationale without detailed financial analysis.

On the other hand, an increase in public transport passengers due to improved transfer convenience will significantly improve the commercial value of the area around the station. Such financial benefits will only be available exclusively to landowners in the station areas.

There are two possible solutions to the financial problems of land acquisition and collection near the station as follows:

- Significant reduction in land acquisition costs: a floor-to-land use right swap method in land readjustment scheme and urban redevelopment scheme, which will be explained in detail in 3.10.
- Spatial use intensification: composite use of land for high-rise commercial and residential floors at the upper levels of intermodal facilities.

The second method is basically the construction of station buildings connected to the station or the station plaza. In this case, PPP is the basic means of implementation. The actual organization involves various factors such as the land ownership status around the station, the comparative commercial advantage of the station itself, and the requirement for public space.



Source: JICA Study Team Estimation

Figure 2-3 Station Access Improvement Work Investment Cost Estimation by Type

2.6. Private Sector Investment Promotion

Most of the investments for the development in TOD areas must come from the private sector due largely to the nature of land uses. For example, according to the financial analysis of the "Data Collection Survey For Hanoi Metro Line 2 Extension North" undertaken by JICA in 2020, the amount of investment required for urban development by private investors in the TOD area would require three to five times as much money as the investment for urban railway development.⁷ The principle of TOD is the intensified use of the space around the station. To that end, it is necessary to actively promote the development of unused and underutilized land in TOD areas and the redevelopment of

⁷ The survey provided support for the preparation of the pre-feasibility study of Hanoi's UMRT Line 2.3. The survey provided the comprehensive planning of TOD areas in addition to the station planning, providing the integrated economic/financial evaluations and land value capture.

existing urban areas, which cannot be achieved without the participation of ambitious private investors. It is only possible to create synergy between urban development and public transport by recognizing the importance of private sector developments in TOD areas.

1) Funding Through PPP

In the urban railway sector in Vietnam, attempts have already been made to induce private investment. In Hanoi, the pre-feasibility studies for urban railways Line 2 Phases 2 and 5 were conducted by the initiative of the private sector, but now the private sector has withdrawn. The reason for withdrawal is difficulty and risk in recovering the expected huge investment cost by operating the urban railway alone.

Another issue is that the Vietnamese government's policy is not in place to protect investors from investment risks in order to encourage more active PPP projects.⁸ In the Law on PPP that came into effect in January 2021, the method of Build and Transfer, which was actively used as a PPP method unique to Vietnam until 2018, was officially excluded as a method due to its accountability problems.

With the disappearance of BT, which was used as the most important LVC tool, the development of new tools for LVC has become an urgent policy task.

2) Need for Investment Promotion in TOD Areas

Real estate development investors must assemble land use rights in good locations around urban railway stations, obtain investment licenses, and obtain city planning approval for detailed investment plans. Financial costs such as interest rates will be added over time until the business makes a profit from the funds invested until these three major licenses are obtained. Without obtaining all the licenses required, all the invested funds will be wasted. Even in Hanoi and HCMC, there are some completed but failed projects when the project does not match the needs of potential house buyers. Although a large-scale development is a norm in both cities, the risk of its downside is huge. It is important to recognize that the excess profits that the developers enjoy for successful projects are nothing but risk premiums.

Eliminating the risks associated with uncertain and time-consuming administrative procedures will reduce the obstacles to private investment and promote competition. It will be easier to exercise LVC in the projects. TOD district should receive the same promotion measures as the promotion of foreign investment. What is important in the TOD area is to create a business environment that promotes private investment that meets the principles of TOD. As a result, the use of space will be intensified, and passengers will increase, thereby creating a virtuous cycle of urban development and the urban railway. Since LVC still is an additional cost element for the investors to the TOD area, there should be some offset measure to promote investment at the same time.

3) Measures For Developers Who Have Assembled Land for Development

Large-scale investment projects in Vietnam basically require an investment license through bidding. For land use in the TOD area, as mentioned in the section on city planning, a zoning plan that matches

⁸ MPI is also actively continuing to exchange views with the private sector, and the Japan Chamber of Commerce and Industry is calling for government guarantees of purchase agreements and guarantee for remittance of profits to be secured by legal ordinances.

the TOD should be created. In order to promote investment activities of investors who are ready for investment, the TOD licensing standards should be established, and a transparent licensing system should be established.

2.7. Land Acquisition and Assembly

In urban areas of Vietnam, the availability of developable land is extremely limited. Therefore, the first stumbling block for TOD projects, including the access road to the station, pedestrian space, transfer facility site, is the land acquisition and assembly. In Vietnam, all land is owned by all the people, and the state institution is entrusted with management authority as its representative, and the people are entrusted with the right to use it in Vietnam. In reality, the land use right holder has a right close to the actual ownership, and the land use right is bought and sold as discussed below.

1) Rights of Occupation, Utilization, and Disposal of Land

Land titles consist of three basic rights: to occupy it, to use it, and to sell those rights to a third party. Under the current law of the Land Law 2013, basically, all three land rights are granted to the titleholder. The land use title in Vietnam is equivalent to the ownership in its substance. The only exception applies to the organizations that have received land and are exempted from the land use fee payment to the government. This category applies to non-profitable national organizations (laboratory and others).

2) Laws and Regulations Related to Land

The latest four laws and regulations regarding land ownership are as follows.

- Land Law 2013
- Decree 43/2014/ND-CP Detailing the implementation of a number of articles of the Land Law and its revisions
- Circular 23/2014/TT-BTNMT On certificates of land use rights, ownership of houses and other land-attached assets and its revisions
- Circular 02/2015/TT-BTNMT Detailing a number of articles of Decree No. 43/2014/ND-CP and Decree No. 44/2014/ND-CP and its revisions]

The 2013 Land Law is scheduled to be amended in 2022. According to the government resolution 06 / NQ-CP dated January 21, 2021, that establishes the revision schedule and policy, the revision will take place on the issues as follows:

- i. Surveying and development of surveying and national database system for evaluation, preparation of land management documents of land that can contribute to socio-economic development sufficiently.
- ii. Rational, effective and sustainable planning, management and utilization of land: promotion of effective utilization of underground space, improvement of land utilization planning, system development for rational, effective and sustainable planning, management and utilization of land,

- iii. Policy development for the concentration and aggregation of land for socio-economic development to unleash the potential value of the land; land use management of ex-state owned farms and forests,
- iv. Management and development of land-related revenues to the national treasury
- v. Development of information system related to market prices, mesh-based land price map database, benchmark-setting of standard land plots, and plot-based land price database

The agenda iv) above is nothing but land value capture expressed as "management and development of land-related revenues to the national treasury."

3) Changes in Land Law

After the unification of the north and south in 1975, the government promoted collective agriculture through the establishment of cooperatives, including the southern Part, but problems such as a decrease in agricultural production occurred. As a countermeasure, policies such as the introduction of contract farming and the promotion of independent agricultural production were implemented. However, agricultural production continued to decline. Under such circumstances, Vietnam's first land law was enacted in January 1987 (effective in 1988). In the Land Law of 1988, three rights of ownership, management right, and use right were established as basic rights concerning land. However, the Land Law of 1988 left many problems, including restrictions on transfer. Following the enactment of a new constitution in 1992, a new land law was enacted in 1993 and revised in 2003. The Land Law of 1993 expanded the land rights of farmers. Although the farmers are granted the farmland by the government, they can use the farmland stably for a long period of time, and they are also allowed to rent the farmland, set collateral for the farmland, and inherit or transfer the farmland. However, the Land Law of 1993 and the Land Law of 2003 have a long term of 20 years, so the problem is that the tenure after 20 years was unclear. Since this provision was abolished in the Land Law of 2013, it was confirmed that the land use right of agricultural land is guaranteed eternally. Regarding land occupancy, use, and disposal rights, the 2013 Land Law that is fully approved the disposal rights for land granted to individuals who are not charged with land-use fees from the national government.

4) Land Registry and Survey

The Vietnam Land Registration System is a system for registering land use rights. Once the registration procedure is complete, a land-use certificate is issued. The land use right certificate contains information on the land use right holder, information on the land, as well as information on the mortgage settings. However, Vietnam's land registration system does not have the function of confirming rights or conflicting claims. In other words, it is a system that does not plan to have legal effects, such as public notice power and rights estimation power. Coupled with the fact that the registration is not open to the public in principle, Vietnam's registration system exists as a system that provides for the request of the state institution to manage the land publicly but does not facilitate or secure real estate transactions.

According to the Ministry of Natural Resources and Environment, as of July 2020, 97.36% of the eligible land has been registered, and land use right certificates have been issued.

5) Land Valuation System and Land Recovery Compensation

Definition of the land price according to land price evaluation system:

The land price in Vietnam's land price evaluation system is the value of the land use right as a standard for calculating the amount of compensation to the land use right holder when there is no alternative land when the land is recovered by the country. Land price is evaluated according to the type of land use at the time of the decision to recover.

Land pricing authority and process:

- Land price framework setting: The Ministry of the Natural Resources and Environment formulates the land price framework once every five years, which the Ministry of Finance examines and the government enforces.
- Setting land prices in the land price table: The local resource and environment bureau formulates the land price table once every five years, and the People's Committee enforces it. The People's Committee establishes a land price appraisal council, which reviews the land price list.

Land Price Determination Method: According to No: 44/2014/ND-CP," REGULATIONS ON LAND PRICES," the land price assessor selects an appropriate method among 1) Direct Comparison Method, 2) Subtraction Method, 3) Income Method, 4) Surplus Profit Method, 5) Land Price Coefficient Method.

The official land price is set every five years. According to the latest change in published prices by Hanoi Municipal People's Commission Decision 30/2019 dated December 31, 2019, regarding standard land prices applicable from January 1, 2020, to December 31, 2024. All types of land in Hanoi have been revised upward by an average of 15% compared to the period 2014-2019. Specifically, residential land in the district was adjusted to increase by an average of 16% on two-way trunk roads. Commercial and service land in the district has been revised upward by 62-65%. However, this is a five-year adjustment and does not reflect market trends in a timely manner.

The published official prices differ substantially from the actual market price. According to the official price table of Hanoi City, the Hoan Kiem district (the area near Hoan Kiem Station on Urban Railway Line 2) is about 180 million VND/m². According to the Tien Phong newspaper (February 25, 2020), the average price of roadside houses (housing has almost no asset value) on Le Thai To Road (Hoan Kiem district in Hanoi) is 10. It is 100 million VND / m², and especially in places near Hoan Kiem Lake, which has a lot of traffic, it is traded at a land price that is several times higher than the official price. This is also the reason why the compensation price offered by investors when implementing a project may not be accepted by the residents due to the difference between the published price and the actual price.

Regarding land prices related to agricultural land, land prices are calculated and applied in the same institutional framework as land prices other than agricultural land. Land prices are to be announced by the People's Committee at the city / provincial level. There is no provision regarding the standard land price for the conversion of agricultural land to other purposes. Various disputes are constantly occurring regarding the recovery of agricultural land. According to the Government Audit Bureau, 70% of the 700,000 land-related disputes that occurred during the three years from 2009 to 2011 (annual average of over 200,000) were disputes of agricultural land due to dissatisfaction with compensation and resettlement destinations from land recovery. The amount of compensation for the

recovery of farmland is usually lower than the market price. The compensation does not address the incremental values generated by land-use conversion from agriculture to other purposes. The compensation amount does not reflect the land price evaluation. The 2013 Land Law does not provide measures to solve this problem.

Regulations Regarding Compensation for Land Recovery

The regulations currently in effect regarding land recovery compensation are as follows:

- Decree 47/2014/ND-CP Providing For Compensation, Support, And Resettlement And Its Revisions
- Decree 06/2020/ND-CP Amending And Supplementing Article 17 Of Decree 47/2014/ND-CP On Compensation, Support, And Resettlement Upon Land Expropriation By The State
- Circular 37/2014/TT-BTNMT Regulating Compensation, Support, And Resettlement And Its Revisions.

2.8. Land Acquisition and Assembly Methods

In order to carry out effective TOD development, a development site of at least 1000 m² and, in the case of a large scale, 10-20 ha may be required. Based on experiences in Japan, it is conceivable to apply the following methods for land assembly.

- Direct acquisition
- Land readjustment
- Floor to land use right exchange method
- Securitization of land use rights (separation of possession rights and usage rights)
- Restriction of land use rights by designation of city planning

Direct Acquisition

The simplest method for improving access around the station and improving only transfer facilities is for the city government to implement land recovery directly. As estimated in 2.4, land recovery costs account for most of the project costs. The approach poses a heavy burden financially and administratively. For an integrated commercial and public space complex development, it is usually a private developer who has to assemble land altogether.

Land Readjustment Scheme

The land readjustment scheme is a method of reorganizing land plots and creating public space while preserving land ownership. The scheme was extensively utilized in Japan to avoid public intervention for land acquisition. Since it enables substantial cost reduction in land recovery, it serves as a means of LVC from the landowners. For details on this method, please refer to Chapter 3, Section 3.9.

Land readjustment schemes should be promoted in Vietnam as a community-led local urban development method that does not rely on forced land recovery or unilateral development by large-scale

developers. By setting up a common vision, a group of land use right holders with local social, economic, and geographical ties is capable of carrying out the redevelopment of their community for enhancing the local economy.

This method has a legal interpretation as equity contribution in-kind by land-use titles. After the amendment of the Land Law, the land use right holder has the right to dispose of the land use right. Since the disposal right includes not only the right to transfer but also the right to carry out economic activities on the land, it is also permitted to invest the land use title in-kind contribution.

If additional funds are needed, it is possible to invite third-party companies as co-investors from the outside and develop the business as one corporate entity (corporation). In order to make such a move a reality, there is a need for a leader who advocates the merit of land readjustment to land use rights holders for greater district benefits.

Floor to Land Use Right Equivalent Swap

Under Vietnam's land law, land use rights holders basically have the right to dispose of their land-use rights, and exchange of land use rights is also permitted. It is also possible to exchange land use rights for the ownership of the redeveloped housing (including condominiums). For details on this method, please refer to Chapter 3, Section 3.9.

Securitization of Land Use Rights (Separation of Land Occupation Rights and Utilization Rights)

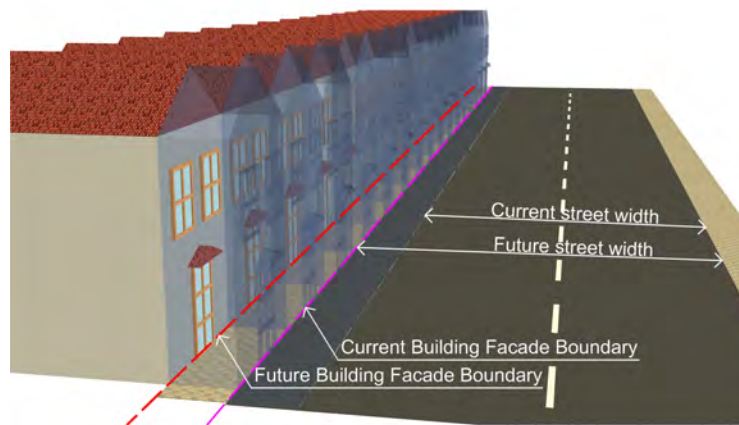
Securitization of land use rights is a method of collectively grouping land use right holders in the target area and concluding a contract to grant the land use right for a fixed period of time without transferring the land use right. The Land Law allows the land use right holder to rents the land use right as leased land. As a result, land use rights holders may enjoy the high rent generated from more intense utilization of land while retaining their land titles. On the other hand, there is an advantage for developers that it is easier to conclude negotiations than to acquire land titles. The developer may be an external developer, a public institution including the city government, or a consortium established by land use right holders.

For details on this method, refer to Chapter 3, Section 3.9.

Restriction of Use and Expropriation by Urban Planning for Road Widening

One of the biggest challenges in public transport is securing a right-of-way. If the land for the road or railway track is not continuous, transport alignment cannot be attained. Within the TOD area, widening narrow roads and securing sidewalk space is an important infrastructure development to secure station access. Expropriating land to carry out setbacks in an existing urban area with a certain width is not easily realized because the cost for negotiation and relocation of residents is too high.

By offsetting the cost and time of negotiations to secure route land, the method adopted in Japan is to limit land use rights and disposal rights by land use controls. In this method, the landowner on the planned road by the city plan loses the right to change the land use pattern, and when buying and selling land, the land is sold only to the government or the agency designated by the government. The next step taken by the local government is to ban the reconstruction of the buildings that exceed the planned setback line. The designed widening of the street will be achieved over the long period of the natural urban regeneration process. The owner of the current buildings will have sufficient time to plan for relocation or set back the new building to fit the new plot size. Public intervention on private property rights will be kept at a minimum in this approach.



Source: JICA Study Team

Figure 2-4 Facade Set Back Regulation and Street Widening

2.9. Flood Control and Mitigation

Given the low elevations of HCMC and Hanoi, these metropolises are subject to frequent flooding, which paralyzes urban activities from time to time. Since the incident of 1971 in Hanoi, the city, located on the sandbank in the river, has been particularly aware of the risks imposed by flooding. Almost half of HCMC lies less than a meter above sea level, and nearly 70% of the city is considered to be at risk of flooding. During the rainy season (August – December), low-lying areas and the central districts of HCMC face a recurrent risk of flooding, especially at spring tides.

Urban development increases the need for water supply, which is often extracted from an underground aquifer, leading to land subsidence. At the same time, urban development increases the pressures to encroach restricted areas by local ordinance or land use plans for urban developments such as the areas outside of the dykes or riverbeds while reclaiming natural ponds and swamps which otherwise serve as water retention facilities. A case in point is the planned site for the Xuan Dinh Depot for Hanoi Line 2.1, as discussed in Part III. The only such large parcel of land for a train depot was available at a swamp.

Flood Mitigation Laws in Vietnam

The laws of Vietnam require some mitigation measures against urban floods. Those related laws are as follows:

- Decree Regulations on Management And Protection Of Railway Infrastructure (No. 56/2018/ND-CP)
- Circular National Technical Regulation on Construction Planning (QCVN 01:2021/BXD)
- Circular National Technical Regulation on Technical Infrastructure Works (QCVN 07-2:2016/BXD)

Section 2.8 and Section 2.11 of the "National Technical Regulation on Construction Planning" QCVN 01:2021/BXD stipulates the regulations on foundation height and surface water drainage, respectively. The floor height must be planned according to the computed flood levels specified in

terms of recurrence interval years. The foundation level must be at least 0.3 meters higher than the computed flooding level, for civil land, or 0.5 meters, for industrial land.

The drainage system shall be calculated according to the recurrence interval years of rainfalls. The new construction areas must have a separate drainage system. Areas with common water drainage networks must be renovated into semi-separate water drainage systems or separate water drainage systems. All inner-city roads and roads crossing suburban residential areas must have rainwater drainage systems.

For Ben Thanh station of UMRT Line 1 of HCMC, the design unit determined the highest water level in an estimated 300-year flood even through the Circular 01/2021/TT-BXD only requires compliance to a 100-year flood.

The standards are often updated by the revision of the circulars, making it necessary for constant updating of TOD standards accordingly.

2.10. Universal Design in TOD Areas

Though universal designs for handicapped people are yet to fulfil the needs in increasing high-density urban areas, especially in TOD areas in Vietnam, the legal framework exists in Vietnam as follows;

- Law On Persons With Disabilities (No. 51/2010/QH12)
- Circular On National Technical Regulation On Construction For Disabled Access To Buildings And Facilities (No. 21/2014/TT-BXD).

The "Law on Persons with Disabilities" protects the right of the disabled to access public works (Article 4 and 5), and the "Circular On National Technical Regulation On Construction For Disabled Access To Buildings And Facilities" specifies more specific standards to ensure the access by the disabled.

Accordingly, the works must ensure the standards of construction for disabled people, including (i) apartment buildings; (ii) public facilities such as head offices of state agencies, hospitals, commercial and service works (iii) urban service facilities: railway stations, bus stations, pedestrian tunnels, public toilets, money withdrawal machines. Accordingly, when building a TOD project, a terminal, and surrounding buildings, it is necessary to take the following measures for the disabled:

- i. The number of parking spaces must be ensured for the disabled in the parking lot;
- ii. The position of a parking lot for the disabled should be near a road, near an entrance to the building, at the same height of the entrance;
- iii. Roads leading to designated facilities must provide a road reserved for the disabled and designed according to standards;
- iv. There is at least one aisle for the disabled, which leads to the reception and each main floor. Any door on the aisle should not pose any barrier to the passage, and the door should not be of revolving type;
- v. When designing the ramp for the entrance and exit, it must comply with the standard of slope, width, length; install a handrail for the ramp;

- vi. The design of steps to the entrance must comply with the standards stipulated;
- vii. The design of doors and lifts must comply with the regulations applicable to the disabled;
- viii. Design of reception counters should be suitable for using wheelchairs;
- ix. Toilets should be installed with a dedicated area for the disabled;
- x. The escape system should be installed, and the roads and pavements must be designed according to the regulations to ensure the use by the disabled;
- xi. Signs and instructions for the disabled must be installed according to regulations.

The standards are often updated by the revision of the circulars. Therefore, any plan for TOD needs to update the building standards accordingly.

2.11. TOD Implementation Organization System

In order to realize TOD, one of the pre-requisites is to establish a cross-sector cooperation mechanism within the executive branch. An organizational structure that guarantees cooperation between the public transport sector and other city planning and infrastructure development (roads, water, sewage, drainage, etc.) is the basis for effective TOD implementation. Before the internal system on the administrative side is enhanced, it is necessary to create a comprehensive urban development system that actively attracts private investment.

1) TOD Organization Inside the Government

On January 13, 2021, Railway's Transportation Bureau and Building and Planning Bureau signed an agreement to jointly carry out an urban development plan in line with the development of public transportation (reported in various newspapers). Such an agreement reconfirms that the barriers between departments have existed within the bureaucracy. These silo problems are not limited to Vietnam or Railway but are omnipresent all over the world, posing an obstacle for an integrated development such as TOD. In that sense, the HCMC agreement can be seen as the beginning of breaking down the walls inside the organization. Nevertheless, more specific solutions are needed for the realization of TOD. It is necessary to establish a task force⁹ for TOD on the selected routes by assigning full-time staff specializing in TOD. The task force should consist of specialists seconded from the relevant departments with a high level of expertise. It is required to establish a TOD committee organized by the DPI to coordinate between departments from the top, in addition to the task force as an implementation-level organization.

⁹ The task force may be established under the DPI in charge of coordination between departments as the main bureau, and the members will consist of the city planners from DPA, transportation planners from DOT, urban railway experts from MAUR: Railway, MRB: Hanoi City, and land-related experts from DONRE. If necessary, the taskforce should add specialists related to utilities such water and sewage, and flood management experts from the Department of Agriculture and Rural Development.

2) Cooperation With the Private Sector

Vietnam's development system for large-scale urban development is basically a system in which the private sector takes the initiative from the planning stage. A 1/500 level detailed plan (including land use and basic design of building structure) of the target development area must be prepared by the investor according to the zoning plan and obtained with the permission of the city government. Investors are basically responsible for the accumulation of land in the target area. In some cases, the People's Committee will assume responsibility, in which case the price of land use rights will be based on the post-development uses. In the case of large-scale district development, the investor will be responsible for infrastructure development that enables not only commercial profits but also living and business in the target district. Urban infrastructure, be it roads or utilities, is basically a network. Even if the investor bears 100% of the connection between the newly developed area and the existing infrastructure network, the obligation to bear the load on the road network, water supply capacity, and sewage treatment capacity are clearly defined. Not. In addition to the public return of development profits, it is also necessary to consider mandating the burden of infrastructure load.

3. Public Finance and Land Value Capture

3.1. Theory of Land Value in TOD Context

In order to deepen the understanding of "land value capture," which is now becoming the focal point in the field of TOD, the first step is to clarify the definition of land value derived from the development of public transportation. It is necessary to understand what constitutes the value of the land. The land value corresponds to the excess profit¹⁰ that a developer earns when selling a newly developed property near a station. And this excess profit is not dependent on the developer but the location. In TOD, the excess profit is proportional to the degree of accessibility to public transportation and is reflected in the land price in the long run. In other words, the land price itself can be considered to be the most quantitative index that reflects the excess development profit. Land value capture is a policy to reclaim a share of the excess profit generated for access to public transit.

The land price is determined by the work of the market, just like any other asset. The land has a direct utility of providing space for residence or work. A renter would pay a fixed sum as the monthly rent for the use of the fixed area of the floors. The property owner has to make profits from the floor rent after deducting the investment costs and recurrent maintenance costs. The land value should be the net present value of the sum of all the future streams of excess profits, i.e., land rents, to accrue to the investment after deducting the depreciation costs, maintenance costs, management costs, and capital costs. The land where urbanization takes place with limited urban space availability will see continuous increases in the land rent. However, the lack of objective land rent forecasts lends itself to a rise in speculation in the land market.

Figure 3-1 illustrates the composition of land value in the case of locations near new stations developed by a new public transit line.

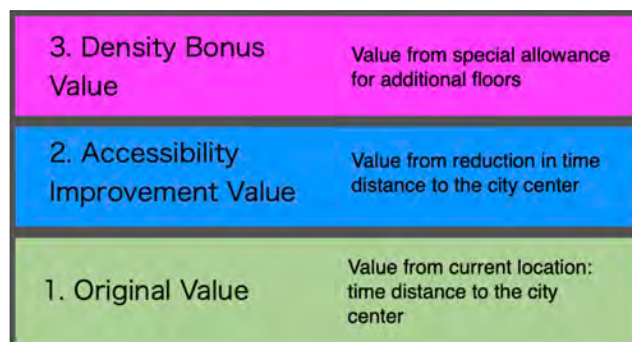


Figure 3-1 Composition of Land Value at Public Transit Station Vicinity

Next, standard formulae are offered for estimating these values.

1. Primitive value: This value results from the market principle mentioned above, and its level varies greatly from city to city. In general, if other land price determinants are the same, the time

¹⁰ Excess profit is defined as the surplus from the gross profit after deducting the capital costs such as interest payment as well as dividend payments.

distance to the city center is the most important factor. The benchmark is the rent of a place with a similar living and working environment and the same time distance to the city center.

$P_0 = \sum_i F_0 \frac{r_t}{(1+d)^i}$ whereas P_0 : Original Value, F_0 : Currently developable floor area, r_t : land rent per floor area at a location with t time distance to the city center, i : the i -th period in present value calculation, d : discount rate

2. Accessibility improvement value: The added value comes from shortening the time distance to the city center as a result of the improvement due to the introduction of public transportation. The formula is expressed as follows.

$V_1 = \sum_i F_0 \frac{r_s - r_t}{(1+d)^i}$ Whereas V_1 : Accessibility improvement value, R_s : land rent per floor area at a location with the s time distance to the city center.

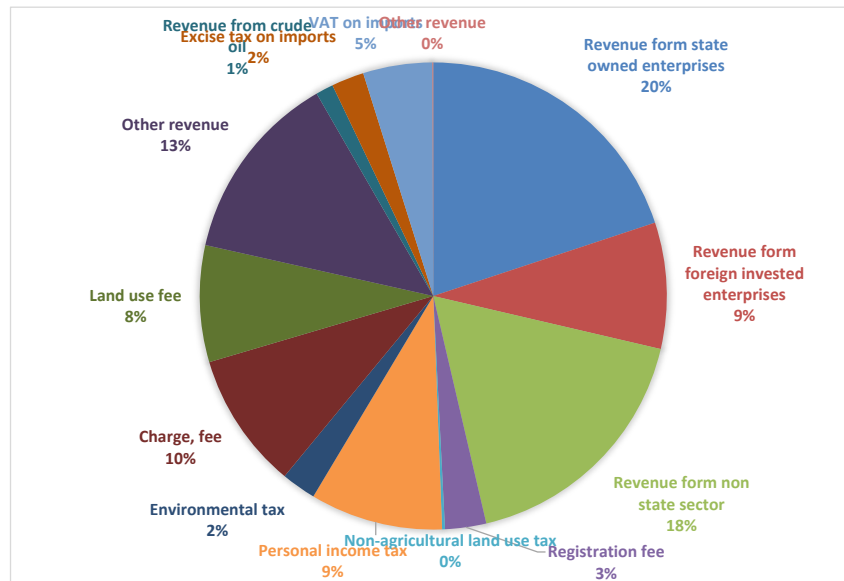
3. Additional floor area ratio value: Development around public transportation stations has less load on road traffic, so it is possible to relax the floor area ratio regulations. The formula for calculating the value from the additional floor area ratio is as follows.

$V_2 = \sum_i (F_1 - F_0) \frac{r_s}{(1+d)^i}$ Whereas V_2 : additional floor density bonus, F_1 : developable floor areas.

Actually, there is an additional factor in forecasting the rent for each period in the future, and even with this rational formula, the calculation result will change depending on the evaluator. Please refer to the above formula in the following examination of land value capture.

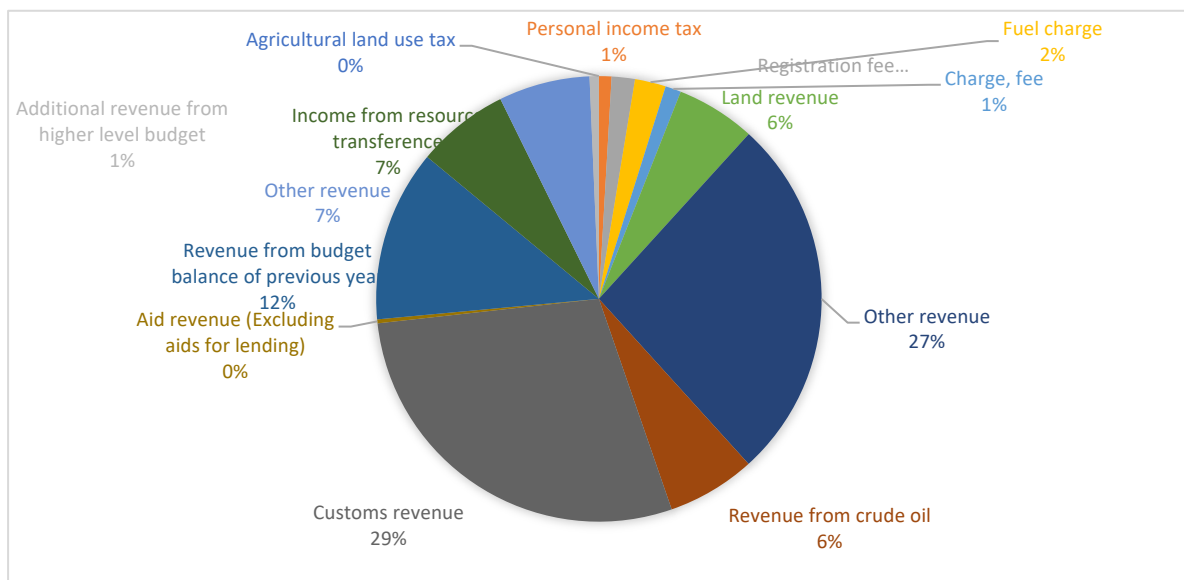
3.2. Revenue Situation of The Two Cities

Hanoi's revenue in 2019 was VND271,460 billion, and HCMC's revenue in 2018 was VND378,395 billion. Figure 3-2 and Figure 3-3 show the revenue compositions for Hanoi and HCMC, respectively (2019 for Hanoi and 2018 for HCMC). All of these revenues cannot be expended solely for the cities, but a portion of the revenue is transferred to the central government. As a reference for the financial scale of the two cities, the initial draft of Vietnam's national budget for FY2021 indicated a total revenue of 1,343,330 billion VND (about 6 trillion yen) and a total expenditure of 1,687,000 billion VND (7.6 trillion yen). The combined revenue of the two cities is about half the size of the central government's budget.



Source: HaNoi_ Statistical Yearbook 2019

Figure 3-2 Hanoi Revenue Composition



Source: Ho Chi Minh City Statistical Yearbook 2018

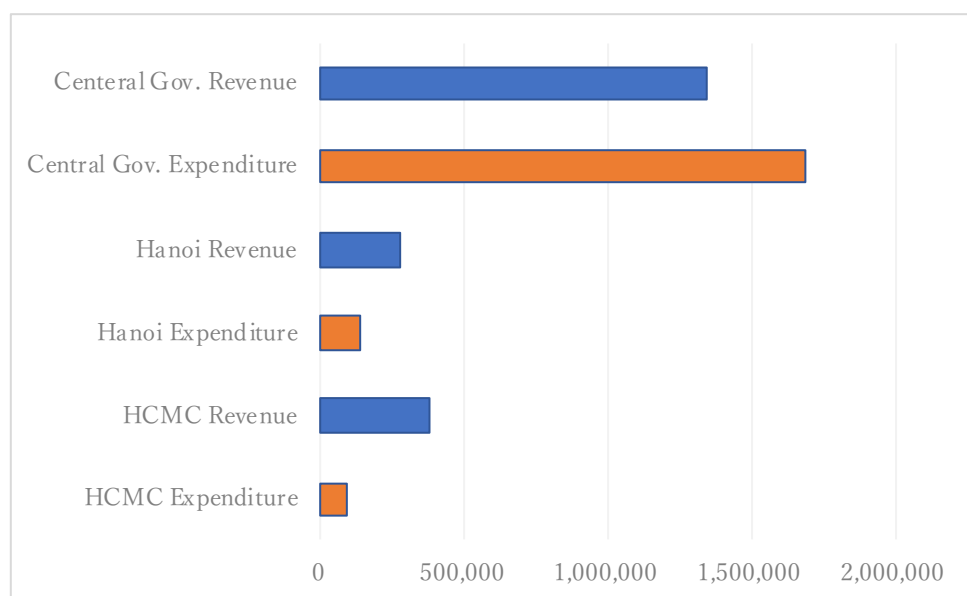
Figure 3-3 HCMC Revenue Composition

Currently, there are no specific revenue sources for urban infrastructure development in the two cities. There is an agricultural land tax and a non-agricultural land use tax, but they are levied at a rate of only 0.03% of the land's official value and generate very little tax revenue. In the case of Hanoi, the share of tax revenue is only 0.2%. Vietnam has a public land price system, and the commune-based People's Committee reviews the land price every five years. The Land Use Fee, on the other hand, is a charge for the transfer of land use rights, which accounted for 8 percent of tax revenue in 2018.

3.3. Status of expenditures and balance with revenues

Expenditure in Hanoi was 137,456 billion VND in 2019 (about 0.6 trillion yen), which was 50.6% of the revenue. For HCMC, the expenditure was 85,528 billion VND in 2018 (about 0.4 trillion yen), which was 22.6% of the revenue. Therefore, among the total amount of revenue collection, Hanoi utilized about half, and HCMC utilized about a quarter for their expenditures. The allocation of these revenues is regulated by the relevant degrees for each tax category, and some are subject to final approvals by the National Assembly.

Figure 3-4 shows the status of revenue/expenditure of the two cities and the central government.



Source: Prepared by JICA STUDY TEAM from statistics of each city. The amount in billions of Vietnamese Dong

Figure 3-4 Revenue and expenditure of the two cities and the central government

3.4. ODA Borrowing Limits

Currently, the Vietnamese government has adopted a policy of debt control by stipulating the basic policy of public debt management in the Law on Public Debt Management (20/2017/QH14). The limit on ODA loans is also included in this series of debt management policies, and the National Assembly has decided to impose a ceiling limit of 65% for the public debts to GDP ratio for the country as a whole.

Vietnam's public debt to GDP ratio improved significantly to 43% in 2019. Thus, this ceiling restriction itself is not an obstacle to borrowing.¹¹ However, the Resolution of the National Assembly issued on July 28th, 2021(Resolution 23/2021/QH15 on Public Debt and Finance for the Period between 2021 and 2025), the following decisions have been made on ODA loans; a) the growth rate of Government-guaranteed loan balance will not exceed the nominal GDP growth rate year on year. b) In particular, the maximum guarantee limit for the two policy banks should be equal to the annual

¹¹ IMF 2020 Article IV Consultation with Vietnam Press Release, March, 2021

principal repayment obligation; c) The net withdrawal limit of government-guaranteed loans during the whole Period must not exceed VND 76.5 trillion, and the withdrawal limit on the government's loans for on-lending would not exceed VND 222 trillion. d) In addition, the resolution also decided on the lowering of the public debt limit from the current 65% to 60% of the GDP. Given the need for the recovery of the economy in post pandemic period, there are many opinions for more flexible management of public debt.

Hanoi is a special city and is separately allowed to issue public debts up to 70% of its locally allocated tax revenue (64/2017/ND-CP Decree on "Stipulating a number of Mechanisms and Policies of Budget finance specific to Hanoi Capital").

The public debt levels of Hanoi between 2018 and 2021 are shown in Table 3-1.

Table 3-1 Hanoi's Public Debt

Year	(1) Local Budget Allocations (billion VND)	(2) Maximum Limit of Public Debt (billion VND)	(3) Public Debt Outstanding (billion VND)
2018	93,801	65,660.7	55,641.7
2019	100,542	70,379.4	61,673.4
2020	102,031	71,421.7	65,456.7
2021	100,627	70,438.9	—

Source: HPC

Note: Local budget allocations are less than 40 % of the total revenues collected in Hanoi, as the larger portion is assumed by the central government.

Source: Decision No.7443/QD-UBND dated December 30th, 2019, Decision No. 5724/QD-UBND dated December 29th, 2020, Decision No. 437/QD-UBND dated September 10th, 2021 and No. 5700/QD-UBND dated December 28th, 2020, Decision No.5379/QD -UBND dated December 28th, 2021 (For 2020).

3.5. Property tax

Property tax is a well-established tax system that forms the basis of local taxation worldwide. However, Vietnam does not have a property tax system. There is only a minor tax on land. The Vietnamese government understands the need for adjusting to an international standard tax system and is considering the introduction of a property tax; the Prime Minister's Decision No. 2174 / QD-TTg dated 12/11/2013 in 2018 instructed the National Assembly to study the establishment of a property tax, and in 2018 the Ministry of Finance (MoF) prepared a draft proposal for a property tax law and made recommendations to the government. However, this proposal is still away from reaching a consensus on its introduction, with the property tax being presented as optional. As for the valuation of assets, which is the most important aspect of tax assessment, there is some consideration of introducing market prices, but basically, it is assumed that the currently practiced public land prices will be used as the base. One of the reasons for this is the consideration of the economic impact in rural areas where there are many low-income people and possibly oppositions from the business circle.

1) Local Tax Revenue and Property Tax in the World

(1) Global Trend

Globally, there has been an ongoing debate in many countries about imposing a property tax on movable and immovable property in order to increase the independent revenue sources of urban and local governments. According to the OECD, the countries with high ratios of property taxes to GDP include the United Kingdom, Canada, and the United States, while countries such as Luxembourg, Switzerland, and Mexico have almost zero ratios. However, as an average trend, as shown in Table 3-2, property tax is playing an increasingly significant revenue source both in developed and developing countries.

Table 3-2 Worldwide Property Tax Adoption and Contribution to GDP and (Property Tax Revenue as % of GDP)

	1970s	1980s	1990s	2000s
OECD countries	1.24	1.31	1.44	2.12
(number of countries)	(16)	(18)	(16)	(18)
Developing countries	0.42	0.36	0.42	0.60
(number of countries)	(20)	(27)	(23)	(29)
Transition countries	0.34	0.59	0.54	0.68
(number of countries)	(1)	(4)	(20)	(18)
All countries	0.77	0.73	0.75	1.04
(number of countries)	(37)	(49)	(59)	(65)

Source: John Norregaard (2013), IMF Working Paper Fiscal Affairs Department, Taxing Immovable Property Revenue Potential and Implementation Challenges

According to the table above, the developing countries collected property tax of about 0.6% of GDP in the 2000s. In this regard, from the Hanoi Statistical Yearbook (Nien Giam Hanoi 2019), the city GDP in 2019 is 968,436 billion VND in Hanoi and 1,338,179 billion VND in HCMC. If we assume that the tax is collected at the average level of transition countries, the property tax revenue in Hanoi will be VND 6,585 billion, and in HCMC, VND 9,100 billion. The property tax revenue would provide about 5% and 11% of the total expenditures of both Hanoi and HCMC, respectively.

3.6. Land Value Capture of Increased Land Prices

One of the key issues related to the urban railway is the land value capture (LVC) for urban rail development benefits. This has been proposed as a solution to the free-rider problem, in which land-owners and users in the vicinity of stations enjoy the benefits of urban rail development without bearing any contribution to public finance. As discussed in the previous sections, Vietnam lacks a basic taxation mechanism of fixed properties, which should be a basis for minimal LVC. Given this deficiency in public finance, it is essential to establish LVC methods expeditiously in Vietnam.

Methods of Land Value Capture

There are seven standard methods of LVC as follows:

- i. Property tax introduction or reinforcement of land tax,

- ii. Fee charge for land value improvement (betterment charges) to a specific area (around the station),
- iii. Auction of building density bonus (relaxation of floor-to-area ratios),
- iv. Land readjustment scheme,
- v. Sales of development rights,
- vi. Lease of publicly owned space, and
- vii. Joint venture with private developers

The applicability of these methods in Vietnam is examined in the following section.

3.7. Land Value Capture by Property Taxes

1) Benefits of Property Taxes and Land Value Capture

The benefits of introducing property taxes in Vietnam, especially in terms of LVC, are as follows:

- Property tax is levied on the ex-post realization of wealth. It is a tax on realized value without the need to pre-determine future sources of revenue to determine the value added by public investment.
- Property taxes are realized through simple transactions. This means that there is no need to negotiate with investors as in a transfer scheme, and such negotiations do not hinder implementation.
- The property tax is a tax of a broad and thinly spread nature. That is, it can be levied thinly on all property owners who have benefited from public investment, and it can be levied thinly on an ongoing timescale rather than a one-shot basis.
- Property tax is a wealth tax. It means that if a property tax on real estate were to be introduced, it would be paid more by those who have the "ability to pay" since real estate is often a major store of wealth.
- Property tax should be allocated as the main revenue source for the local governments to promote the alignment of development beneficiaries and taxpayers as well as political decentralization.
- A property tax should create stronger local governance. That is because property taxes are a highly visible and politically sensitive revenue instrument, a property tax system promotes more responsive, efficient, and accountable local governance and public service delivery.

2) Property Tax and Urban Planning Tax in Japan

The history of property tax in Japan is long. According to the National Tax Agency, in modern Japan, after the land tax revision in the Meiji era, it was an important national tax with more than 8 million

registered taxpayers until April 1947, when the land tax was transferred to the local government (prefectural taxes). The property tax remains one of the main important local taxes.¹²

Land valuation is an important element of the property tax system, but it has also been affected by policy changes in the process of economic growth. Since the introduction of the land tax, the land value assessment method, which is the tax base for the land tax, was not revised until the introduction of the residential land rental price in 1910 and the land rental price in 1931. The tax rate has remained almost unchanged, except for a temporary increase to raise funds for the Sino-Japanese and Russo-Japanese wars. On the other hand, after World War II, the introduction of the property tax and the wealth tax increased the importance of land value evaluation, and the evaluation method became complicated. To simplify the system, the street-based valuation method was introduced in 1955.

During the rapid economic growth period, a heavy taxation system on gains from the transfer of land was introduced to control soaring land prices. In another instance, a tax reduction system for the home acquisition was introduced to promote home acquisition to illustrate the effects of the policy agenda of the time.¹³

In addition to the property tax, the city planning tax was introduced in 1956 to make up for the lack of tax revenue in urban areas in Japan. While the property tax is nationwide and exhaustive, the city planning tax covers only land and houses in urbanized areas within the statutory urban plan areas. Article 702 of the Local Tax Law stipulates that the purpose of the tax is "to cover the cost of urban planning projects to be carried out in accordance with the City Planning Law or land readjustment schemes carried out in accordance with the Land Readjustment Law." However, it is currently used as a general revenue source. The taxable area is defined as the urbanized area as stipulated in Article 7, Paragraph 1 of the City Planning Law. The tax rate is basically based on the assessed value of the property, with a maximum rate of 0.34%. The tax is collected directly by the municipality in the form of an addition to the property tax.

As for the purpose of LVC for TOD in HCMC and Hanoi, a localized urban planning tax is the most appropriate tool. However, Japan's city planning tax is an add-on to the property tax and is not a tax system that can be implemented independently. To implement this tax system as a stand-alone tax, it will require a property evaluation system to accompany; thus, the improvements of the current land price table system may be necessary.

3) Issues and Possibility of Introducing Property Tax and Urban Planning Tax

Most cities in the world have a property tax system to collect levies on increased values of land in an ex post facto, thin, and over a long term. Not having the property tax, Vietnam lacks a basic framework for LVC. The introduction of a property tax has been put on hold, despite years of research by the Ministry of Finance with a proposal in 2018. Conversely, the introduction of a property tax system is the first step for the basic framework for LVC.

There are some cases where property tax has been introduced in recent years (e.g., Cambodia as a neighboring country of Vietnam¹⁴), the introduction of the tax requires the construction of a complex

¹² <https://www.nta.go.jp/about/organization/ntc/sozei/tokubetsu/h27shiryokan/00.htm>

¹³ <https://www.nta.go.jp/about/organization/ntc/kenkyu/ronsou/39/satou/hajimemi.htm>

¹⁴ <https://www.adb.org/sites/default/files/publication/561136/governance-brief-038-cambodia-property-tax-reform.pdf>

and sophisticated administrative system, including the establishment of a land valuation database, asset assessment method and administrative organization. It also requires the training of experts with assessment skills and an assessment complaint resolution framework.

It is no exaggeration to say that the value of land is largely determined by its overall accessibility (attractiveness) to urban residents and workers due to its location. In cities with highly developed urban railways, such as Tokyo, the greater the accessibility to the rail line and the walking time distance from the station, the greater is the value of the land. Furthermore, accessibility to city functions, services, and amenities varies from location to location. Thus, the fair valuation of land with its strong heterogeneous property at every location requires a sophisticated but, at the same time, widely applicable method. This means that a valuation system with accountability and transparency that satisfies landowners will be an essential element in establishing a tax system.

From the perspective of political fairness in taxation, property tax needs to be introduced nationwide. It is possible to introduce it only after confirming the equity and implementation effect in various aspects such as income disparity and regional disparity. It is not difficult to predict that the introduction of additional taxes, especially in rural areas where low-income earners are concentrated, poses major challenges in terms of social justice. In that sense, taxation on urban areas is rational given the current infrastructure investment and economic development in urban areas. The city planning tax adopted in Japan is limited to areas where there is a statutory city plan exists, which is a city planning decision, is subject to priority public investment under the legal framework.

There are still concerns that the city planning tax is too widespread. Due to public investment, where the beneficiary population is unevenly distributed around the station, as seen in urban railways, the introduction of taxes in a wide area may have a great backlash. In addition, the more limited the number of reference points for land evaluation, the more the land price evaluation labor can be minimized. If so, it is considered appropriate as an approach to limit the taxation of land to the TOD target area at the initial stage. It is considered more realistic to collect taxes from these limited areas by paying fees for access to public services, which will be discussed in the next section, rather than taxes.

4) Land Tax Reform

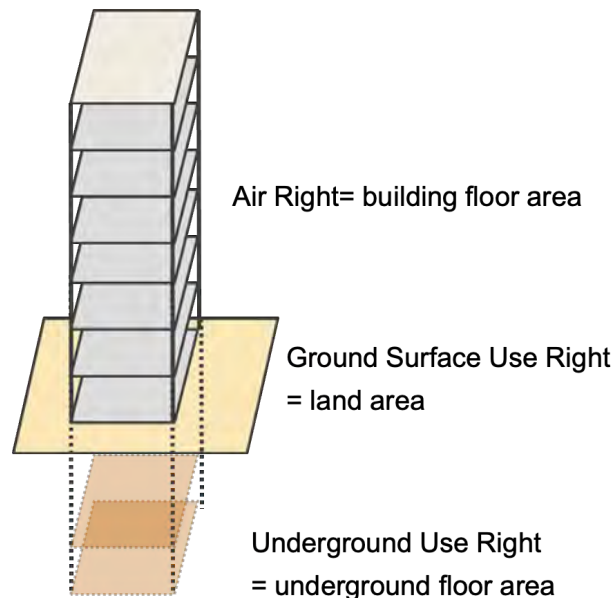
The introduction of a new tax is a big challenge that may invite strong opposition and may induce unexpected side effects. The target areas for land value capture for TOD are limited to urban TOD areas, while the property tax system covers the entire national land comprehensively. For the purpose of simply enhancing land value capture for TOD, it suffices to reform the current land tax system to introduce one more parameter for the evaluation of the land, i.e., building density of FAR (floor to area index).¹⁵ The concept aims at capitalizing on three-dimensional space utilization that TOD promotes and enables. The required revision is such that the official land assessment will add FAR values as a multiplier to the original land value of the area.

The concept for the reform is based on the recognition of land uses composed of three elements of 1) surface, 2) air, and 3) underground as illustrated in Figure 3-5. Based on these expanded land use

¹⁵ FAR is synonymous to FSI (floor to space index). They both represent the ratio of total floor areas to the land area of the plot.

concepts, the land valuation is based on the three-dimensional spatial areas instead of the conventional two-dimensional areas. Pragmatically, the FAR index will be incorporated into the assessment of official land values as a multiplier to the base price of land plots.

Lately, the city governments have been keenly aware of additional and more sophisticated land uses, including underground space, due to the increasing limitation of urban space. It is good timing to introduce a three-dimensional interpretation of land uses in the legal framework.



Source: JICA Study Team

Figure 3-5 Expanded Concept of Land Use Rights

There should be legal framework changes at two levels as follows;

Step 1: Amendment of Decree 53/2011/ND-CP and Circular 153/2011/TT-BTC

An immediate solution for effecting the incorporation of FAR multiplier into the land value assessment system is to revise the Decree 53/2011/ND-CP "Guiding Non-Agricultural Land Use Tax," and Circular 153/2011/TT-BTC," Guiding Non-Agricultural Land Use Tax," which stipulate the detailed rules of the Non-Agricultural Land Use Tax Law. Without amending the Land Law, it may be possible to amend and add some sections to these bylaws to incorporate open-air use rights and underground use rights as taxable objects and to define the tabulation formula for the calculation of the multipliers to the conventional basis values of the land.

Step 2: Amendment of the Land Law or the Law on Non-Agricultural Land Use Tax

The amendment of the Land Law to expand the scope of land use rights to include the above three parts of the space will be the basis for amending the method of calculating land use tax.

3.8. Betterment Charges and Impact Fees

A betterment contribution (known as a special assessment in the United States) is a charge or fee imposed on owners of selected properties to defray the cost of a public improvement or service from

which they specifically benefit. Impact fees are the mandated exaction from developers for the implementation of a large-scale project for the approval of the project. Betterment charges are imposed on all the property owners within a specific area, such as TOD areas. Impact fees may be imposed on new projects proposed by developers. The revenue size may differ substantially. Betterment charges may be imposed at a low rate over a long duration, whereas impact fees may be imposed on developers as a large lump sum payment at once before the implementation.

Betterment charges and impact fees are similar to property tax or urban planning tax, but the coverage of charges is limited to a small area or a group of businesses that have enjoyed or will enjoy the benefits endowed by the urban infrastructure development. Often these levies are imposed on top of property taxes which are applied to city-wide property owners. In other words, these are considered the most direct form of value capture.

In the United States, many cities introduced betterment levies to special assessment districts. The betterment charges are calculated on the basis of the increment in land values caused by public infrastructure improvements. Normally the local government issues bonds to receive the original money for infrastructure development from capital markets.

Bogota of Colombia has widely used betterment levies to help fund public infrastructure. The scheme (known as contribution de valorizacion) was legalized in 1929 but left untapped until 2005. According to Lincoln Institute, Bogotá had raised about US\$1 billion worth of revenues from this levy between 2007 and 2016.¹⁶ The collection of this fee has been generally accepted by taxpayers. The system had relatively lower default rates than compared with property taxes. Controversies have surfaced, nevertheless, over how the charge is calculated.

The main challenge in the administration of betterment charges or impact fees comes from the difficulty and accountability issues in quantifying the land value increment resulting from infrastructure investments. In order to introduce this scheme in Vietnam, improvements in the current land price evaluation system may be needed to win compliance. It is even harder to identify the portion of value increase due to infrastructure investments but not to general economic development. The cost of administering parcel-by-parcel betterment levies could make it administratively difficult to implement a betterment levy scheme.

Critics point out that only wealthier parts of the city can pay for the fees. However, evidence from Lima, Peru, suggests that low-income households are more eager to pay for the public infrastructure and services than the wealthy. In the early 1990s, the city launched a successful program featuring 30 projects that used a contributory tool for financing public services. It was better received by the poor communities than by the higher-income households. One solution is to hold the charges at a minimum level that the residents and landowners easily accept.

Property taxes have the advantage of being more widely collected, but their introduction in Vietnam will have to wait for a central government decision, which will take a long time. On the other hand, it is allowed to introduce a service fee. Although it is necessary to get legal clearance of the betterment charges a fee as a fee rather than a tax, it has the potential to develop a new LVC tool as an innovative attempt at the city level.

¹⁶ Martim O. Smolka “Implementing Value Capture in Latin America,” Lincoln Institute of Land Policy

3.9. Sale of Additional Floor-to-area Ratio

In pursuit of the TOD principles, it is necessary to increase the urban density and concentrate the residential and working populations in the areas near the station to build up the passengers for urban railways. At the same time, there is no risk of triggering traffic congestions by the intensification since the massive transport capacity of the railway can easily absorb the increases in the person trips arising from high population densities. Based on these presumptions, it will be possible to actively raise the floor-to-area ratio (FAR) of the building regulations in the area. For the developer, the additional floor-to-area ratio allowed by additional FAR can be an important asset for improving the profit margin of the development project against high land prices. The method of auctioning and monetizing this additional FAR is another tool for LVC.

1) Examples Of Auctions of Building Rights in São Paulo, Brazil

In accordance with the Urban Development Act, Federal Law No. 10257 of 2001, and the Land Use Law, Federal Law No. 13885 of 2004, the City of São Paulo introduced the Charges for Additional Building Rights - Outoga Onerosa do Direito de Construir (OODC) in its 2002 Strategic Master Plan. Under the OODC, the city government sets a base floor-to-area ratio and a maximum floor-to-area ratio for each zone and sells the difference between the base and maximum floor-to-area ratios as additional building rights to investors in the form of auctions. At the same time, it serves as an urban planning tool to control the existing and developable floor area of each zone and adjust the infrastructure loads. Naturally, the policy is to set high maximum floor-to-area ratios in areas at public transportation nodes to attract population.¹⁷ Since 2002, over 2,500 high-rise licensed projects in Sao Paulo acquired additional building rights, raising over US\$1 billion in public revenues.

2) Special Floor-to-area ratio Applicable Districts in Japan

In the case of Japan, there are no examples of the government selling floor-to-area ratios to generate revenue, but there is a system in place to allow the sale and purchase of floor-to-area ratios between landowners in certain zones in order to promote the high-density use of urban space.

A special floor-to-area ratio district is one of the local districts designated by Japan's urban planning system, and the area is entitled to the privileges of transfer of a portion of a building site's designated floor-to-area ratio to multiple other building sites. These districts were established in 2000 as a result of amendments to the City Planning Law and Building Standards Law, with the aim of promoting the use of unused FAR.

In general, the transfer of floor-to-area ratios is only allowed between adjacent sites, but under the special floor-to-area ratio application zone system, it is now possible to buy and sell "air rights" between non-adjacent buildings sites within a special floor-to-area ratio application zone. In principle, the criteria for designating special floor-to-area ratios and maximum building heights will be established. In order to transfer the floor-to-area ratio, it is necessary to apply to the administrative agency in charge for examination and approval.

¹⁷ Lincoln Institute of Land Policy, 'Recent Experience with Land Value Capture in Sao Paulo, Brazil' Land Lines, July 2011

One of the most famous examples of this system is the Otemachi-Marunouchi-Yurakucho Special Floor-to-area ratio District (designated in 2002 in Chiyoda Ward, Tokyo), in which Japan Railway East used the extra floor-to-area ratio rights of the red-brick Tokyo Station building (approximately 600%, the difference between the designated floor-to-area ratio of 900% and the utilized station building floor-to-area ratio of 300%, equivalent to a floor area of 180,000 m²) for the construction of several buildings in the surrounding area as shown in Source: Masami Kamata, "Japan Taiwan Technical Conference, Tokyo Marunouchi Station



Before Restoration



After Restoration

Figure 3-6. The transfer generated sales of 50 billion yen (USD 500 million approximately) to restore and preserve the station building.

Source: Masami Kamata, "Japan Taiwan Technical Conference, Tokyo Marunouchi Station

Figure 3-6 Restoration of Tokyo Station Restoration

3.10. Land Readjustment Scheme

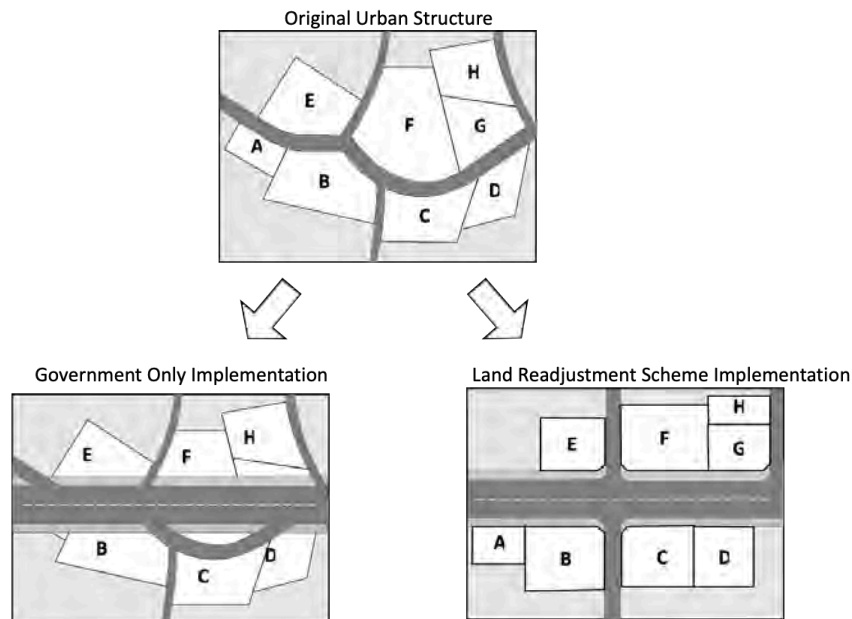
The land readjustment scheme is a land assembly method advanced in Japan. It is a development method based on the mutual assistance of landowners, in which each landowner retains his or her land rights in the area to be developed, expands the road area and secures reserved land by reducing a certain percentage of the land, and bears the project cost with the profit from the sale of the reserved land.

1) Land Readjustment Schemes In Japan

Japan's land readjustment scheme (simply called Land Pooling in English) is an urban development method based on a partnership of landowners with a history of about 100 years and has been used to reorganize land plots and secure land for urban facilities, including roads. It is the most important urban development method in Japan because of its role. The scheme was adopted in the late 19th century. Initially, in the rural area on the outskirts of metropolitan areas where urbanization is progressing, rural landowners joined hands to reorganize their land parcels against the encroachment of land by developers. It was a mutual aid development method in rural areas that did not rely on the government to realize the value enhancement of the value of individual plots by improving road access to farmland. As time progressed, the scheme was modified by the city government in collaboration with landowners as a redevelopment method for disaster prevention, improvement of traffic

access, and improvement of living environment in densely populated areas in the city, and the scheme continues to be applied to this day.

The number of projects implemented is over 12,000, or about 370,000 hectares, and development contributed to the urban development and redevelopment constituting 30% of Japan's Densely Inhabited Districts (DID).¹⁸ One-fourth of the completed statutory city planning designated urban roads and one-third of station plazas have been created through land readjustment schemes.



Note: If the government simply improves traffic access of the target area of irregular-shaped parcels linked by narrow roads, formed before the emergence of automobiles (left), and only road expansion is done with minimal land expropriation, parcels are dissected to become unsuitable for development. In the land readjustment scheme (right), the parcels are re-shaped in the entire area to be reduced, but regularly shaped easy-to-use parcels are created.
Source: JICA Study Team adoption from JICA, "Land Readjustment."

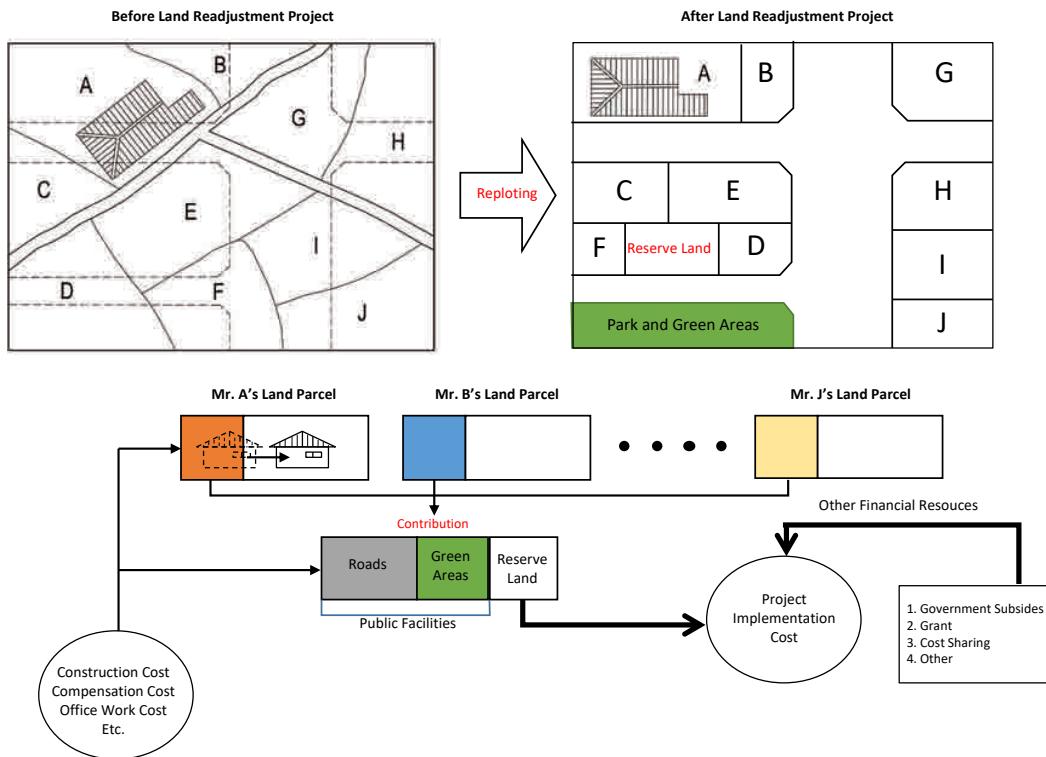
Figure 3-7 Simultaneous Reorganization of Parcels and Road by Land Readjustment Scheme

2) Methodology of Land Readjustment

The land readjustment scheme method basically reorganizes the target district as a whole after eliminating the current land ownership divisions and remodels the district to provide transportation access and urban services. It is necessary to calculate the required area, including the required area of public land and the area for sale, to generate the project cost, and obtain the consent of all landowners for the corresponding reduction. The reduction in steps varies depending on the characteristics of the district and the content of the project but is generally around 20% -40%. In a growing economy with ever-increasing land prices, the key to success is to gain the understanding of landowners that the value of land assets will exceed the loss by land contribution. However, even if you agree with the general remarks, negotiations on the final adjustment of interests here, such as individual reduction

¹⁸ Densely Inhabited District which is often referred to as DID and is defined as an area a city, town or village that is composed of a groups of contiguous basic unit blocks each of which has a population density of about 4,000 inhabitants or more per square kilometer, and whose total population exceeds 5,000.

rate, replacement destination, and plot shape, are not simple and require time and effort. The higher the level of public facilities, roads, etc., the higher the value of the entire district, but on the other hand, the rate of step reduction also increases, and the ability to plan and design is required to adjust this trade-off. It is an extremely democratic urban development method that achieves the improvement of the value of the district while minimizing public intervention by rebuilding the urban space on a block-by-block basis.



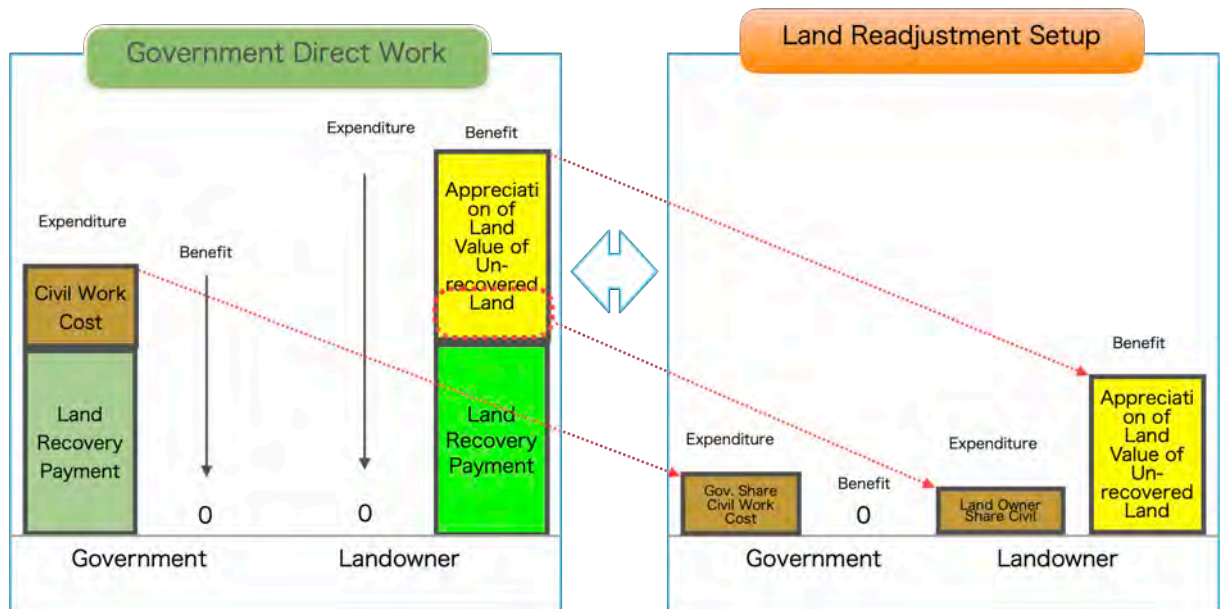
Source: JICA Study Team adopted from JICA, "Land Readjustment."

Figure 3-8 Land Contribution and Reserve Areas for Sales in Land Readjustment Scheme

3) Land Value Capture by Land Readjustment

The land readjustment scheme does not directly recover the development profits to the government but achieves substantial savings on the public burden of implementing the district development with its innovative approach. Figure 3-9 below shows a financial status comparison of stakeholders between the cases of implementation by the government alone and by the land readjustment scheme. In government-alone projects (left), the government first spends land recovery costs to secure public land, with additional investments for the improvement and construction of public facilities. On the other hand, there is no public financial revenue to be generated. Some of the landowners are obliged to transfer the land to the project, but they receive the compensation, while the other landowners in the surrounding area left out of land contribution gain the financial benefit from the rise in land prices. In the case of the land readjustment project (right), first of all, the land is not recovered, and the public land is created by the in-kind contribution of the land by the landowners. Next, part of the public investment will be covered by the sales revenue of the reservation provided by the landowners.

On the other hand, landowners retain the same or increased value of properties from district-wide improvements even though they have reduced landholdings. In the land readjustment project, the financial income earned by the landowner is reduced, and at the same time, the burden of public implementation expenditures is also significantly reduced.



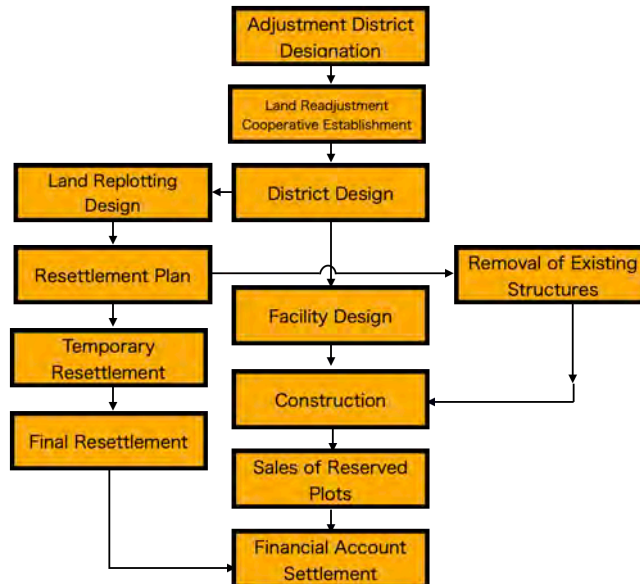
Source: JICA Study Team

Figure 3-9 LVC Effect of Land Readjustment Scheme

4) Land Readjustment Procedure

For the planning of land readjustment, the target area needs to be identified, and the improvement works such as access road widening, station square, and parks need to be specified for improving the site. Based on the work volumes, the area size requirements for public facilities should be calculated first. The new layout must take into account to minimize the impacts of the replacement of existing landowners. The major workflow is shown in Figure 3-10. First, after identifying the district, a land readjustment cooperative composed of the concerned landowners and investors is established. In order to secure the public facility design and land, the replotting design must proceed in tandem to designing the required public facilities on the contributed land areas by the reduction of the current land holdings. For the land resettlement plan, it is necessary to proceed steadily with the agreement of all the landowners based on the principle of equity (a rule that each landowner is guaranteed the allocation of land lots of the equivalent or better value after the project compared to the existing situation). The temporary resettlement is a step where each landowner relocates without final land registration to expedite the construction process. While engaging in the construction, the sales of the reservation land to cover part or all of the project cost should proceed. Then all the landowners are resettled. Finally, the financial accounts of the project are settled and closed as completion. Land contributions for public land and reservation for sales vary depending on the individual site and the availability of public financial support. Historically, in Japan, the contribution rate for public land was 20% and another 20% for reservations for sales. The land readjustment project is not a simple

physical district redevelopment plan, but it requires a delicate financial plan to secure funding (securing reserve land for sales and government grants) to finance the project implementation cost. Overall, it is necessary to generate a social consensus of all the landowners involved. Therefore, it requires financial expertise and a high level of consensus development skills to reach a unanimous agreement on the plans by all the stakeholders.



Source: JICA Study Team summarized from Land Readjustment Handbook

Figure 3-10 Flow of Land Readjustment

There are many cases in Japan, but as an example related to TOD in recent years, the land readjustment scheme at the north exit in front of Wako City Station is shown in Figure 3-11 below. Now that the rise in land prices has slowed compared to the Period of economic growth, it is difficult to offset the reduction of land plot size by the appreciation of the remaining land plot. Therefore, in the example of the station square in Wako Station, the rate of land contribution is about 20%, and the reservation land to be sold to a third party contributes only about 1% financially.

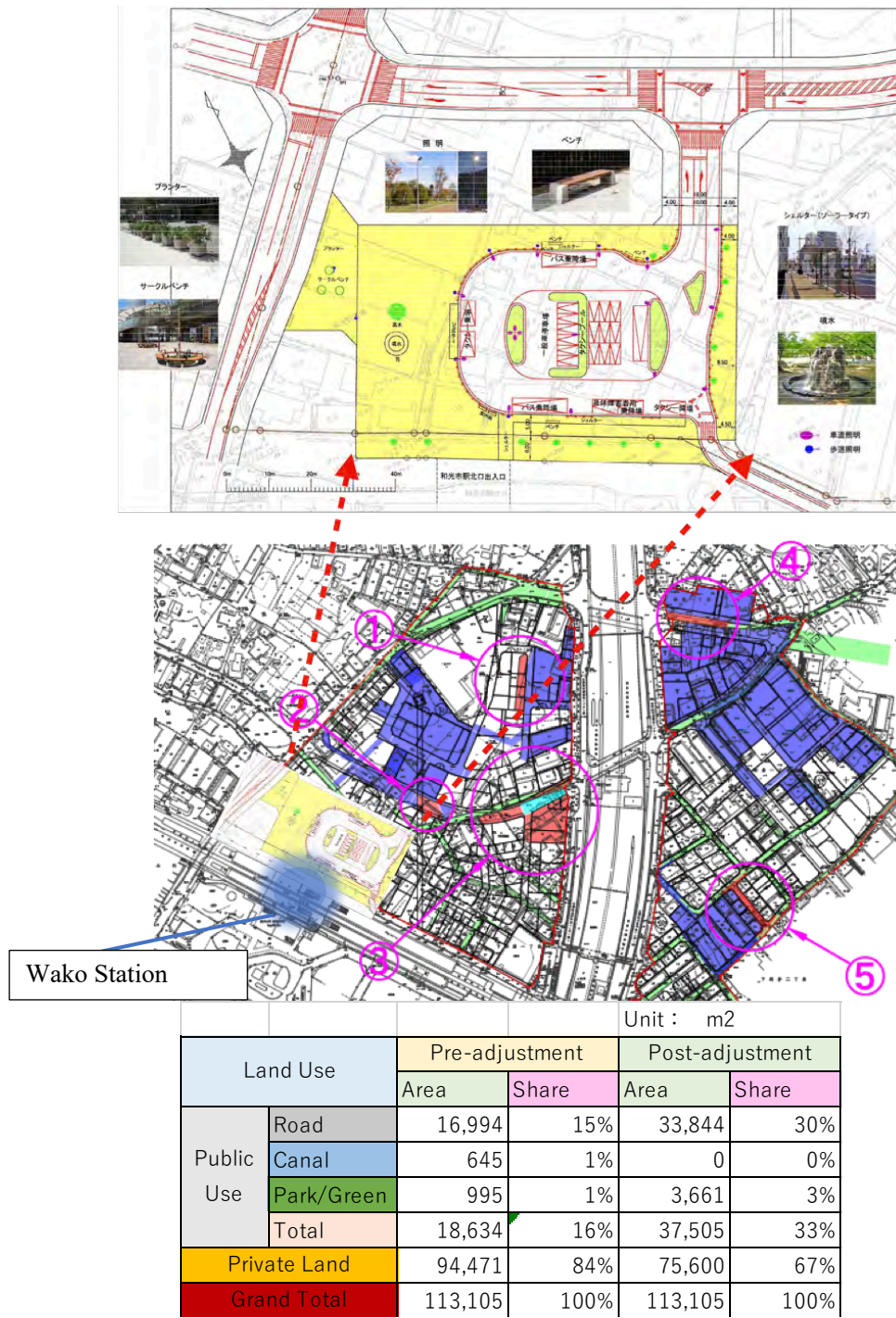
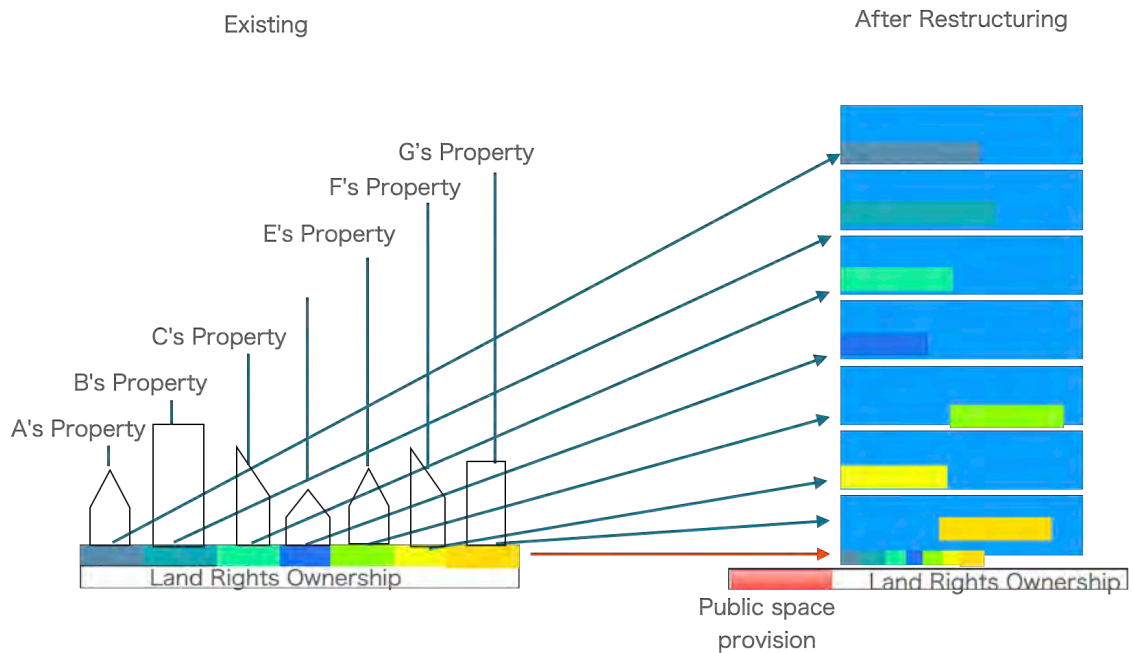


Figure 3-11 Land Readjustment of Station Plaza at Wako

5) Floor to Land Use Right Swap (Urban Redevelopment Scheme)

The Urban Redevelopment Scheme is a statutory development program of the land readjustment scheme in a high-density urban area. By exchanging the floor area equal to or greater than the land owned by the landowner in value. While avoiding land recovery and preserving the ownership of the

landowner, the area and plot will be developed in an integrated manner to be utilized by the developer.



Source: JICA Study Team

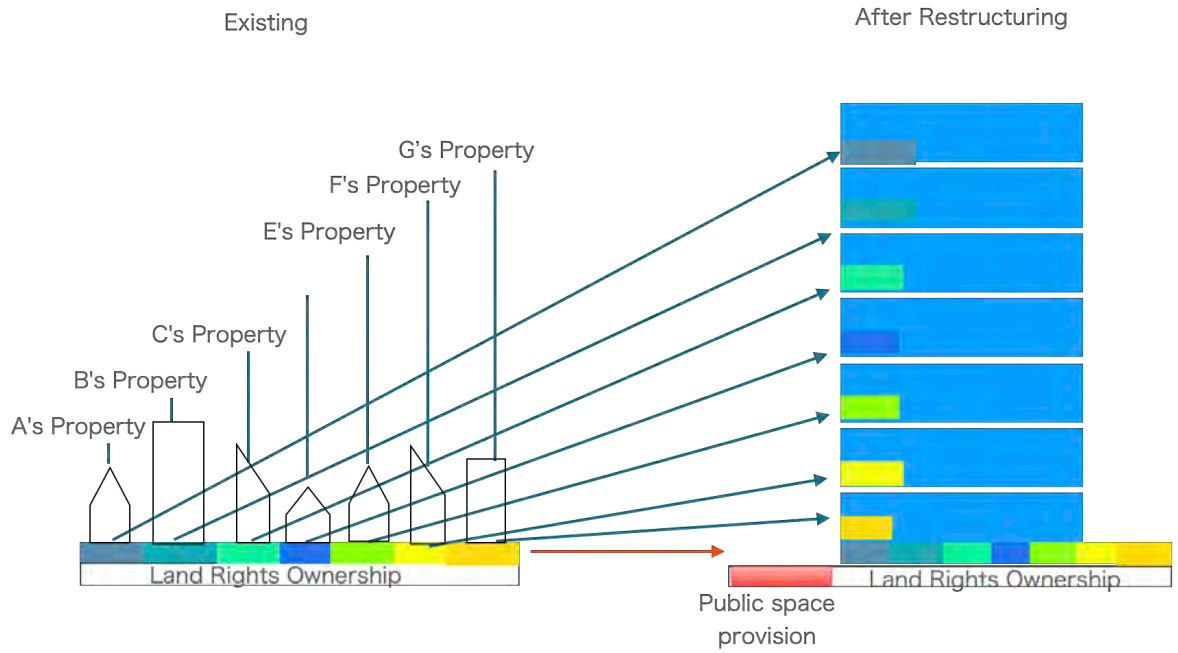
Figure 3-12 Floor to Land Use Right Swap in Urban Redevelopment Program in Japan

6) Leasing of Land Use Rights (Separation of Land Occupation Right and Land Utilization Right)

In Japan, the conventional floor/land-right equivalent exchange is now further developed. While retaining the land ownership except for the space for public land required, the floor rights are endowed to compensate for the values of the pre-existing buildings. The development of the building and most of the other floor areas will be operated by the developer with the highest priority on business feasibility, and the landowner will receive the land lease fees from the developer. This scheme can be regarded as the separation of land ownership and land use rights.

An advanced example of the land leasing method for land assembly is Marugame Shopping Street in Takamatsu City. In this method, the landowner does not have direct ownership of the land or floor on a one-to-one basis. Instead, a long-term lease contract for land or a usage contract with a development company is concluded in the form of investment. Since the use of the space (floor area) to be developed and the landowner are completely separated, the operating company can plan the most profitable and value-added development.

In addition, the initial investment can be lowered because the developer does not have to purchase the land. Compared to the floor to land use right swap method, as is clear from the comparison of Figure 3-12 and Figure 3-13, the floor areas to be transferred to the landowner for compensation can be reduced, and the floor area that can be monetized can be expanded, so that the investment recovery is expedited. On the other hand, landowners can retain the land titles, which are expected to increase in value in the future, as well as a continuous source of cash income of land leases. Further, when cash is required, there is an advantage that the liquidation of assets can be easily achieved by selling the land lease contract to a third party.



Note: Compared to Figure 3-12, the land ownership is retained to all the individual landowners after some reduction for public space generation. The floor compensates areas are smaller.
Source: JICA Study Team

Figure 3-13 Land Assembly through Separation of Land Occupation Right and Land Utilization Right

4. Action Plan and JICA Cooperation Possibilities

4.1. TOD Action Plan Strategy

The future action plans to be discussed during the course of study are presented here based on the analyses of the current systems of Vietnam and the good practices introduced.

- i) A multiple number of government departments and agencies need to act together to promote TOD. It requires a committee for inter-agency policy adjustment and a task force to coordinate the implementation;
- ii) The major investment in TOD promotion depends on real estate investments by private investors, i.e., public investment alone will not make it happen;
- iii) Land recovery in the central part of the cities is expensive, which requires compensations several times more than the officially listed land prices;
- iv) Land value capture is necessary for the continuation of urban railway developments in the future;
- v) Vietnam does not have a property tax as a basis for LVC;
- vi) The introduction of a property tax may take a long time;
- vii) Introduction of tax is a matter of national policy, while service fees can be introduced at the municipal level;
- viii) It is important to improve transfer facilities to and from urban railway stations, but it is difficult to secure land; The majority of implementation costs comprises of the land recovery and relocation compensation costs;
- ix) Large-scale station complexes are effective in maximizing the benefits of TOD, but it is difficult to assemble a large parcel of land;
- x) The current land use controls and building regulations are lax in their effectiveness and do not provide a playing field for land value capture negotiation with the investor;
- xi) In addition to securing land use rights, investors need to secure multiple approvals, such as approval of a detailed plan and investment license; The time and effort required for such procedures, as well as the risk to feasibility, maybe pose barriers to private investments in TOD areas;
- xii) The risk is further increased in the case of detailed district plans that require the revision of the zoning plan approved by the city; and
- xiii) One option is the auction of an additional floor-to-area ratio, but this requires the flexibility in changing regulations posed by the zoning plans.

Based on the recognition of the above issues, the matrix of action plans is presented here for further discussion to address the problems for the city and central government levels separately.

Table 4-1 Action Plan for TOD Promotion

Policy	Goal	City Government Action Plan	Central Government Action Plan
City/district planning	Incorporate the TOD promotion principles in the city master plans.	<ul style="list-style-type: none"> - A planning and implementation committee is established to coordinate TOD-related departments. - A planning task force is established to promote TOD. - An integrated plan for the city master plan and the city transportation master plan is adopted. - 	<ul style="list-style-type: none"> - A planning and implementation committee is established to coordinate TOD-related departments. - Decree regarding TOD special areas is enacted based on both the City Planning Act and the Railway Act.
	Develop a land-use plan / public facility development plan based on the TOD principle in the area around the public transportation station.	<ul style="list-style-type: none"> - TOD promotion districts are set at the city level. - TOD land-use guidelines are set. - The zoning plan for the TOD promotion area will be changed. - 	<ul style="list-style-type: none"> - TOD land-use guidelines are set at the national level.
Land readjustment project (including floor/land use right equivalent exchange)	Introduce a land readjustment project for the accumulation of land for advanced combined use of land integrated with public transportation stations.	<ul style="list-style-type: none"> - Establishment of land readjustment project implementation task-force - Guidelines and manuals are prepared - The pilot areas for the land readjustment project are identified. - A pilot land readjustment business association is established, and a land readjustment business plan is drafted. - Pilot land readjustment projects are implemented. 	<ul style="list-style-type: none"> - Training is held to develop the capacity to build a land readjustment project system at the national level. - Guidelines and manuals at the national level are prepared. - Land readjustment method public relations materials at the national level are prepared. - Public relations activities are carried out at the national level to make the system known. - A public investment budget is allocated to support the land readjustment project. - The land readjustment law or decree is enacted. - The urban redevelopment project floor/land use right equivalent exchange) law or decree is enacted
Land value capture	Part of the land price improvement of mobility improvement by public transportation will be returned to the public.	<ul style="list-style-type: none"> - A land price evaluation review committee will be established in urban areas. - Guidelines for visualization and accountability of land evaluation are set. - The distance to the station is reflected in the land price evaluation. - A TOD special fee system within the limits of the current legal system will be considered. - TOD special fee will be introduced. 	<ul style="list-style-type: none"> - A non-agricultural land tax revision, property tax, or city planning tax introduction review committee for cities is investigated. - Non-agricultural land tax system revision, city planning tax, or property tax is introduced.
	Part of the increase in land prices due to high-density development incentives around the station will be returned to the public.	<ul style="list-style-type: none"> - A land price evaluation review committee will be established in urban areas. - Guidelines for visualization and accountability of land evaluation are set. - The available floor area ratio is reflected in the land price evaluation. - An additional floor area ratio auction system will be considered. 	<ul style="list-style-type: none"> - Taxation on advanced space use is investigated in the revision of the Land Law. - The Land Law is revised to include taxation on the use of advanced space. - Law/regulations are put in place regarding floor area ratio auctions, sales, and additional identification of floor area ratios.

Policy	Goal	City Government Action Plan	Central Government Action Plan
		- An additional floor area ratio auction will be held. -	
PPP / investment promotion	Promote private investments in high-density mixed use urban developments around the stations	- Investor obligations and incentives for TOD investment are adopted. - TOD investment license approval criteria and bidding system are set. - Biddings to acquire a TOD investment license are held, and investment licenses are issued. -	- Decree regarding TOD special districts are enacted based on both the Town Planning and Zoning Act and the Railway Act. - Law/regulations are established to promote TOD investment. -

Source: JICA Study Team

The key element in developing a strategy for TOD is to build a win-win relationship between the public and private sectors, as well as landowners. It is also important to create a pro-development administrative culture that the public will support the rapid realization of urban development.

The following sections below add more specific explanations of each action plan.

4.2. Action Plan for Planning System

1) Revision of Urban Planning

Reinforcement of Land Use Controls and Building Regulations

Land use controls and building regulations should be redesigned for each district according to the current infrastructure capacities and near future expansion plans.

Designation of Tod Promotion District Zoning Plans

In areas where early commissioning of urban railways is expected, the physical boundaries of TOD promotion zones should be set up to streamline the approval process and at the same time adjust the building density regulations to maximize land value capture

Overlaying Tod Promotion District Zoning Plans

In areas where early commissioning of urban railways is expected, an overlay of special TOD district plans onto the zoning plans would shorten the modification process and promote private investment consistent with the objectives of the TOD.

Revision Of General Construction Plan To Incorporate Tod Methodology

Vietnam's general construction plan sets a broad vision of what a city should be, including development orientation, development areas, economy, administration, infrastructure development, education, health, and culture. Transportation planning has not been closely integrated into the urban master plans yet but left to sector planning. To make up for these shortcomings, it is necessary to revise the plan focusing on the integrated plan of public transportation and population / working population allocation/land use planning. The Law on Planning of 2017 sets inter-sectoral integration, but its methodology needs yet to be explored and established.

In Hanoi, the city master plan has been reviewed since the beginning of 2021, and it is a good time to change the plan for the city.

4.3. Action Plan for Land Value Capture

Land Law and Non-agricultural Land Tax Law Reform

As recommended in 3.7, the quickest way to introduce tax-based land value capture is to change the assessment method of publicly announced land values by the introduction of land use density multipliers based on the concept of land-air use rights and underground use rights.

Since the revision of Land Law 2013 is announced to take place at any time soon, there is a window of opportunity for the revision. TOD concerns only the non-agricultural land tax without affecting other land taxes such as agricultural land tax. Therefore, another law required for revision is the Law of Non-agricultural Land Tax. While the laws can address the recognition of differentiation of land utilization at three levels of surface, air, and underground, the bylaws will define the actual calculation methods.

The recommended sequence of revisions are as follows:

- The revision of Decree 53/2011/ND-CP "Guiding Non-Agricultural Land Use Tax," and Circular 153/2011/TT-BTC," Guiding Non-Agricultural Land Use Tax" for the new calculation methods incorporating the land use density multipliers;
- If the above action requires a higher level of revision of land tax, the next target is the Law of Non-agricultural Land Tax;
- If the above action still fails to implement the introduction of the multiplier, then it is necessary to undertake the overall overhaul of the legal framework, including the Land Law.

Introduction of Betterment Charges in TOD area

The introduction of own taxes at the city government level is not legally permitted. However, fees for public services can be set by the city level, and collection is allowed (Law No. 97/2015 / QH13 Law On Fees And Charges). Article 3 of the law stipulates, "Fees are an amount of money that shall be paid by organizations or individuals to make up for expenses for public services provided by a regulatory agency, public service providers as assigned by a competent state agency." Betterment charges have been introduced and widely adopted at the urban level to offset the public infrastructure load on large-scale development in US cities as well as in Bogota, Columbia. For HCMC and Hanoi City, TOD Betterment Charge as a fee for railway access services to the TOD area is proposed. It is assumed that the charge will be levied on the property owners as well as the land use title holders in the TOD areas on an annual basis.

However, the law specifies that the attribution of fees for railway services is set to the Ministry of Finance. In order to ensure that the fees are attributed to the municipal People's Committee, the fees need to be defined as the total infrastructure service charge of the TOD area, not the railway service.

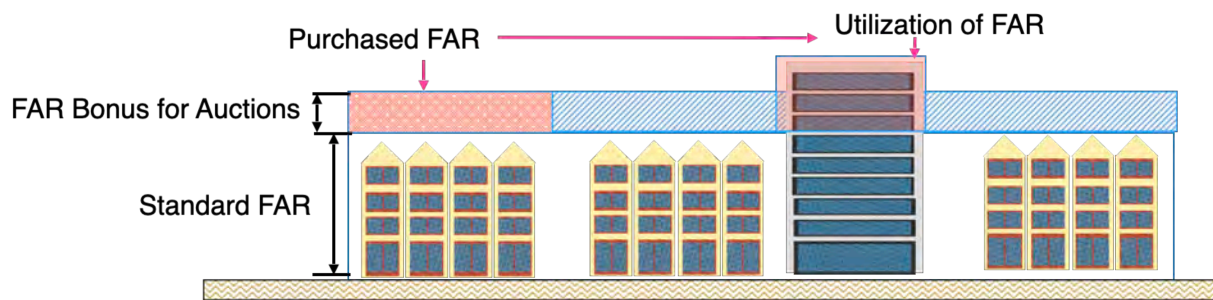
Additional Floor-To-Area Ratio Auction

The sale of options (rights as financial securities) for additional floor-to-area ratio in TOD areas as LVC measure has already been proven worldwide. It is necessary to consider the introduction of such a method to Vietnam. The following two conditions need to be met.

- i. Changes to the zoning plan: Floor-to-area ratio regulations in zoning should be capped for the entire subject area, while additional floor-to-area ratios should be made freely transferable

within the TOD area, rather than being specified for each lot. In other words, the floor-to-area ratio needs to be a total control item within the TOD area. By regulating the total volume, it will be possible to keep the infrastructure load under control throughout the TOD area.

- ii. Authorization as tradable securities: The purpose of an auction is to maximize the LVC revenues. When investors purchase additional floor areas, there is a risk that the additional floor area will be wasted if the investment is not viable if its use is limited to the site. In such a case, the value of the security will be limited, and the price is likely to be bid low. Therefore, auctions of resalable securities are desirable.



Source: JICA Study Team

Figure 4-1 Concept of Additional Floor-To-Area Ratio Auction

Introduction Of Urban Planning Tax (Medium- To Long-Term)

The introduction of betterment Charges on an urban block basis is problematic from the perspective of administrative efficiency, considering the effort required to introduce and maintain the system. The main purpose of tax reform should be to tax property tax thinly and widely. On the other hand, it is not difficult to imagine that the introduction of a new tax in areas with low-income levels, such as rural areas, would pose significant problems in terms of social equity. If the goal is achieved by limiting taxation in urban areas, where the benefits of development are concentrated, the introduction of an urban planning tax, which exists in Japan, is a promising option. In this case, the tax could be limited to urbanized areas within cities. The number of land parcels and fixed assets to be assessed will be substantially limited compared to the general property tax, and the administrative burden will be much lower.

4.4. Action Plan for Land Acquisition and Assembly

With regard to land assembly, we recommend the implementation of several pilot projects for the redevelopment of TOD areas based on some land readjustment schemes, including floor-to-land use right swap. This method will enable the creation of an area for public facilities such as a plaza in front of the station from an area of some size (10-20 ha). For stand-alone construction of large-scale facilities such as station buildings and bus terminals, a special purpose company (SPC) among the stakeholders, including a developer for business development, should be established to implement a pilot project over a site by consolidating land use rights as equity contribution in kind or long-term debt to the SPC. A long-term lease for the assembled land will allow landowners to preserve their assets and secure a constant income of lease. The developer does not have to recover or compensate for the land, resulting in a large initial reduction in investment cost. It also has the advantage of

providing highly liquid security to the landowner and an exemption of transfer taxes with fewer transaction costs than the transfer to the developer.

4.5. Action Plan for PPP Modality in TOD Areas

Infrastructure Expansion Costs Burden

The main developer of TOD districts is the private sector, and its main driving force is nothing but real estate development. However, since high-density development should be a norm in TOD districts, supporting infrastructure development is also required for incremental population, jobs, and traffics generated as consequences. On the other hand, the existing zoning plans and detail plans have already set the population targets and corresponding infrastructure specifications. Therefore, some revisions should be promoted and would the verification of all infrastructure plans. When considering additional population allocation is approved, it is necessary to set up a mechanism to allocate the additional costs of infrastructure developments.

Public-Private Partnership

There are three possible ways to develop the station and its surrounding area through the use of PPP.

- v. Construction and operation of the entire station building by private investment;
- vi. Provision of an access corridor from the building around the station to the station premises; through private investment
- vii. Construction and operation of intermodal transfer facilities by the feeder transit operator; and
- viii. Auction of development rights of publicly assembled land near stations.

The above four measures can be combined to provide a variety of options. The fourth option of ‘development right auction’ requires the leadership of the public side to generate public land lots with the adoption of land readjustment schemes for the auctioning.

One of the advantages for investors is to capture the potential customers created at the stations. An investment of an entire station building can maximize the commercial opportunities. In the case of an all-weather walkway that does not cross any road, 100% of the pedestrians become potential customers. In the case of the intermodal transfer, the facility would bring mutual benefits of increasing passengers for both urban railway and transit feeder operators.

Auction of Development Rights of Publicly Assembled Land in TOD Areas

In the short term, it is quite difficult for the Vietnamese city governments to introduce a universal land value capture system such as taxes and fees. The simplest way to implement land value capture is to sell the public land to developers or investors as development rights, along with land use rights. However, at present, there are few public lands along urban railways, and forced land recovery only would create conflicts with residents.

A realistic proposal is a combined technique of creating a cohesive land agglomeration by combining land acquired from market-price-based negotiations and public/reserved land plots generated from the contributions through land readjustment projects.

The price of the land around the urban railway and its station will start to rise once the public expectation is formed on future accessibility improvements when the implementation plan is in force. Private developers, who detect such plans early on, would consolidate land and implement high-density development to monopolize the profits from land value appreciations.

JICA Study Team proposes the following series of actions for the land value capture by the city's initiatives. The trick is to make a move before the investor.

- 1) Identify TOD target areas with a high comparative advantage as transportation hubs. At that time, sounding with the investors on investment intentions must be carried out to ensure feasibility;
- 2) Purchase land at market prices through negotiations in and around TOD areas with the implementation of the land readjustment project in prospect;
- 3) Develop a feasible land readjustment project plan based on the land plots available from the action 2) above through the dialogues and consensus building with the land title holders;
- 4) Formulate a TOD district detailed plan that can be implemented in a short period of time, reflecting the land readjustment project specified in 3);
- 5) Establish a land readjustment association and implement a land readjustment project;
- 6) Auction the development rights of reserved land and floor areas over public facilities (station squares, parks, transfer facilities, concourses, etc.) realized by the land readjustment project. By relaxing the floor-to-area-ratio regulations and building regulations in the existing zoning plans, it becomes possible to increase the bid prices by allowing developers to secure additional development floor areas.

The above proposal is also a comprehensive approach to mobilize all the land value capture methods so that the cumulative effects are maximized. Market-reliant business developments should be left to the private sector. However, the government should take the initiative in development through the pre-emptive acquisition of land, land readjustment, and detailed planning without relying on investors. As a result, the full land value capture will be realized.

In the long term, when there is sufficient expertise and needs developed for this method to pool advance-purchased land plots to provide bases for temporary relocation or barter trading to scale up urban developments, land pooling may be institutionalized into a "Land Readjustment Land Bank."

On the other hand, the investor is frustrated in unclear and prolonged approval process for development license under the current urban planning framework. It is a norm for the investor to assemble land as a pre-requisite for the investment. The ensuing prolonged approval process only adds costs and risks to the investment; thus the investor feels that the current land use controls are inhibiting much needed investments in TOD areas. There should be a reform to improve the transparency in land use controls and shorten the approval process.

It is highly recommended that investors in TOD special zones be given special incentives that are commensurate with the corresponding obligations.

Consolidation of investment licenses, land use permits, planning approval, and other procedures

Under ordinary property development procedures, the departments in charge of investment license, planning approval, or land use right entitlement are different, so it takes time for the examination procedures. In addition, if even one is not approved, there is a great risk that money invested may be

wasted. A one-stop service desk should be established to essentially unify the licensing and approval procedures.

Incentives For Investors

The investment incentives to be investigated are as follows;

- Proposals for modifications of land use regulations and other regulations;
- Granting of additional floor-to-area ratio in exchange for LVC implementation
- Early approval of investment licenses
- Partial reduction and exemption of corporate income tax and expansion of loss deferral system
- Deregulation through approval of the establishment of TOD-only SPCs

Corresponding Obligations of Investors

- Fulfilment and supplementation of transportation node functions
- Land contribution for providing public land (roads, station squares, parks, etc.)

4.6. Action Plan for Laws and Regulations

The development of laws and regulations is under the authority of the central government. The preparation should proceed by clarifying the responsibilities and rights of stakeholders to establish a legal system which enables smooth implementation through standardized procedures. The following five points are the targets of legislation related to the promotion of TOD.

- Designation of TOD Special Zone
- Land readjustment scheme
- Land Law and Law of Non-agricultural Land Tax
- Betterment Charges and additional floor-to-area ratio sales as a means of LVC
- Urban planning tax
- PPP

Possibility Of Setting Up TOD Special Zones In Vietnam

There are many similarities between urban planning in Japan and Vietnam, including the fact that the planning system is mandated by the legal system. However, there are also concerns arising from the differences. In the case of Japan, when it was first introduced, urban planning was the only type of planning in cities. More detailed plans for the district were introduced in 1980, and a higher level of long-term planning, equivalent to a master plan, was introduced in 1992, increasing the hierarchy in accordance with social demands and the level of planning capacity of local governments. Vietnam, on the other hand, has had three layers from the very beginning, and in recent years the Law on Planning has mandated the formulation of higher-level regional and national plans. There are concerns that the multi-layered planning structure places an excessive burden on an administrative capacity.

The breakthrough in Japan's 2002 Law on Special Measures for Urban revitalization was the fact that the measure allowed the zero-based revision of the existing land use plans for the designated areas. In Vietnam, the overriding superiority of the upper plans makes the deviation of the lower plans almost impossible to achieve. In this sense, unless it is legally permissible to remove the restriction once for all for the TOD promotion area, it will continue to be impossible to realize dynamic adaptation in planning, although it is possible legally. Therefore, the imposition of revision requirement only applied to TOD areas in a top-down approach might be the only way to solve the gridlock of inter-plan consistency.

The direction of Revision of Urban Planning Legal System

The TOD investment promotion special district will be by formulating a government decree on the special zone for TOD (pilot plans) as well as revising the government ordinances under the Law on Urban Planning and the Railway Law. The government decree must clearly state the granting of investment incentives such as short-term examination, permission to establish SPC, and relaxation of land use regulations while mandating the provision of public space, including setbacks, participation in land readjustment schemes, intermodal transfer facilities, station plazas, and parks.

Legalization On Land Readjustment Schemes And Floor-To-Land Use Rights Swap Schemes

The law of land readjustment must set the institutional framework and financial responsibilities to secure the rights and obligations of participants. The major elements of the law should include the following issues:

- Organization of implementing body
- Rights and obligation of implementing body
- Rights and obligation of participants including land use right holders
- Designation of supervising public agency
- Authorities and obligations of the supervising agency
- The disposal method of land use titles
- The procedure of land readjustment work
- Principles of readjustment of land use titles
- Principles of valuation methods of ex-ante and ex-post land use rights and floor space for exchange
- Financial account of the readjustment scheme

Establishment Of TOD Betterment Fee Law and Regulations

If the introduction of the TOD betterment charge is not deemed to be feasible by the current Law on Fees, a new law or ordinance is necessary for TOD betterment fee establishment.

Establishment of Property Tax / Urban planning tax with reform of current land price evaluation system

A legal framework should be established for the introduction of nationwide property tax or geographically restricted urban planning tax that is linked to the values of land. The currently institutionalized public announcement system of land prices in Vietnam is the basis for the calculation of

land use tax and land recovery compensation. There may be different land price standards or calculation methods for different purposes. It is also necessary to consider the establishment of the system of land price evaluation expert certification and appellate system for complaints and conflicts.

Legal Framework for PPP Promotion

Given the lagging situation in LVC development and the limited fiscal capacity to meet the huge public investment demand, the private sector participation in sharing the burden and benefits of TOD is also a way to resolve the mismatch between the cost and benefit. In the construction of urban railways, attempts were made to induce private investment in urban railways, and private companies undertook the Pre-FS for Phase 2 and 5 of Urban Railway Line 2 in Hanoi, but the private sector has now withdrawn from the project. The reason for the withdrawal is that it is difficult to recover the investment cost from the operation of the urban railways alone, and the large initial investment amount and consequent risks make investors hesitant. The actual implementation methods of investor protection will have to wait for the detailed regulations that are scheduled to be introduced in the near future.

4.7. Recommendations for JICA Cooperation

Based on the above action program, the following are the recommendations for the directions of JICA's support measures.

1) ODA Loan Possibilities

As ODA loans, there are two potential modalities, 1) policy loan and 2) sector loan. The program loan is to lend for general fiscal support on conditions that the pre-agreed policy and institutional improvements related to TOD promotion are undertaken. The second option is the sector loan to finance a bundle of investment projects in the TOD target area. Program loan is possible if the necessary conditions exist such that the Vietnamese side has some commitment toward policy reforms and that the time to implement policy measures is relatively short.

Program loan for TOD promotion

Based on the above action programs, the following recommendations are made regarding the possibility of JICA's support measures.

TOD Policy Loan For City Governments

A policy loan does not specify the use of the funding for any particular spending purpose, but on the other hand, progress toward the fulfilment of the specified policy action is the necessary condition for the disbursement of each loan tranches. According to the action plan summarized in 4.1 above, Table 4-2 proposes a TOD program loan framework with the city government as the executing agency. Regarding land value capture policy, it is necessary to wait for future discussions on what would be the policy actions. In general, the triggers for the disbursement will be a series of government actions such as the establishment of a review committee, a study of some policy goals, pilot projects, administrative orders at the city level, and eventually laws or bylaws. It is conceivable to set the introduction of the system in stages. The program loan framework should be designed, so that action plans are subdivided into staged achievements, which allows clean and easy monitoring.

Table 4-2 TOD Program loan Framework for City Governments

Policy	Goal	Action Plan
City/district planning	- Incorporate the TOD promotion principles in the city master plan.	- A planning and implementation committee is established to coordinate TOD-related departments. - A planning task team is established to promote TOD. - An integrated plan for the city master plan and the city transportation master plan is established.
	- Develop a land-use plan / public facility development plan based on the TOD principles in the areas around the public transit stations.	- Tighten the land use control and building regulations over the entire city. - TOD promotion districts are set at the city level. - TOD land-use guidelines are established. - The zoning plans for the TOD promotion area are changed
Land readjustment project (including floor/land use right equivalent exchange)	- Introduce a land readjustment project for the accumulation of land for advanced combined use of land integrated with public transportation stations.	- Establishment of land readjustment project implementation taskforce - Training for capacity development of land readjustment projects is conducted. - Guidelines and manuals are prepared. - Land readjustment method public relations materials are created. - Candidate sites for land readjustment projects are identified. - Public relations activities are carried out to raise the awareness of landowners. - A public investment budget is allocated to support the land readjustment project. - The pilot area for the land readjustment project is identified. - Pilot land readjustment cooperatives are established. - A pilot land readjustment project plan is drafted. - The pilot land readjustment project plan is adopted by the union. - Pilot land readjustment projects are implemented.
Land value capture	- Part of the land value of mobility improvement by public transportation is returned to the public.	- A land price evaluation review committee is established in urban areas. - Guidelines for visualization and accountability of land evaluation are set. - The distance to the station is reflected in the land price evaluation. - A TOD special fee system within the limits of the current legal system is considered. - TOD special fee is introduced.
	- Part of the increase in land prices due to high-density development incentives around the station is returned to the public.	- A land price evaluation review committee is established in urban areas. - Guidelines for visualization and accountability of land evaluation are set. - The available floor area ratio is reflected in the land price evaluation. - An additional floor area ratio auction system is considered. - An additional floor area ratio auction is held.
PPP / investment promotion	Promote private investments in high-density mixed use urban developments around the stations	- Investor obligations and incentives for TOD investment are adopted. - TOD investment license approval criteria and bidding system are set. - Bids to acquire a TOD investment license are held, and investment licenses are issued

Source: JICA Study Team

TOD program loan framework for central government

Similarly, based on the outline of the action plan in 4.1, the central government's program loan framework is proposed, as shown in Table 4-3. As a program loan framework, achievable action goals are set by stage for easy monitoring. For land readjustment, the legislation poses risks without

foundation on the successful lessons of pilot projects at the city level. On the other hand, tax reform cannot be expected to have a broader effect without major engagement by the central government.

Table 4-3 TOD Program loan Framework For Central Government

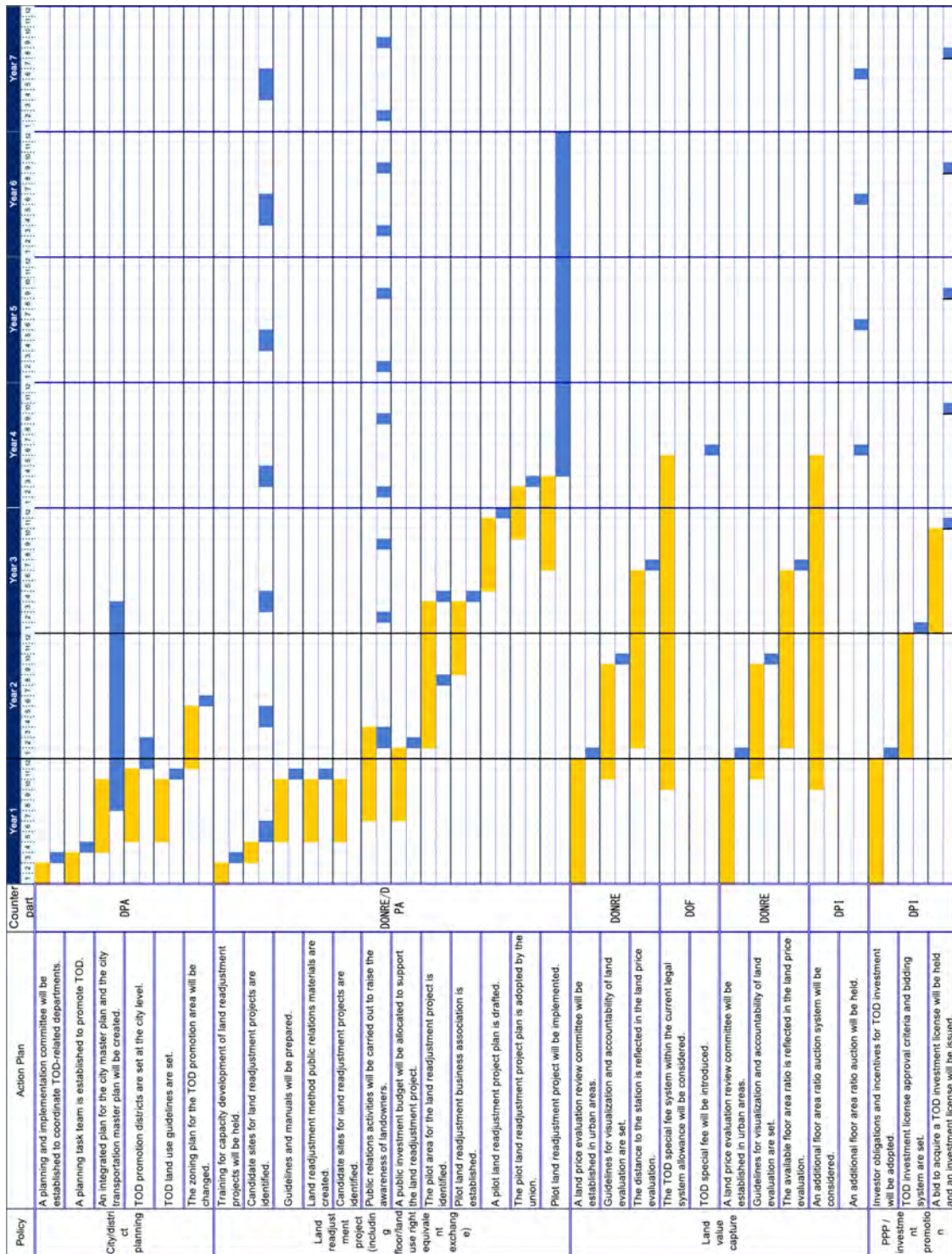
Policy	Goal	Action plan
City/district planning	- Incorporate TOD promotion principle in the city master plan.	- A guideline for land use control and building regulations are adopted to preserve the urban environment. - A planning and implementation committee is established to coordinate TOD-related departments. - Decree regarding TOD special areas is enacted based on both the City Planning Act and the Railway Act.
	- Develop a land-use plan / public facility development plan based on the TOD principle in the area around the public transportation station.	- TOD land-use guidelines are set at the national level.
Land readjustment project (including floor/land use right equivalent exchange)	- Introduce a land readjustment project for the accumulation of land for advanced combined use of land integrated with public transportation stations.	- Training is held to develop the capacity to build a land readjustment project system at the national level. - Guidelines and manuals at the national level are prepared. - Land readjustment method - public relations materials at the national level are prepared. - Public relations activities are carried out at the national level to make the system known. - A public investment budget is allocated to support the land readjustment project. - The land readjustment law or decree is enacted. - The urban redevelopment project floor/land use right equivalent exchange) law or decree is enacted
Land value capture	- Part of the increase in land prices due to urban infrastructure development will be returned to the public.	- A non-agricultural land tax revision, property tax, and city planning tax introduction review committee for cities is established. - Non-agricultural land tax system revision, city planning tax, or property tax is introduced.
	- Part of the increase in land prices due to high-density development incentives around the station will be returned to the public.	- Taxation on advanced space use will be considered in the revision of the Land Law. - The Land law is revised to include taxation on the use of advanced space. - Laws are put in place regarding floor area ratio auctions, sales, and additional identification of floor area ratios.
PPP / investment promotion	- Promote private investments in high-density mixed use urban developments around the stations	- Decrees regarding TOD special districts are enacted based on both the Town Planning and Zoning Act and the Railway Act. - Law/regulations are established to promote TOD investment.

Source: JICA Study Team

Timeline:

TOD promotion consists of a cross-disciplinary policy mix. Loans are provided in stages triggered by the achievement of the policy mix. The progression in the achievements of the policy mix will be based on the sequence of achievements of 1) preparation of organizational structure, 2) examination of priority issues, 3) establishment of policy guidelines and implementation plans, 4) implementation

of social experiments such as pilot projects, and 5) legal institutional establishments. Both land readjustments and investment licenses will target multiple projects. Since the land readjustment requires a long-time duration before the completion, the milestone should be set at the commencement of the construction instead of completion.



Source: JICA Study Team

Figure 4-2 City Based Policy Loan Action Plan Time Lines

The above timeline clearly indicates that the promotion of TOD policy reforms involves many related agencies. In addition, the implementation cannot take place without the engagement of the private sector, including the land titleholders and investors. Therefore, the organization would require a cross-cutting organizational structure to encompass various policy issues at the same time. Of course, it is more effective to focus on the critical issues that the city government has the need and commitment to. The biggest obstacle is the land assembly for TOD implementation in Vietnam. If the city can make a commitment to the land readjustment, the solution of land assembly to lead to the solutions of other issues in a chain reaction manner, as illustrated in 4.8.

Sector Loan for TOD Infrastructure Development

A sector loan can finance a bundle of station area infrastructures (access roads, grade separation, artificial pedestrian decks, station squares, intermodal transfer facilities, parks, etc.) to support Vietnamese version land readjustment schemes, floor/land right swap development projects, station building developments. The projects should aim at the improvements of station access, intermodal transfer, and passenger volume enhancement. As an issue for sector loans, it is necessary to identify the target projects in each city during the course of the study.

2) Technical Cooperation Possibilities

There is a need to provide technical cooperation to improve capacity to promote a TOD policy loan or TOD sector loan. The areas of interest are capacity building for urban planning, land agglomeration projects, land value capture projects, and PPP/investment promotion.

In the case of TOD, since it is necessary to implement policies that span multiple sectors such as urban development, urban transportation, and private investment, the establishment of a TOD committee as a counterpart organization is a prerequisite. Whether the TOD committee is established as a national organization that covers both cities or for each city will determine the scope of the corresponding actions and policies. If the actions are related to legal and tax systems, the counterpart is the central government level. From the scope of this survey, the counterpart may be at the city level, and then a committee may be set up separately for each People's Committee of the City. The output goal for actions may be set at the decision level of the city. A representative of the central government should be invited to participate as an observer and to accumulate pilot cases for the revision and introduction of the legal system for the next step.

Technical Cooperation Option 1: Institutional Development for TOD

According to the proposed policy-action framework of the above TOD program loan project, the technical cooperation program supports every step of five stages: 1) organizational preparation and establishment, 2) study of critical issues, 3) development of policy guidelines and implementation plans, 4) implementation of pilot plans, and 5) institutional framework development. The detailed action plans should refer to Table 4-2's action plans as well as the detailed schedule indicated in Figure 4-2.

Technical Cooperation Option 2: Revision Assistance of TOD-oriented Urban Plans

The program aims at supporting the revision of the General Construction Plan of HCMC and Hanoi City or supporting the TOD-related part of the Provincial Plan development. The scope of technical cooperation should refer to Part III Hanoi 4.3, 1).

4.8. The Way Forward

The proposed projects for ODA loans or technical cooperation projects only present broad project frameworks. One of the findings through various discussions with the relevant departments and ministries is that policy reforms in land assembly or land value capture would require the direct engagement of the central government ministries and agencies so as to effectuate broad-based impacts through legislation.

Amongst all, land tax reform or the introduction of property tax which is central to land value capture, solely belongs to the authority of the central government. DPA or DOF officials interviewed repeated that the city government is only an implementing administrative body of the system. The issues of taxes have very broad policy impacts beyond the issues related to TOD or funding sources for urban infrastructure development. It is beyond the scope of the current study. Nevertheless, it should be noted that urban railway development is one of the key policy measures to improve urban environments and represents typical public work without investment recovery, often operation/maintenance cost recovery with a mismatch of beneficiaries and payers, in this case, the developer and the taxpayer.

The MOF indicated a strong interest in having technical support in the long-standing tax reform, including the introduction of property tax. Such technical cooperation may be designed as comprehensive urban policy reform, encompassing the solution for land value capture at TOD areas.

Regarding land assembly issues, one of the most important recommendations is the introduction of land readjustment or floor-to-land use right swap schemes to resolve land assembly issues in the existing urbanized areas. The prevailing adaptation of the schemes will require a legal framework to ensure proper procedures. However, the basis for the framework needs to be extracted from the lessons on actual implementation cases on the ground to ensure the compatibility of the schemes in the social norms of Vietnam.

In the field of urban planning, the land use control mechanism should enhance its effectiveness. There is a need for policy tools to generate public lands and implement land value capture to promote TOD and to develop a network of public transits. Urban master plans need to set a framework of land use controls not linked to the ideal images of the distant future but directly linked to more intermediate realizable future urban structures.

JICA Study Team proposes a program loan that is based on the adoption of some policy reforms recommended in this study. At the same time, the Decree 114/2021/ND-CP, “On Management and Use of Official Development Assistance (ODA) and Concessional Loans Provided by Foreign Donors,” Article 9 stipulates the requirement of approval by the prime minister for the policy related loan. This new decree may inhibit the program loan to be executed by the ministerial level. The promotion of the program loan requires future research for the adoption of a program loan at the ministerial level.

**Data Collection Survey on Urban Planning and Transit
Oriented Development
in Ho Chi Minh City and Hanoi
Final Report**

Part II – Ho Chi Minh City

Part II

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Abbreviations

BRT	Bus Transit System
CBD	Central Business District
CP	Contract Package
DOC	Department of Construction
DONRE	Department of Natural Resource and Environment
DOT	Department of Transportation
DPI	Department of Planning and Investment
DPA	Department of Urban Planning and Architecture
FIDIC	International Federation of Consulting Engineers
GDP	Gross Domestic Product
GRDP	Gross Regional Domestic Product
HCMCPC	Ho Chi Minh City People's Committee
HIID	Highly Interactive Innovation District,
JICA	Japan International Cooperation Agency
LVC	Land Value Capture
MAUR	Metropolitan Authority for Urban Railway
MCPT	Management Centre of Public Transport
NJPT	Association of General Consultants for Ho Chi Minh Urban Railway Construction Project for Ben Thanh – Suoi Tien Section (Line 1 – ODA Project)
ODA	Official Development Assistance
PPP	Public Private Partnership
ROW	Right of Way
TOD	Transit Oriented Development
MRT	Mass Rapid Transit

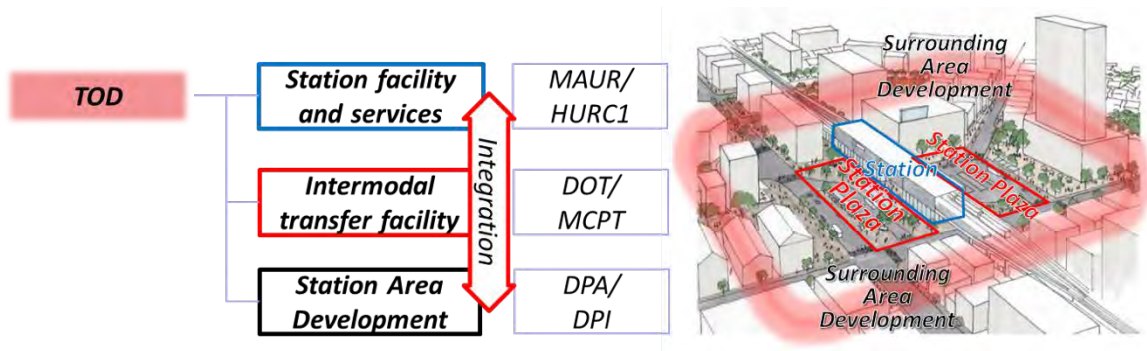
Part II HCMC

Summary

TOD Approach in HCMC

In order to promote a modal shift to public transportation, it is required to promote advanced use of urban space, improve transport nodes, improve the area around the station, and promote non-rail business in the station for access improvement and increase added values of station area. For this, TOD (Transit Oriented Development) is indispensable to realize station area development along railways, including various activities mentioned above.

Promoting the following aspects by relevant departments in an integrated manner is required to deal with TOD issues above (see Figure 1); (a) Station facility and service improvement: MAUR/HURC1, (b) Transport improvement and intermodal transfer facility development: Department of Transport (DOT)/ Management Centre of Public Transport (MCPT), and (c) Station area development: Department of Urban Planning and Architecture (DPA) / Department of Planning and Investment (DPI).



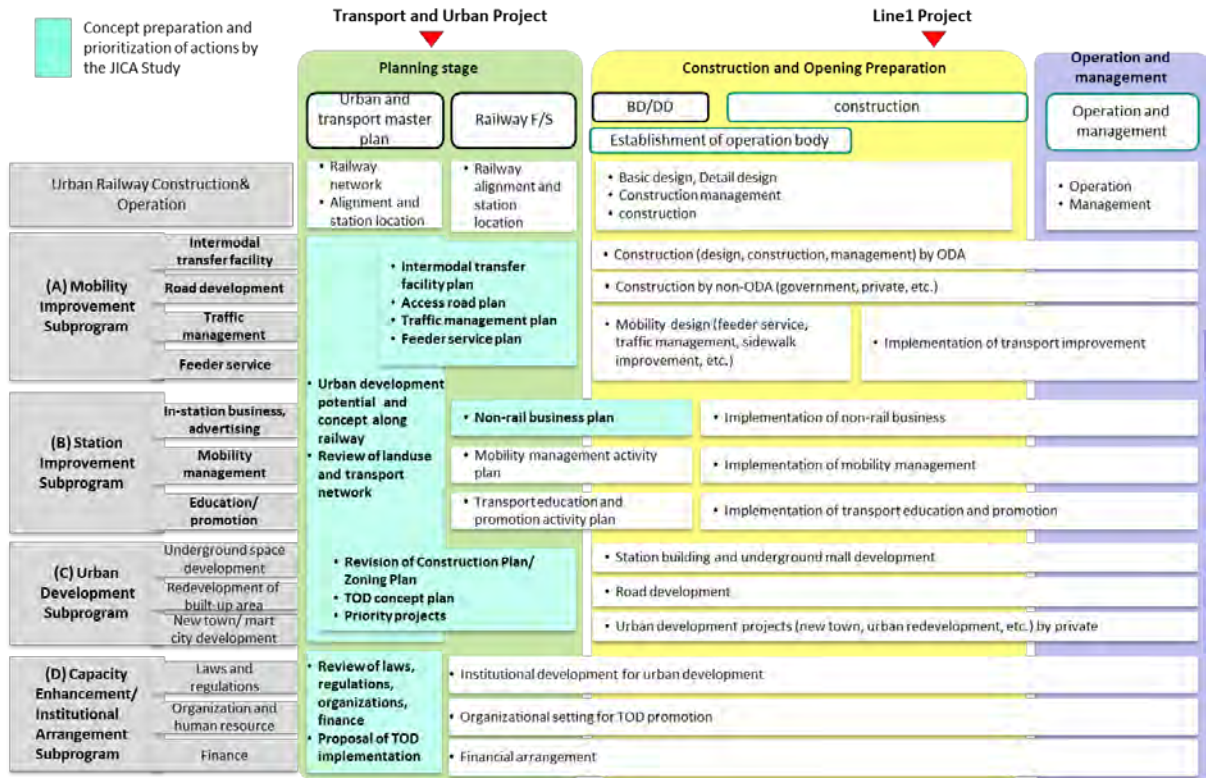
Source: JICA Study Team

Figure 1 Main TOD Components and Relevant Departments in HCMC

Proposed TOD Promotion Program

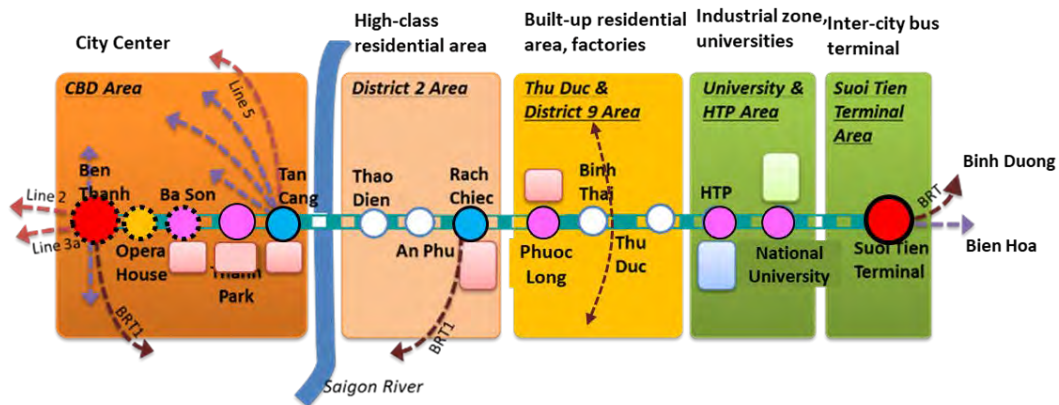
There are many individual issues and related organizations regarding TOD, so it is important to create a system comprehensively tackling these issues. For that purpose, it is necessary to clarify the "**HCMC TOD Promotion Program**" as a TOD policy of the People's Committee, which was agreed upon in consultation with the relevant departments, and then consider the necessary actions and implementation system (see Figure 2).

Among proposed actions, public transport facility development plans are proposed in line with station types. Especially for priority stations of Ben Thanh, Van Thanh, Tan Cang, Rach Chiec, Phuc Long, High-tech Park, and National University, it is expected that phase-wise facility development in line with typologies of station and surrounding areas, and comprehensive urban development projects including institutional arrangement.



Source: JICA Study Team

Figure 2 Structure of HCMC TOD Promotion Program



Type	Station	Approach
Underground Sta.	Ben Thanh , Opera House, Ba Son	Underground development and network connection
Terminal Sta.	(Ben Thanh), Suoi Tien Terminal	Phasing development plan including intermodal station development, station area development
Multi-modal Hub	Tan Cang, Rach Chiec	Intermodal transfer facility development for feeder service (bus, taxi, K&R, P&R, bicycle) Pedestrian facility development
Normal Station	Thao Dien, An Phu, Binh Thai, Thu Duc	Phasing development plan including access road development, urban redevelopment
Integrated Urban Development	Van Thanh Park, (Tan Cang), (Rach Chiec), Phuoc Long, HTP, National Univ.	Harmonization with urban development project Cooperation with private sectors for infrastructure development

Source: JICA Study Team

Figure 3 Types of each station and planning approach

The Way Forward

With the opening of the Line 1 coming in a few years, the various departments of HCMC are working on the promotion of TOD, especially as follows;

- DPA: Revision of the HCMC General Construction plan, formulation of the Thu Duc City General Construction Plan, revision of the Zoning Plan for the area along Line 1, and coordination with related agencies to promote TOD.
- MAUR: Preparation for the construction, opening and operation of Line 1, planning and design of other urban rail lines and BRT
- DOT: Improvement of feeder services, study of transportation node facilities development

In this JICA study, the following three JICA cooperation projects are proposed to address the challenges of promoting TOD in HCMC.

- Policy Loan based on TOD policy (promotion of TOD policy and realization of small-scale infrastructure development)
- Sectoral loans for TOD-related infrastructure development (intermodal transfer facility development along Line 1, development of underground space at Ben Thanh Station, and development of TOD-related facilities on Line 3A)
- Technical cooperation projects for TOD capacity building and institutional development (formulation of strategies and plans for urban development and urban transport, verification through pilot projects, institutional improvement and capacity building)

Departments of HCMC have high expectations for technical assistance for capacity building and institutional improvement with revisioning of various plans related to TOD. In terms of public infrastructure development, while expecting to utilize private investment, they were skeptical about the application of public budgets and loans.

For the private sector, infrastructure development is a highly public project, but at the same time, it is not profitable and requires coordination with public projects, resulting in an excessive burden of project costs and the risk of project delays. For public infrastructure projects such as station plazas and underground spaces, it is important to consider a variety of project menus and financing methods, such as ODA-funded development and private sector's investment (as a public contribution) through incentives such as FAR relaxation, as well as to establish a division of roles and project schemes between the public and private sectors, rather than simply choosing between the Vietnamese government budget and private sector contribution. In addition, it is necessary to establish the division of roles and project schemes between the public and private sectors.

Based on the results of this study and the proposals of these JICA cooperation projects, as well as the contents of the TOD promotion program and recommendations, it is expected that the DPA and other related organizations will consult and coordinate, and that the People's Committee will recommend TOD-related policies and promote various related projects.

1 Challenges in Transit-Oriented Development in Ho Chi Minh City

1.1 Outline of Ho Chi Minh Metropolitan Area

The Ho Chi Minh metropolitan area consists of 7 provinces and Ho Chi Minh City, covering 30,524km² with a total population of 21.6 million in 2020 and density of 706.6 persons per km². Its GRDP is almost double in the past 10 years. Growth in economy has entailed growth in population by 20%, and estimates at 24–25 million by 2030, of which 75% is in the urban area and 25% in the rural area. The urbanization rate is about 70–75%.



Source: JICA Study Team

Figure 1.1 Ho Chi Minh Metropolitan Area

Table 1.1 Population and GRDP of Ho Chi Minh Metropolitan Area

Provinces	Population				GRDP	
	Population 2010	Population 2020	Area (km ²)	Density 2020 (persons/km ²)	VND billion 2010	VND billion 2020
Ho Chi Minh City	7,378,000	9,108,000	2,061.4	4,418.3	463,295	877,467
Long An	1,443,000	1,695,000	4,494.9	377.1	34,762	73,124
Binh Duong	1,620,000	2,502,000	2,694.6	928.5	100,965	235,550
Dong Nai	2,575,000	3,143,000	5,863.6	536.0	73,667	193,227
Ba Ria-Vung Tau	1,012,000	1,161,000	1,981.0	586.1	154,743	238,136
Tay Ninh	1,073,000	1,178,000	4,041.3	291.5	28,341	47,966
Binh Phuoc	888,000	1,009,000	6,876.8	146.7	20,052	39,542
Tien Giang	1,678,000	1,773,000	2,510.6	706.2	35,661	58,079
Total	17,667,000	21,569,000	30,524.2	706.6	911,486	1,763,091

Source: GSO Statistics Year Book

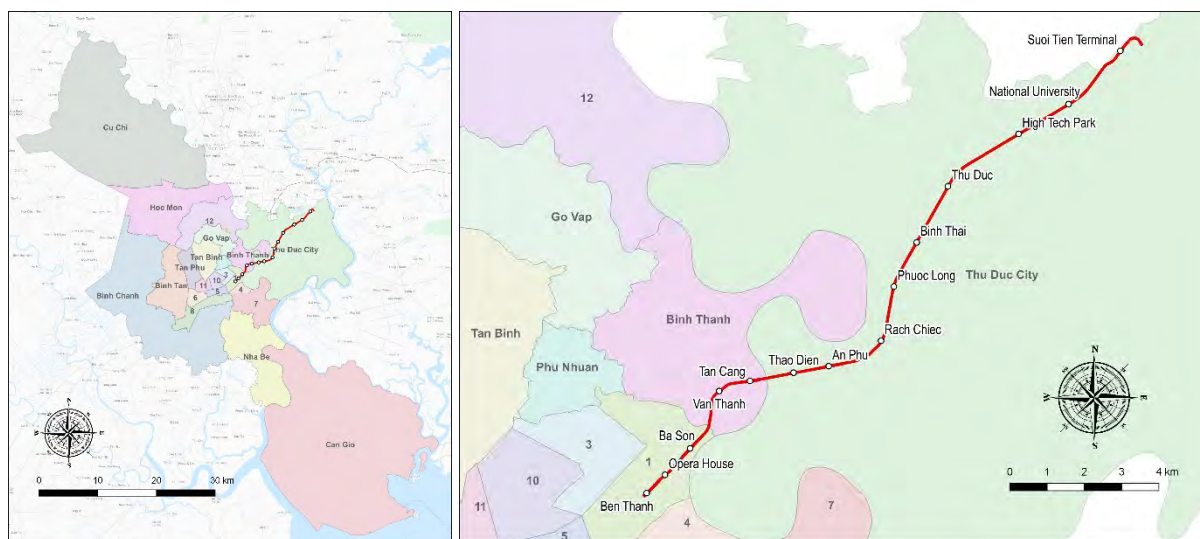
The major cities of Ho Chi Minh metropolitan area are summarized in the following table, which

indicates Ho Chi Minh City and cities in Binh Duong Province have higher density.

Table 1.2 Main Cities in Ho Chi Minh Metropolitan Area

Municipality, Province	City, Town	Population 2013	Population 2019	Area (km ²)	Density 2019 (person/km ²)
HCMC	HCMC	7,974,017	8,993,082	2,095.4	4291.8
Long An	Tan An City	136,000	145,120	81.9	1771.9
	Kien Tuong Town	43,000	43,674	204.4	213.7
Binh Duong	Thu Dau Mot City	270,000	325,551	118.9	2738.0
	Di An Town	374,000	480,502	60.1	7995.0
	Thuan An Town	441,000	603,539	83.7	7210.7
Dong Nai	Bien Hoa City	885,000	1,062,410	263.6	4030.4
	Long Khanh Town	138,000	152,280	193.0	789.0
Ba Ria-Vung Tau	Vung Tau City	313,000	357,124	141.1	2531.0
	Ba Ria Town	100,000	108,701	91.5	1188.0
Tay Ninh	Tay Ninh City	129,000	133,805	140.0	955.8
Binh Phuoc	Dong Xoai Town	88,000	109,125	167.3	652.3
	Phuoc Long Town	48,000	54,160	119.4	453.6
	Binh Long Town	59,000	57,777	126.2	457.8
Tien Giang	My Tho City	219,000	228,109	81.5	2798.9
	Go Cong Town	96,000	99,657	102.0	977.0

Source: Year Book 2019 from Each Province

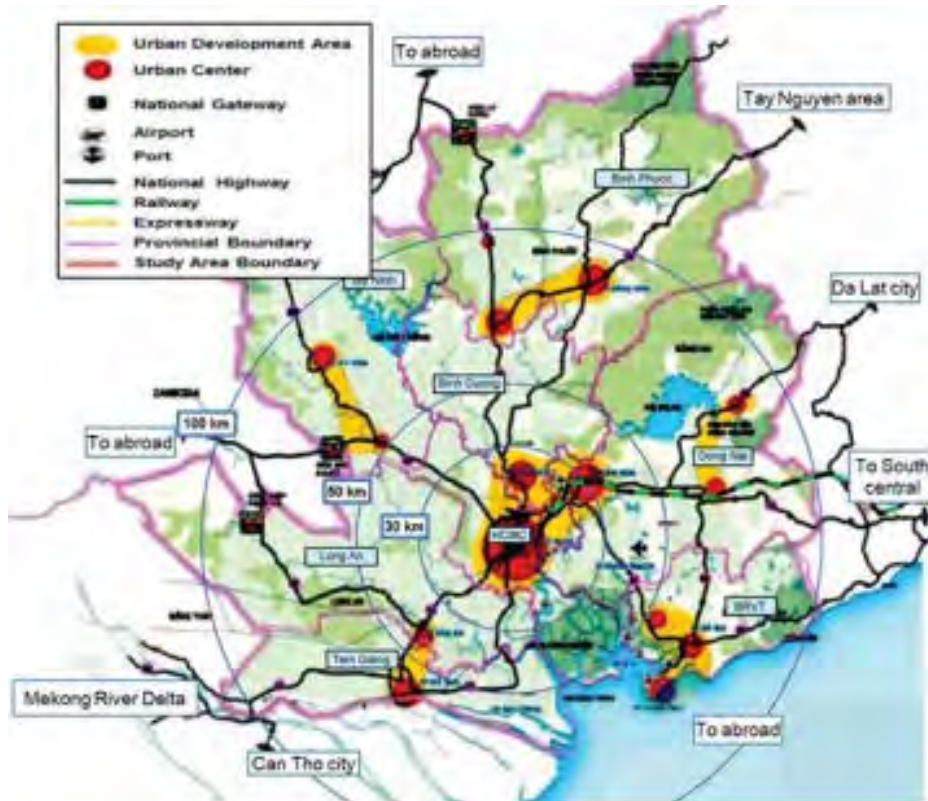


Source: JICA Study Team

Figure 1.2 Administrative Boundary and Location of Line 1 of HCMC

Ho Chi Minh City had 19 urban and 5 rural districts, but Districts 2, 9, and Thu Duc were merged as Thu Duc City on 1 January 2021.¹ Currently, Ho Chi Minh City has 16 urban and 5 rural districts and 1 city. Thu Duc City has an area of 211 km² and will have more than one million residents. Potentially to become a region in Ho Chi Minh metropolitan area, it is expected to contribute 30% of the city's economic growth and 7% for the nation annually.

¹ <https://vietnaminsider.vn/district-2-9-thu-duc-officially-become-thu-duc-city-from-01-january-2021/>



Source: “Final Report of Data Collection Survey on Railways in Mega Cities in Vietnam (HCMC Region)”, JICA, 2015

Figure 1.3 Transport Connection in Ho Chi Minh Metropolitan Area

As for the situation of public transportation in recent years, the number of transportation vehicles, especially private, has been increasing rapidly, but the development of transportation infrastructure still has not caught up. According to statistics, the total number of vehicles in Ho Chi Minh City in 2018 was 8.56 million, of which motorcycles accounted for about 93.4% (8 million) and private cars accounted for about 3.7% (318,000). Public transportation services have been gradually improved, but only about 9.52% of the travel demand of the city has been served, and the number of passengers has been declining in recent years, which cause serious traffic congestion. Several measures have been implemented to improve the traffic conditions in the city, but as expected, they have been substantially ineffective.

According to a briefing on foreign direct investment (FDI) of 2018² issued by Ministry of Planning and Investment, the FDI of Ho Chi Minh City ranked second after Hanoi with a total registered capital of 5.9 billion USD, accounting for 16.7% of total investment capital. Meanwhile, on the FDI accumulation until December 2018, Ho Chi Minh City continued to rank first with 45 billion USD, making up 13.2% of the total investment capital. The economic performance of this area is remarkable, and continuous growth is expected in the future. As for the spatial structure of the Ho Chi Minh metropolitan area, while the cities are expanding along the radial corridor from Ho Chi Minh City, the distribution and growth of the sub-centers is following the urban system of the entire metropolitan area.

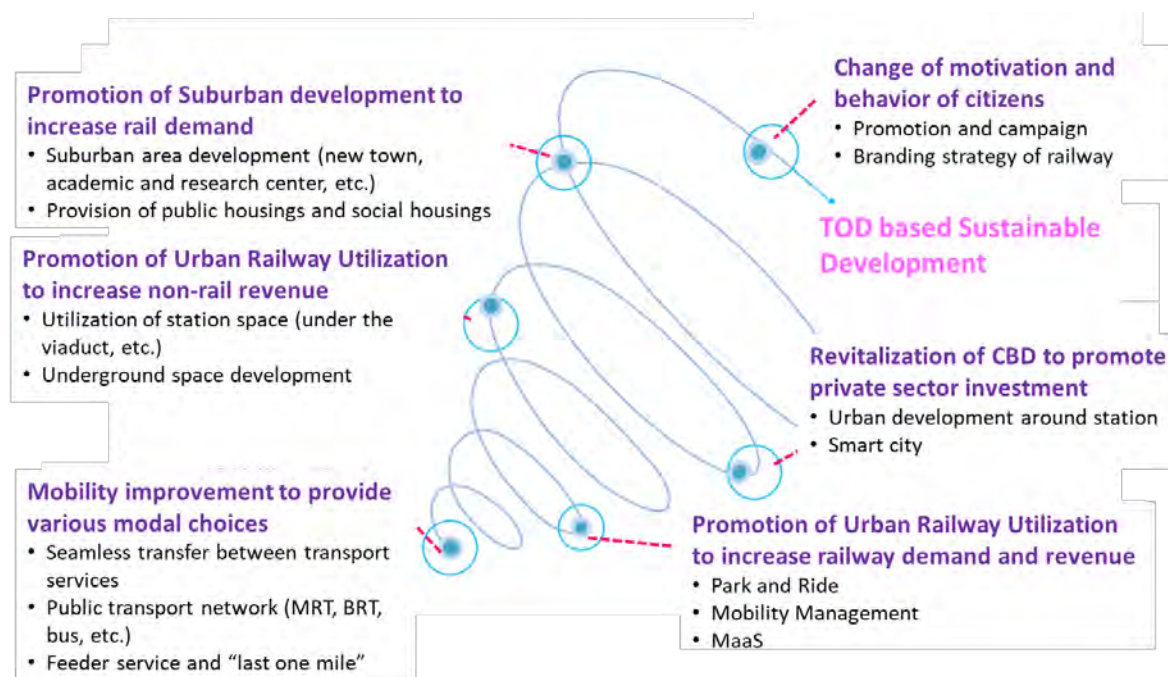
² <http://www.mpi.gov.vn/en/Pages/tinbai.aspx?idTin=41941&idcm=122>

1.2 TOD Strategies along HCMC MRT Line1

1) Phasing TOD Approach for Sustainable Development

In order to promote a modal shift to public transportation, it is required to promote advanced use of urban space, improve transport nodes, improve the area around the station, and promote non-rail business in the station for access improvement and increase added values of station area.

By implementing a series of efforts to address major issues based on the idea of TOD, a "positive spiral" will be induced to bring about positive impacts and changes on the "city" and "people" along the railway lines.






Source: JICA Study Team

Figure 1.4 Phasing TOD Approach for Sustainable Development

2) Challenges of TOD along Line 1

The elevated station of Line 1 will be constructed along Hanoi Highway, which is the main trunk road, but there are problems with pedestrian crossing and vehicle traffic detours, division of the district, and the district on the opposite side of the highway is a built-up where access roads are not well organized. In addition, although several large-scale urban development projects are planned in Thu Duc City, access from stations and transport facilities to meet future demands and scale of urban development projects are not sufficiently planned.

Therefore, it is necessary to contribute to the integration of the districts that were divided by the Hanoi Highway through the development of Line 1, and to promote the development of a smart city in Thu Duc City in consideration of TOD by utilizing the potential of the development of Line 1.

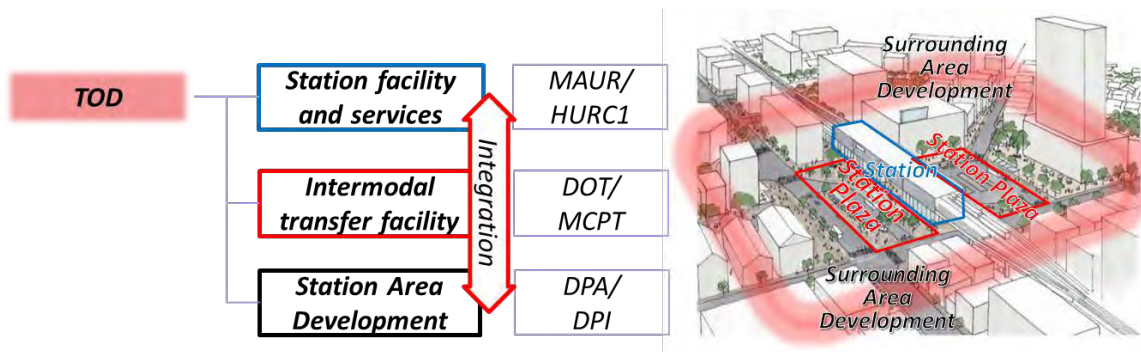
		
No space in front of station →How to develop access roads and station plazas?	Separation of areas by Hanoi Highway →How to enhance accessibility and catchment area?	Integration with Urban Development Project →How to coordinate with plans and maximize development impacts?

Source: JICA Study Team

Figure 1.5 Issues of TOD along Line 1

Promoting the following aspects by relevant departments in an integrated manner is required to deal with TOD issues above.

- ① Station facility and service improvement: MAUR/HURC1
- ② Transport improvement and intermodal transfer facility development: DOT/ MCPT
- ③ Station area development: Department of Urban Planning and Architecture (DPA) / DPI



Source: JICA Study Team

Figure 1.6 Main TOD Components and Relevant Departments in HCMC

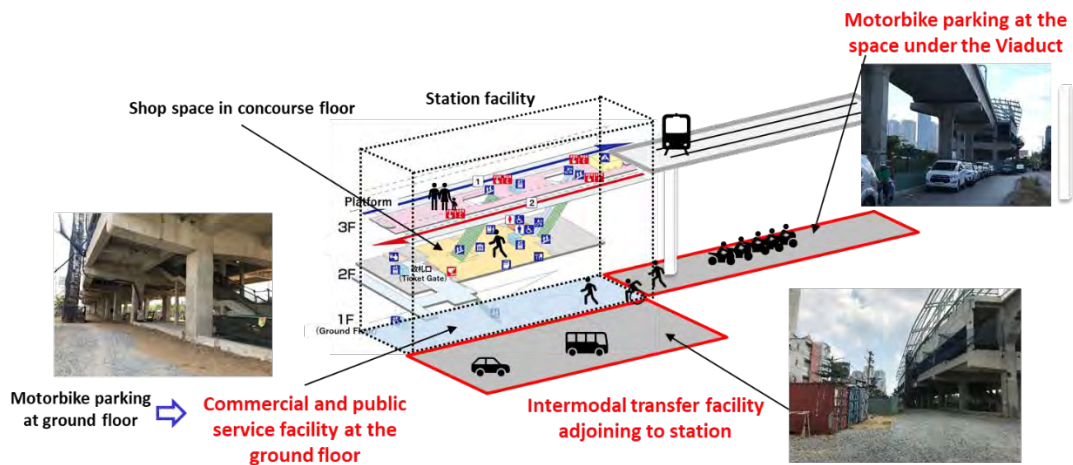
1.3 Study Approach

In this study, based on a comprehensive analysis of issues related to city planning, urban railways, and urban transportation and discussions with related departments, the following five issues were studied and orientations and actions were proposed, namely: (a) utilization of station and ROW space, (b) accessibility improvement, (c) underground development, (d) urban development along railway, (e) institutional improvement. Among priority actions, potential cooperation projects by JICA (loan, technical assistance, etc.) will be elaborated.

Utilization of station and ROW space

Under the current station construction plan, non-rail business and service space is limited to one lot on the concourse floor, and bike parking space in the ground floor. It is proposed to utilize the station yard and the space in front of the station inside of ROW for various purposes to ensure the convenience and comfort of users. Regarding the development of these facilities, it is necessary to coordinate with Metropolitan Authority for Urban Railway (MAUR), Department of Transportation (DOT), and Management Centre of Public Transport (MCPT) and consider the legal conditions of railway

assets.

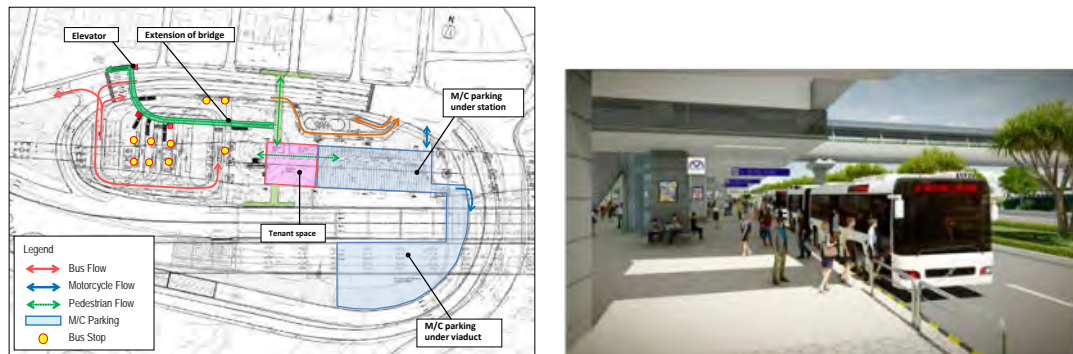


Source: JICA Study Team

Figure 1.7 Image of Utilization of Station and ROW Space

Accessibility Improvement

Pedestrian access is difficult because there are few roads or transport facilities around the station. Therefore, it is necessary to comprehensively promote the improvement and development of access roads, facility development (station plazas, signboards, etc.), and feeder service maintenance. Specifically, an access improvement plan will be created based on the proposals of the past JICA SAPI study, and the implementation measures, organization, and financial resources will be examined.

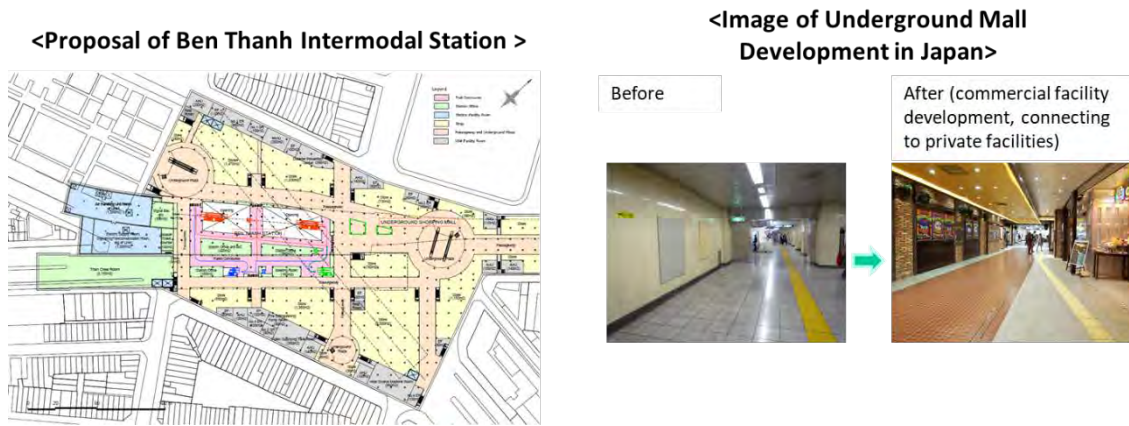


Source: JICA SAPI Study (left), JICA Study Team (right)

Figure 1.8 Image of Access Improvement

Underground development

Passages at underground stations are not only for transfers but also for connection to other railway stations and private facilities. By examining issues in Vietnam based on past survey proposals and experience of Japan, the roles and coordination mechanism between the public and the private sectors are proposed for underground development.



Source: JICA Study Team

Figure 1.9 Image of Underground Development

Urban development along railway

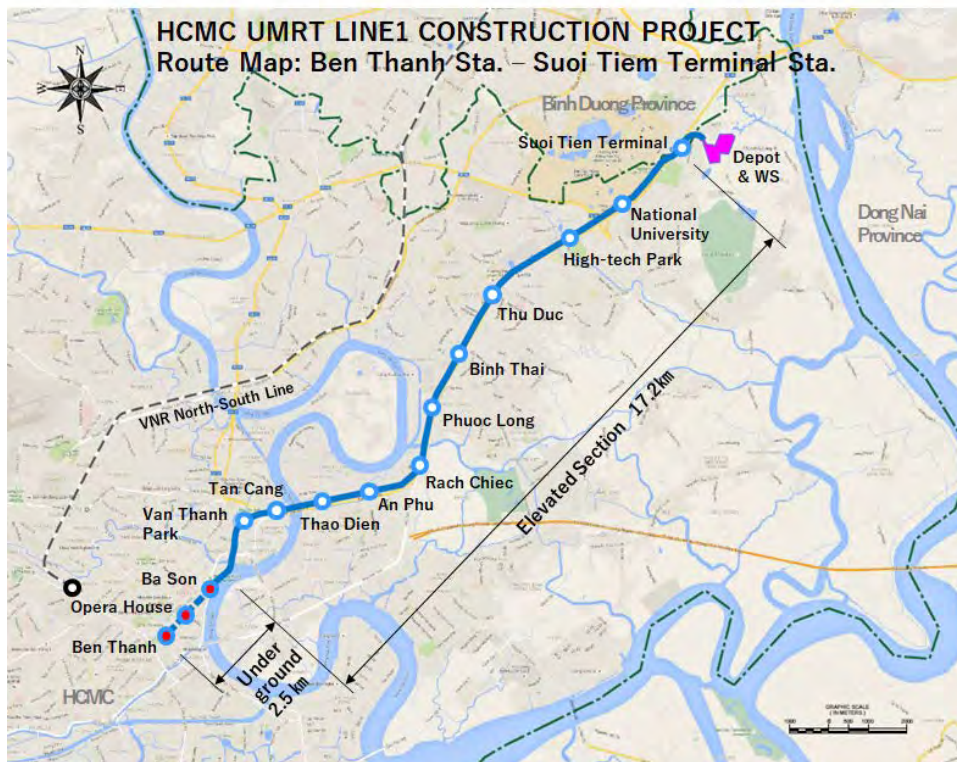
The current zoning around stations and along railway lines is inappropriate for promoting urban development around stations. In addition, since "Thu Duc City" was newly established and Line 1 will be the backbone of the city, in consultation with DPA, the TOD policy along Line 1 as well as the TOD concept plan of each station area are proposed for urban development in Thu Duc City.

Institutional improvement

To promote TOD, the coordination mechanism among governments, role-sharing with the private sector, public participation, finance, legal system, land value capture (LVC) mechanism, etc., will be proposed.

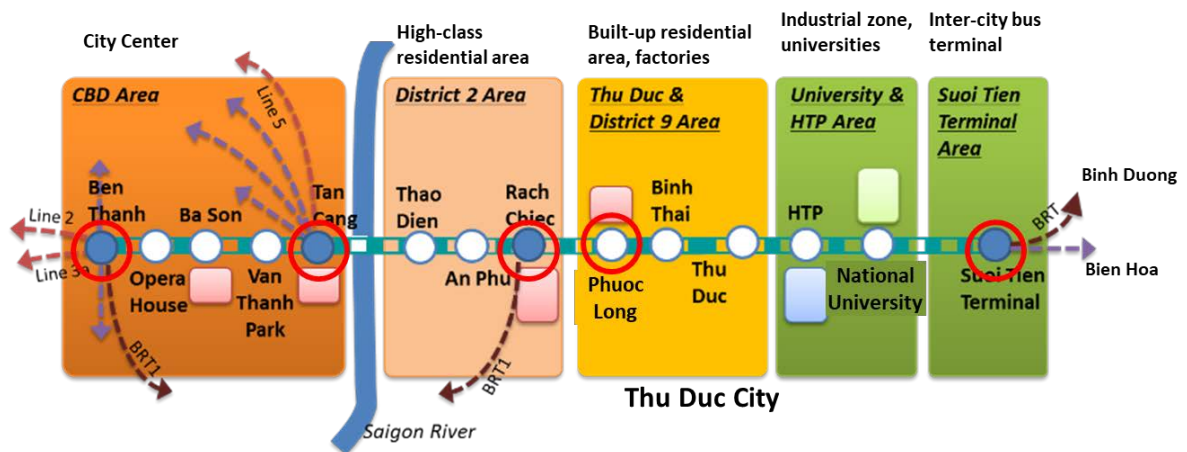
Among the 14 stations of Line 1, the Ben Thanh Station, Tan Cang Station, Lac Chiec Station, Phuoc Long Station, and Suoi Tien Terminal Station were selected as priority stations based on the following criteria:

- ✓ High development potential as CBDs and subcenters
- ✓ Needs of intermodal functions as a transit hub
- ✓ Development potential based on upper policies and plans
- ✓ Necessity and feasibility of TOD project implementation
- ✓ High railway demand



Source: Construction Project of HCMC MRT Line1

Figure 1.10 Route Map of HCMC MRT Line1 (Study Coverage)



Source: JICA Study Team

Figure 1.11 Conceptual Route Map and Priority Stations of Line 1

2 Review of TOD Related Plans

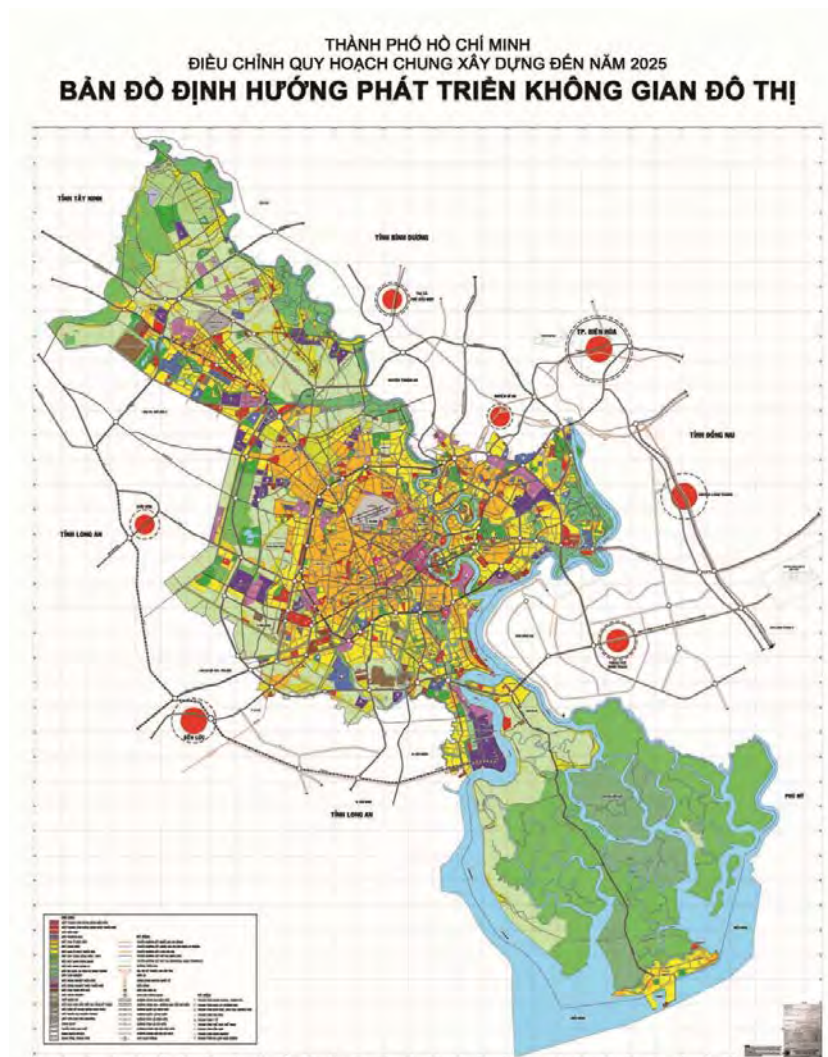
2.1 Plans of Urban and Transport Sectors

1) HCMC General Construction Plan

The General Construction Plan (scale: 1/50,000-1/25,000) is the legal urban plan of Vietnam and is under the jurisdiction of the Ministry of Construction (MOC) in the central government and the Department of Urban Planning and Architecture (DPA) in provincial level, i.e. DPA in Ho Chi Minh City in this study. The construction plan is often the prerequisite plan for related sector plans such as transportation and land use.

The General Construction Plan targeting 2025 in HCMC has been approved, but HCMC will start the revision process in 2021. Currently, the TOR for the plan revision work has been approved and the consultant will be selected by the end of 2022.

In addition, the District Construction Plan (commonly known as zoning plan) (scale: 1/5,000-1/2,000) will be prepared following the General Construction Plan, and DPA plans to update the zoning plan along Urban Railway Line 1.

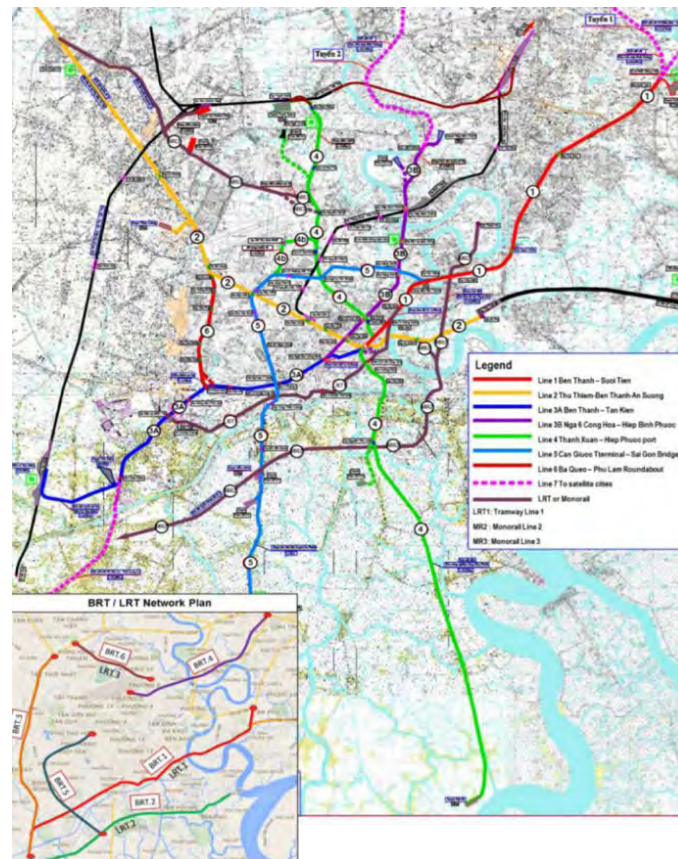


Source: HCMC General Construction Plan up to 2025

Figure 2.1 Zoning Map of HCMC General Construction Plan up to 2025

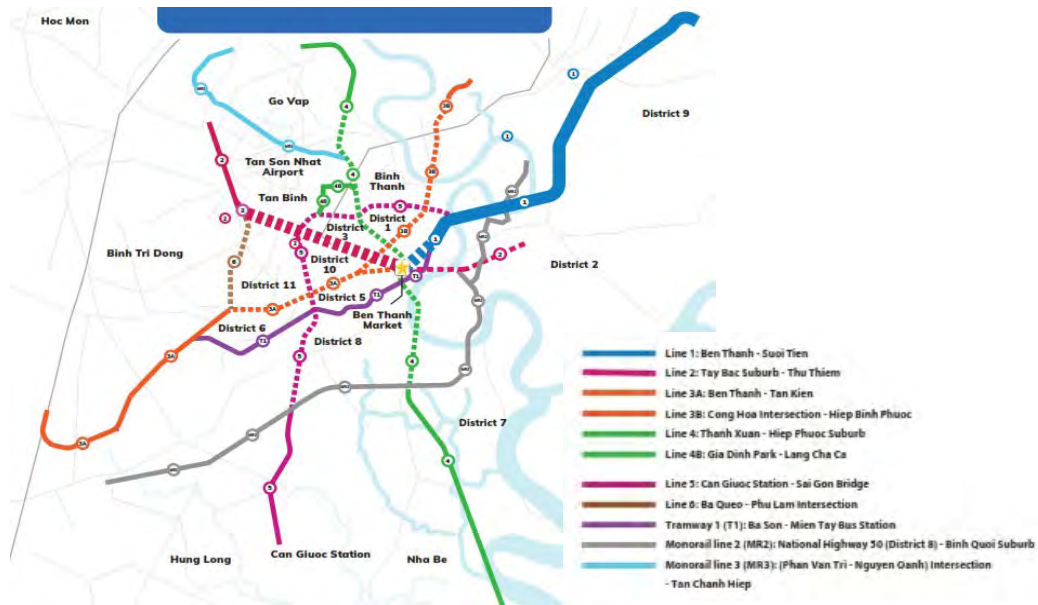
2) Urban Transport Master Plan

The urban railway network and routes of Ho Chi Minh City are based on the Prime Minister's approval document, "No. 568 / QDTTg Ho Chi Minh City Revised Transportation Master Plan (2020 Plan with 2030 Vision)." The approval document includes six urban railway lines and six BRT / LRT lines. The total length of the urban railway is about 160 km (excluding Phase 2 section of Line 3A and Phase 3 section of Line 5), of which 70.8 km is planned to be underground, and the rest is planned to be elevated and above ground. The total length of BRT / LRT is 98km, of which Line 1 (Vo Van Kiet–Mai Chi Tho) is being implemented by the World Bank.



Source: HCMC Urban Railway Master Plan

Figure 2.2 Route Map of HCMC Urban Railway Master Plan



Source: Website of MAUR

Figure 2.3 Future Network of HCMC Urban Railways

3) Draft Thu Duc City Construction Plan

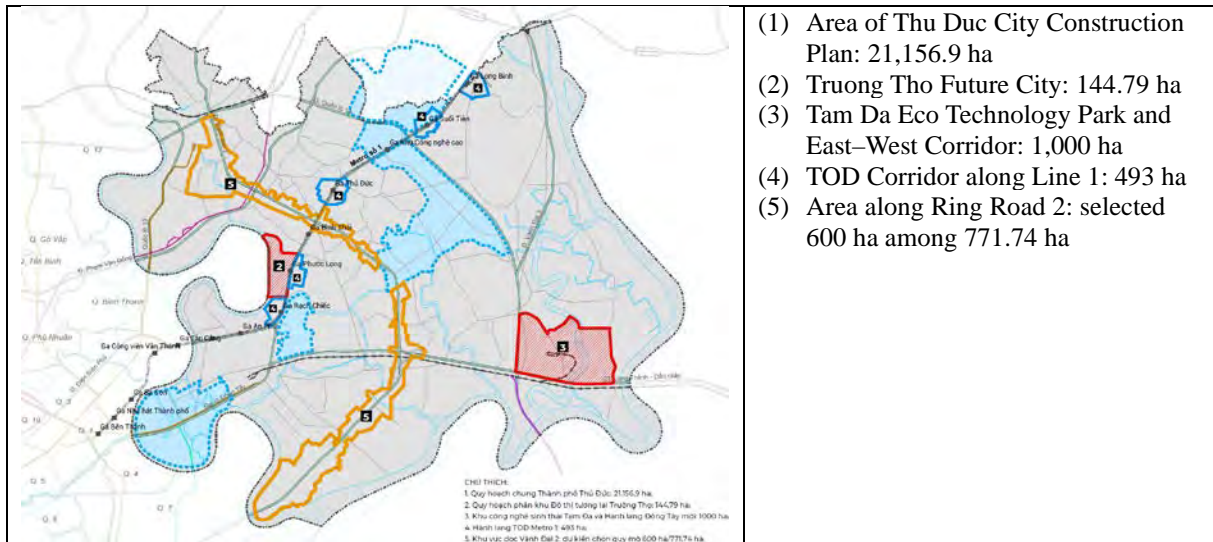
In December 2020, Districts 2, 9, and Thu Duc merged, with a total area of 211.6 km², to form the first city of Vietnam under the direct control of Ho Chi Minh City. Formulation of the Thu Duc City Construction Plan is scheduled for 2021. Its current population is 1,013,795 (about 12% of the total in Ho Chi Minh City), and it is projected to reach 1.5 million in 2030, 1.9 million in 2040, and 3 million in 2060. The economy of Thu Duc is expected to contribute to 30% of the regional gross domestic product (GRDP) of Ho Chi Minh City and 7% of the gross domestic product (GDP) of Vietnam, both of which contribute to being the core for the economic development of Ho Chi Minh City and the southeastern region.



Source: vnexpress.net

Figure 2.4 Location of Thu Duc City

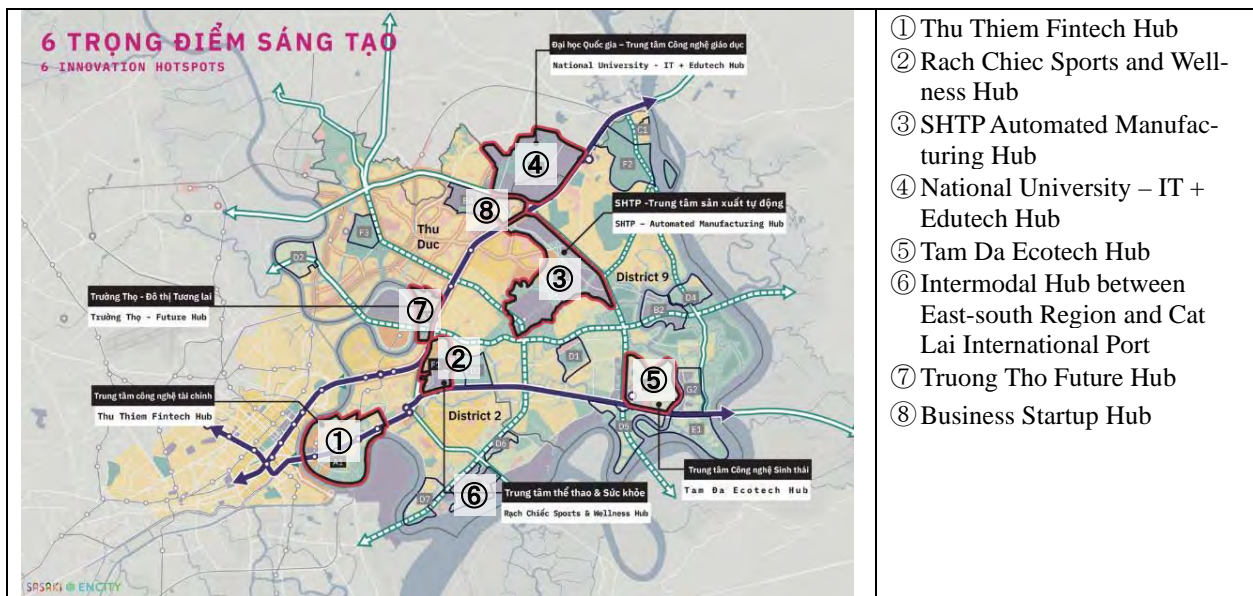
The vision for urban development is to aim for "Highly Interactive Innovation District (HIID)" on the development axis on the east-northeast side of HCMC.



Source: DPA of HCMC

Figure 2.5 Planned Coverage of Land Use Plan Formulation of Thu Duc City

It is a proposal to set up eight innovation centers, but most are along Line 1, namely ② Sports and Health Center near Rach Chiec Station, ③ High-Tech Production Center and ⑧ Corporate Startup Center near High-Tech Park Station, ④ Human Resources Education and Advanced Science and Technology Research Center around National University Station and Suoi Tien Terminal Station, and ⑦ Thuong Tho Future City in front of Phuoc Long Station.



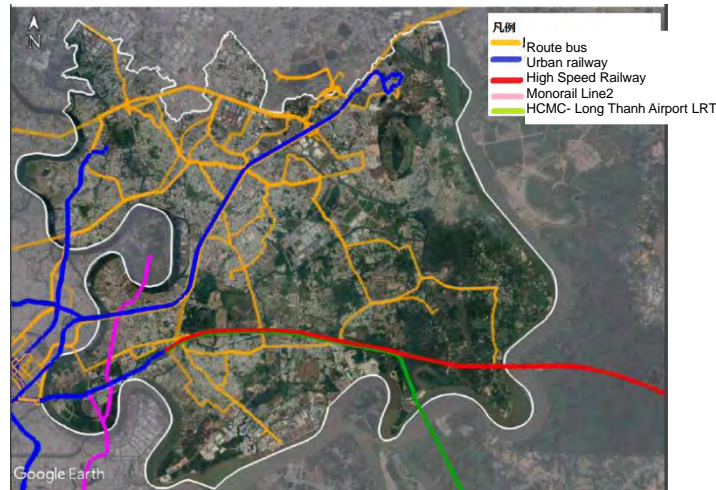
Source: JICA Study Team based on HIID Proposal, Sasaki

Figure 2.6 Eight Innovation Hubs in Thu Duc City

Currently, there are only 26 fixed-route buses that pass Thu Duc City. These buses run on main roads with a width of 12 m or more, of which 10 or more operate on the Hanoi Highway. Therefore, the following goals have been set for public transportation development.

- Improve the road density for public transportation to 2.5–3.0 km / km² (currently, the road density for route buses is 0.67 km / km²).
- Develop public transportation to meet 50%–60% of the city's travel demand.
- Expand the bus route and BRT network to connect the newly developed residential areas and

development centers of the city with Line 1 so that 10%–25% of transportation demand can be met by public transportation by 2025.



Source: JICA Study Team

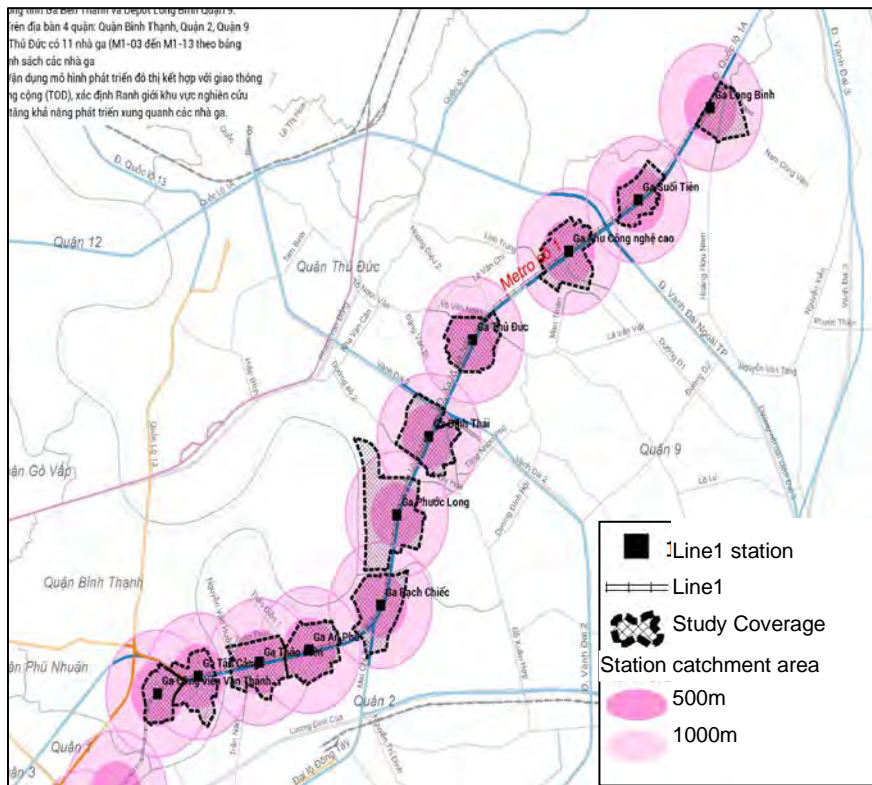
Figure 2.7 Route Map of Current Route Bus and Future Public Transport Network

The frequency of floods in the city until 2040 will be reduced to about once every five years. For flood countermeasure, 10% of the total city area will be used for park development, and 30% (equivalent to 630 ha) of the park will be planned as a regulating pond to mitigate flood risk.

4) Formulation of Detailed Construction Plan along Line1

From notification No. 307 / TB-VP dated June 3, 2019, DPA is instructed to formulate the Detailed Construction Plan (scale 1/500) along urban railways, highways, and ring roads.

Among them, for 13 stations of Line 1 (excluding Ben Thanh Station and Long Binh Depot), the study coverage will be based on the TOD model in the area around the station, and a Detailed Plan will be formulated.



Source: Orientation of Formulation of Detailed Construction Plan along MRT Line1 (scale 1/500)

Figure 2.8 Study Coverage for Detailed Construction Plan along Line1

5) Formulation of Detailed Construction Plan along Hanoi Highway

The Planning Information Center of DPA stipulated regulations for preparing the Detailed Construction Plan (scale 1/2000) for areas along the Hanoi Highway. In it, the land use regulations along the Hanoi Highway and the design policy regarding traffic, landscape, space design, etc., are stated.

In particular, regarding the development of the area around the stations of Thao Dien, Phuoc Long, Rach Chiec, Binh Thai, and High-tech Park, which are the stations of urban railway Line 1, the development of mixed-use facilities within a radius of 200 m around the station, and development of high-rise condominiums in the 200–400 m around the station.

6) Draft Housing Development Plan

The People's Committee has a set of policies prioritizing the development of high-rise condominiums along urban railway lines in some areas in the "Housing Development Plan for 2021 to 2030." The aim is to disperse the population from the city centre where people gather in newly developed districts and suburbs.

According to the plan, with progressing infrastructure development and low population density, Thu Duc City (merged District 2, District 9, and Thu Duc District), District 7, District 12, and Binh Thanh District must prioritize the development of high-rise apartments along urban railways and trunk lines.

On the other hand, the development of high-rise condominiums will be restricted in the CBD, Districts 1 and 3, and the densely populated Districts 4, 5, 6, 11, and Phu Nhuan District until 2025.

In the five rural areas of Cu Chi, Hoc Mon, Binh Chanh, Nha Be, and Can Gio, housing development and satellite city development in areas connected to trunk roads are promoted.

The population of Ho Chi Minh City is expected to grow to 10.1 million by 2025 and 11.1 million by 2030. In response, the company plans to increase the residential area to 237.3 million m² by 2025 and 295 million m² by 2030.

7) Policies and Orientations related to TOD

(1) Proposals for land management and efficient land use

In Vietnam, the land is managed by four management tools: Land Law, land use planning, land finance, and land administrative procedures. However, the current land management is still incomplete with these management tools, which prevents the state and the people from actively managing the process of land price increase due to investment, thereby appropriately distributing profits from land price increase.

The Ho Chi Minh City People's Committee (HCMCPC) summarizes the issues raised and the direction of the proposal, saying that it is necessary to consider the proposal regarding the land management and efficient land use.

Table 2.1 Issues of Current Land Management

Issues	Contents
a) Land Law 2013	Although the Land Law 2013 is used for land management, there are still many defects. The postponement of the Land Law amendment has not resolved the legal contradiction between the Land Law and the legislation enacted after 2013 in land auctions and formal BT projects.
b) Land use plan	Land-use planning is not temporally and spatially linked to plans in other areas such as socio-economics and urban development. The 2013 Land Law stipulates policies on land recovery and auctioning of recovered land to select investors. However, these policies are still principle regulations, and regulations on the order and procedures of land recovery according to the plan have not been specified.
c) Land finance	The city government cannot change the tax and fee systems and land prices, regulated by current state-approved laws and some special mechanisms. It is necessary to add a tax system to return the profit of land price increase due to development, but the HCMCPC has no authority. In addition, the land prices regulated under the Land Law of 2013 do not match the average market price of land.
d) Public land management	Land allocation remains a problem if the land for investment projects is a mixture of state-managed agricultural land, canal land, and other land that is used by public institutions without transfer rights. There are many. Therefore, it is necessary to apply the land allocation / leasing method (land auction or project bidding) uniformly to the entire land area used for the investment project.
e) Admin procedure of land	Currently, the administrative land management system is not digitized. Land-related administrative procedures are still complex and residents are often dissatisfied.
f) Land recovery	Before selecting a project investor, it is necessary to solve the problem of not being able to raise funds for land recovery and land clearance.
g) Monitoring and assessment of land use	Since the Ministry of Natural Resources and Environment (MONRE) has not established a specific legal framework and implementing organization, it has not been able to exercise its right to monitor and evaluate land management by residents, groups and land users.

Source: Proposals for land management and efficient land use, HCMC PC

Table 2.2 Proposals for Land Management and Efficient Land Use

Proposal	Contents
a) Assessment of land use and its efficiency	<ul style="list-style-type: none"> • Conduct research on an index system for assessing the effects of land use used on all types of land in the city. • MONRE is in charge of receiving opinions from residents and groups regarding land management.

	<ul style="list-style-type: none"> Coordinate land management systems, soil land use plans, land policies to increase the effectiveness of land management and land use.
b) Formulation of land use plan	<ul style="list-style-type: none"> MONRE is responsible for formulating a five-year land use plan that will work with the urban planning master plan, focusing on rural areas based on spatial zoning.
c) Land finance	<ul style="list-style-type: none"> Digitize land price calculations based on land price tables, begin demonstrating solutions for standard land plot selection, and set annual land prices to create land price maps for future amendments to the Land Law. Regarding land recovery, more land will be recovered on both sides of the infrastructure construction. Those who have expropriated the land will be resettled on the spot, and the surplus land will be organized and auctioned to cover the cost of infrastructure development. The implementation of additional land recovery and resettlement will be decided in consultation with the affected population. If the majority of the residents (about 2/3 of the residents) agree, the implementation will be approved. Minorities who disagree need to choose between accepting the implementation or having the country recover the land.
d) Public land management	<ul style="list-style-type: none"> Review the land use status of public land every 5 years, deal with illegal and inappropriate land use, and make proposals for land consolidation.
e) Establishment of land use database	<ul style="list-style-type: none"> Select competent land information management software that can be actively upgraded and is software provider independent. Establish a system to provide land information services to different land users such as business groups and residents.
f) Increase efficiency by changing land use purpose	<ul style="list-style-type: none"> To evaluate the effect of land development by investment projects on past land use, the land use purpose change process is managed by the monitoring and evaluation system from the land use planning stage. The monitoring and evaluation system provides a compelling basis for deciding to coordinate plans and investment projects, and eliminate investment projects when land is ineffective.

Source: Proposals for land management and efficient land use, HCMC PC

(2) Cooperation between DOT and DPA for TOD Promotion

In January 2021, DOT signed a cooperation agreement with DPA to develop strategies, plans, and programs for developing urban technological infrastructure systems. This cooperation agreement aims to develop strategies and plans (long-term, medium-term, and short-term) in the transportation and planning sector and promote budgeting and investment efficiency.

For urban development plans in line with the TOD model, it is extremely necessary to make efficient use of land funds along the urban railways, highways, and urban axes of Ho Chi Minh City, so this is due to the Transportation Bureau and urban planning. It is considered one of the important adjustments between the building bureaus.

The specific contents of cooperation are as follows.

- Transport infrastructure: bridges, roads, inland waterways, urban railroads; other transportation-related infrastructure (parking lots, inland waterway embankments, maritime routes); and traffic safety in the city.
- Planning: confirmation and coordination of urban construction plans by 2040 and vision by 2060; detailed planning of intersections in the city; parking lot research and investment; public transport-oriented urban development plan (TOD model); vision from 2030 to 2040 and development plan for service industry from 2020 to 2025; urban underground construction space management plan; and port network development plan.

(3) Auction of public land around the station of MRT Line 1 and Ring Road 2

DPA will propose selling the right to use public land around the station of Urban Railway Line 1 and Ring Road Line 2 to Ho Chi Minh City PC by competitive bidding.

It is said that the public land within a radius of 800–1000 m from the station of railway Line 1 and the public land on ring road Line 2 (the section passing through Thu Duc city) will be arranged and sold by competitive bidding.

Since Line 1 has been constructed, dozens of housing development projects, including about 2000 units, have been completed along the line and sold at high prices. The government has hugely invested in infrastructure development, but only a small portion of the income from these real estate businesses can be obtained through taxes. On the other hand, the profits the real estate investors can get are very high and will continue to increase with the development of railways.

Among them, the land along Metro Line 1 includes a lot of public lands, specifically, the relocation of the Ha Tien cement factory (Thu Duc city), the Phuoc Long port, and the ICD Phuoc Long that will be relocated in the future. By selling these public lands through competitive bidding, it is possible to secure fair purchasing opportunities for companies, and simultaneously, it can be expected to collect funds for infrastructure development and generate funds for new investment projects.

(4) Proposal to restrict use of private cars and strengthen public transport system

In July 2020, the Prime Minister's decision was issued to solve the traffic problem in Ho Chi Minh City, especially the planning and implementation of the control of private cars and strengthening of public transportation in the city.

Table 2.3 Proposal to Restrict Use of Private Cars and Strengthen Public Transport System

Policies to strengthen public transport system	<ol style="list-style-type: none"> 1) Construction of a fixed-route bus network that can meet approximately 19.6% of City's mobile demand by 2030 2) Operation of 3 urban railway lines (Line 1, Line 2, Line 5) and 5 BRT lines by 2030 3) Development of Thu Thiem-Long Thanh LRT in line with the progress of construction of Long Thanh International Airport 4) Consideration of maintenance of mass transportation public transportation (LRT, tram, etc.) 5) Improvement of water transportation in the city combined with tourism development 6) Development of water public transportation (water taxi, etc.) for city movement and sightseeing 7) Examining taxi operation management policies coordinated with other transportation 8) Maintenance of minibuses with less than 17 seats to connect to urban railways and BRT lines 9) Development of P & R parking lot to promote transfer from private cars to public transportation 10) Development of terminal transportation services such as share cycles and electric motorcycles to promote transfer to public transportation 11) Installation of bus lanes and priority lanes to ensure the punctuality of route buses 12) Implementation of a subsidy system for operating public transportation such as water buses, BRTs, and school buses 13) Phasing development and implementation of investment plans for bus vehicles that use environmentally friendly fuels 14) Building a bus business cooperative to form a public transport management model in which the government plays a leading role
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	15) Improvement of route bus operation / management ability and customer service 16) Improvement of systems and equipment for managing public transportation 17) By 2025, use on all bus routes and application of IC cards that can be used interchangeably between buses, railroads and some other public transportation 18) Improving the operation and management capacity of HCMC Public Transport Management Center (MCPT)
Policies to restrict private cars	1) Impose congestion charges and environmental tax to limit the inflow of automobiles into the city center 2) Vehicle quality control for automobile and motorcycle safety and environmental protection 3) Prohibition of motorcycle operation in city centers, including Districts 1, 3, 5, and 10, by 2030
Other policies	1) Prioritize land use for public purposes, such as park and parking lot development, and continue relocation of facilities such as bus terminals, schools, and hospitals according to the plan. 2) Improvement of existing roads suitable for route bus operation, design of new roads 3) Creation and implementation of measures for transport infrastructure development and financial resources development 4) Promotion of transport-related business in smart city business 5) Development of pedestrian-only space in the city centre 6) Adjustment of working hours and school hours to alleviate traffic congestion due to commuting during peak hours 7) Strengthening warnings and crackdowns on traffic rule violations 8) Promotion of policy promotion efforts to curb the use of private cars and promote the use of public transport

Source: Proposal to restrict use of private cars and strengthen public transport system, Prime Minister's Decision No. 44 / TB-VPCP, 24 January 2017

(5) Promulgating the Plan to carry out the work to effectively operate and exploit the Urban Railway Line 1 of HCMC

Ho Chi Minh City PC has issued Decision No. 4856/Q D -U BND dated 13 November 2019 that approves the adjustment of the investment project to build Urban Railway Line No. 1 (Ben Thanh–Suoi Tien) in Ho Chi Minh City. Accordingly, Urban Railway Line 1 is a large-scale project, first deployed in Ho Chi Minh City, with complex technical characteristics and modern applied technology, involving many fields. The management experience of agencies and units is still limited; therefore, it is necessary to issue a plan to determine the content of the work, the completion time, the agency/unit in charge, and coordination in the implementation of the work until the completion, and ensure the effective operation and utilization of Line 1.

The process of implementing tasks and work needs to be carried out expeditiously, ensuring quality synchronously, with close coordination between relevant departments, agencies, and units, to meet the progress of the project planned level. In “2.3 Solutions to promote investment efficiency” in this document, the following are the tasks related to TOD.

Table 2.4 Solutions to Promote Investment Efficiency of Line 1

Solutions	Department	Contents
b) Accessibility enhancement project and organization of bus routes connecting Ben Thanh - Suoi Tien urban railway station	DOT	• Reviews and updates the report on investment intentions
	DPI	• Appraise and submit the project investment policy
	MCPT (investor)	• Accelerate the organization of the project implementation as planned, in line with the schedule of the Urban Railway Construction Project No. 1 (Ben Thanh - Suoi Tien) to ensure ensure synchronous connection of the bus system with Urban Railway Line 1 (Ben Thanh - Suoi Tien).
c) Organize traffic in	DOT	• Review the actual status of the project, on-going

Solutions	Department	Contents
the station area and along the route		<p>projects and planning along the corridor of Urban Railway Line No. 1</p> <ul style="list-style-type: none"> Organize synchronous connection between projects; organize traffic along the route, station area, connect with stations, arrange parking areas, bus shelters, pick-up and drop-off areas
d) Urban development around the station Urban railway line No. 1 (Ben Thanh–Suoi Tien) (According to TOD model - Traffic-oriented urban development model)	DPA	<ul style="list-style-type: none"> Organizes, studies, adjusts the scale and sets up new urban design projects, detailed planning for stations along Urban Railway Line 1 delivered by HCMC PC at Notice No. 779/TB-VP dated November 1, 2019) Coordinate with DONRE, DOT, DOC, MAUR and the and the People's Committees of the relevant districts to urgently review, research and confirm specifying the boundaries of planning research, proposing solutions for land use planning, planning and architectural criteria for each land area around the station along Urban Railway Line 1, in order to increase the efficiency of exploitation and use of the land. Land use Propose a plan to connect the traffic of metro stations with the surrounding area Propose plans, implementation roadmap Report to HCMC PC (The task was assigned by HCMC PC in Notice No. 882/TB -VP dated December 3, 2019)
	DONRE	<ul style="list-style-type: none"> Coordinate with DPA and the People's Committees of the relevant districts in expediting the actual survey, reviewing the current status of land use and land law of the province. Land plots around stations along Urban Railway Line 1, within a radius of 500 - 800 m (The task was assigned by HCMC PC at Notice No. 882/TB-VP dated December 3, 2019)
g) Intermodal works at station areas of Urban Railway Line 1, Ben Thanh - Suoi Tien line	MAUR	<ul style="list-style-type: none"> Provide documents and research results on intermodal works at station areas of Line 1 (implemented since 2014 under Decision No. 4750/UBND -QLDA dated September 16, 2014) for DOT to receive and assume the prime responsibility for making a report on project investment policy proposals and submit them to competent authorities for appraisal and approval according to regulations.
h) Non-rail business	HURC1	<ul style="list-style-type: none"> Cooperate with MAUR, DPI, DOF and related agencies and units to research and develop a scheme for commercial service exploitation on Line 1 Propose HCMC PC to consider and decide (Task has been assigned by City People's Committee in Section 2.5 of Notice No. 165/TB-VP dated March 19, 2021) Cooperate with HURC1 to research and propose specific mechanisms to encourage investment to effectively exploit the land around the station; study the mechanism to exploit the services at the station (The task was assigned by HCMC PC in Decision No. 4856/QD -UBND dated November 13, 2019)

Source: “Decision on Promulgating the plan to carry out the work to effectively operate and exploit the Urban Railway Line 1 of HCMC”, No. 2087, 9 June 2021, HCMC PC

2.2 Review of Past JICA Studies and Projects

1) Preparatory Survey on Ben Thanh Central Station Project (PPP Infrastructure Project)

Ben Thanh Station is the starting point on the central city side of Line 1 and is positioned as a transportation hub connecting to Lines 2, 3A, and 4 and BRT. This station has the potential for development as a general station and underground development, and since the entry by a Japanese business operator was being considered, the "Preparatory Survey on Ben Thanh Central Station Project (PPP Infrastructure Project)" was carried out in 2012.

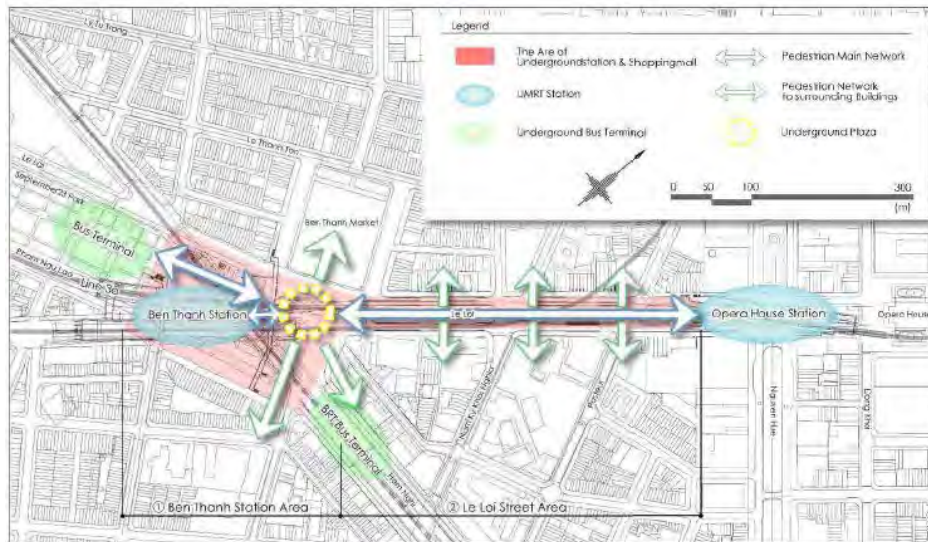
After the study, the proposals were discussed, and the project was examined together with the Line 1 Construction Project, but Ho Chi Minh City PC did not make a formal decision, so Ben Thanh Station was not realized. The issues are as follows.

- There is a gap between the idea that the underground commercial space is a commercial facility and the private sector should develop the infrastructure and the idea that the public should develop the infrastructure as part of the station facilities to ensure the comfort and convenience of the users. No agreement was reached on public-private sharing.
- The huge development costs of an underground shopping mall (about 40 billion yen) cannot be covered by private businesses alone, and the infrastructure part requires public funds, so it was not covered by the Line 1 project.
- As construction continues on Lines 2, 3A, and 4, it is necessary to have a phasing development perspective, but there was not enough discussion on it.



Source: Preparatory Survey on Ben Thanh Central Station Project (PPP Infrastructure Project)

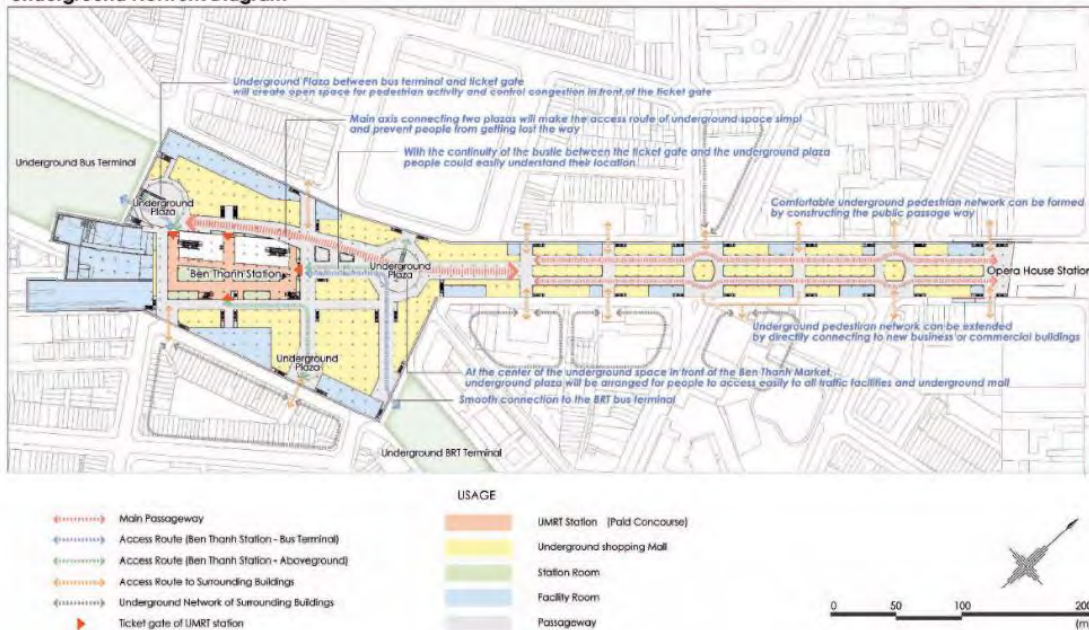
Figure 2.9 Image of Station Area and Underground Mall Development of Ben Thanh Station



Source: Preparatory Survey on Ben Thanh Central Station Project (PPP Infrastructure Project)

Figure 2.10 Conceptual Layout of Ben Thanh Station

Underground Network Diagram



Source: Preparatory Survey on Ben Thanh Central Station Project (PPP Infrastructure Project)

Figure 2.11 Pedestrian Network and Bus/ BRT Terminal of Ben Thanh Station

2) HCMC UMRT Line1 Construction Project (ongoing)

The MRT Line 1 construction project runs northeast from Ben Thanh Station in the centre of the city, crosses the Saigon River and runs along the Hanoi Highway, connecting Dong Nai Province and Suoi Tien Terminal Station, which is adjacent to Binh Duong Province. It is the first urban railway in Ho Chi Minh City with a total length of 19.7 km (including the 2.6 km underground section with 3 stations and 17.1 km elevated section with 11 stations).

Total length	19.7 km	
Underground section	2.6 km, 3 stations	
Elevated section	17.1 km, 11 stations	
Client	HCMC PC	
Financial source	Japanese Yen loan	
Project cost	2,367 mil. US\$	

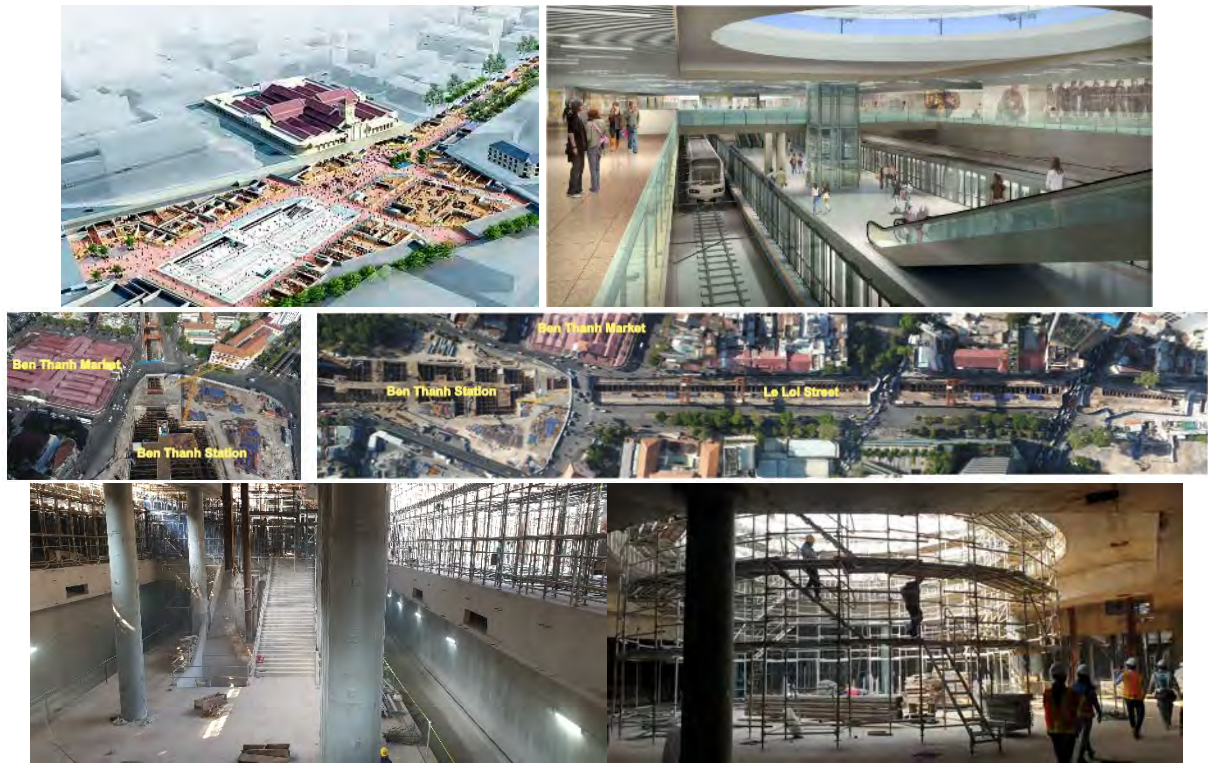
Source: NJPT

Figure 2.12 Outline of MRT Line1 Construction Project

Table 2.5 Construct Package of MRT Line1 Construction Project

Implementation body	MAUR
CP1a (underground section)	Ben Thanh Station and opencut tunnel between Ben Thanh Station and Opera House Station Contractor: Sumitomo Mitsui Construction/ CIENCO4 (JV) Contract term: FIDIC pink book (design by the client)
CP1b (underground section)	Opera House Station, Ba Son Station, shield tunnel between stations, opencut tunnel to Ba Son Station (boundary to CP2) Contractor: Shimizu Corporation/ Maeda Corporation (JO) Contract term: FIDIC silver book (design and build by the contractor)
CP2 (elevated section, depot)	Civil works and architecture of elevated section, stations and depot Contractor: Sumitomo Corporation/ CIENCO6 (JV) Contract term: FIDIC silver book (design and build by the contractor)
CP3 (system)	Railway system (truck, electricity, signal, operation system, AFC, PSD, railroad vehicle), 5-year maintenance Contractor: HITACHI Contract term: FIDIC silver book (design and build by the contractor)
GC: General Consultant	Basic Design, Bidding support, Construction Management, O&M support NJPT Association (NK/JIC/PBJ/JTC/TEC/TEDI-south/TRICC)

Source: NJPT



CP1a: Ben Thanh Station



CP1b: Opera House Station, Ba Son Station



CP2: Elevated Station, Depot



CP: System

Source: NJPT

Figure 2.13 Photos and Images of Contract Packages of MRT Line1 Construction Project

3) Project for Strengthening Management Ability of Operation and Maintenance Company for the Opening of Urban Railway Line 1 in Ho Chi Minh City (ongoing)

The technical cooperation project aims to support the establishment of HURC1, which is the operating company of Line 1, and improve its operating capacity. The counterpart is MAUR, scheduled to be implemented for five years from December 2017.

The TOD itself is out of scope, but as part of the support for the operating company, it is included to support the formulation of rules for non-rail business and the implementation of mobility management activities. The target of the non-rail business is the operation of the kiosk space on the 2nd floor concourse and the bicycle parking lot on the 1st floor, and the advertising business of the entire station. Both are entrusted to private companies.

4) Urban Development Project around Suoi Tien Terminal Station

Becamex Tokyu, a joint venture between Tokyu and SAMCO, is working on a Suoi Tien terminal development project in parallel with the "TOD Urban Development Project and BRT Project Preparation Survey (PPP Infrastructure Survey) in Binh Duong Province" by JICA (2016). In the 16 ha of land, a development project is being implemented for the Phase 1 part of three commercial business facilities (about 3 ha) located between Suoi Tien Terminal Station and the bus terminal facility.

Detailed city planning was approved by DPA in 2016, and in October 2020, SAMCO opened the Mien Dong (Eastern) Bus Terminal Facility.

According to the hearing, the business is not progressing as expected due to the scheme related to the development of the land of the state-owned enterprise based on the land law and the state-owned enterprise law. In addition, coordinating with MARU is necessary because part of the construction of the station plaza will be inside of ROW of Line 1.



Source: Becamex Tokyu

Figure 2.14 Site Photo and Image of Urban Development Project around Suoi Tien Terminal

3 TOD Possibilities along Line 1

3.1 Urban Plan and Urban Development

1) Land Use Plan and TOD Orientation

MRT Line 1 is the first urban railway in Ho Chi Minh City. The growth axis and economic activity of the city extend northeast. It is necessary to consider the TOD concept along Line 1 to unite neighboring provinces (Dong Nai province, Binh Duong province), achieving the “Highly Interactive and Innovative City (HIID)” vision of the newly established Thu Duc City.

In the current Ho Chi Minh City construction plan, most of the nodules are limited to highway intersections, and the TOD concept along Line 1, such as zoning for mixed-use development around Line 1 station, is not fully reflected.

The following perspectives need to be reflected in the future update of the Ho Chi Minh City construction plan, the creation of the Thu Duc city construction plan, and the zoning update around each station on Line 1.

- Designate intermodal transport hub stations for connecting urban railways and roads and public transports: Tan Cang station (bus), Rach Chiec station (BRT), Suoi Tien Terminal station (BRT, city / intercity bus), etc.
- Develop subcenters for residents and commuting users through medium- to long-term land use reorganization, such as access road development in front of the station and construction of existing urban areas.
- Zoning will include the location and scale of access roads to stations and parking facilities such as P & R.
- Promote station area development in collaboration with private development to contribute to the convenience of station users and the promotion of railway use, such as transport facilities, public spaces, and station-related service facilities integrated with the large-scale urban development project in front of the station. Public contributions such as public infrastructure development by developers, application of developer burden, can be applied.
- Consider the development potential of areas where future land use conversion is expected, such as roadside public land and industrial areas. Consider the introduction of urban facilities that are highly convenient for local residents and station users, such as affordable housing development for middle-income earners and public service facilities, which are not limited to large-scale development projects by the private sector.

To update the construction and zoning plans, it is required to coordinate:

- the smart city projects of Thu Duc City,
- transport development projects (station plaza, access road, etc.),
- underground space development, and
- the TOD regulations and incentives.

Present condition, land use issues, urban development, and transport access are reviewed, and TOD orientations are proposed.



Source: General Construction Plan of HCMC toward 2050 (alignment of Line1 is added by JICA Study Team)

Figure 3.1 Land Use Plan along Line1 in the General Construction Plan

Table 3.1 Proposed Arrangement of Urban Plans by Station

Station	Proposed Arrangement of Urban Plans
Ben Thanh	Specification of boundary of underground development
Van Thanh	Urban redevelopment of built-up area (south side)
Tan Cang	Land use conversion of army land for development
Rach Chiec	Coordination with “Sports Complex” project BRT& Station plaza development (south side) Urban redevelopment of built-up area in long-term (north side)
Phuoc Long	Land use conversion of industrial area for development Promotion of mixed-use development with station plaza (west side)
High Tech Park	Coordination with “High tech park” project Station plaza development (south)
National University	Coordination with “IT& Education Hub” project Urban redevelopment of built-up area (north)
Suoi Tien Terminal	Coordination with commercial development around bus terminal Station plaza development (west) Urban redevelopment of built-up area (east)

Source: JICA Study Team

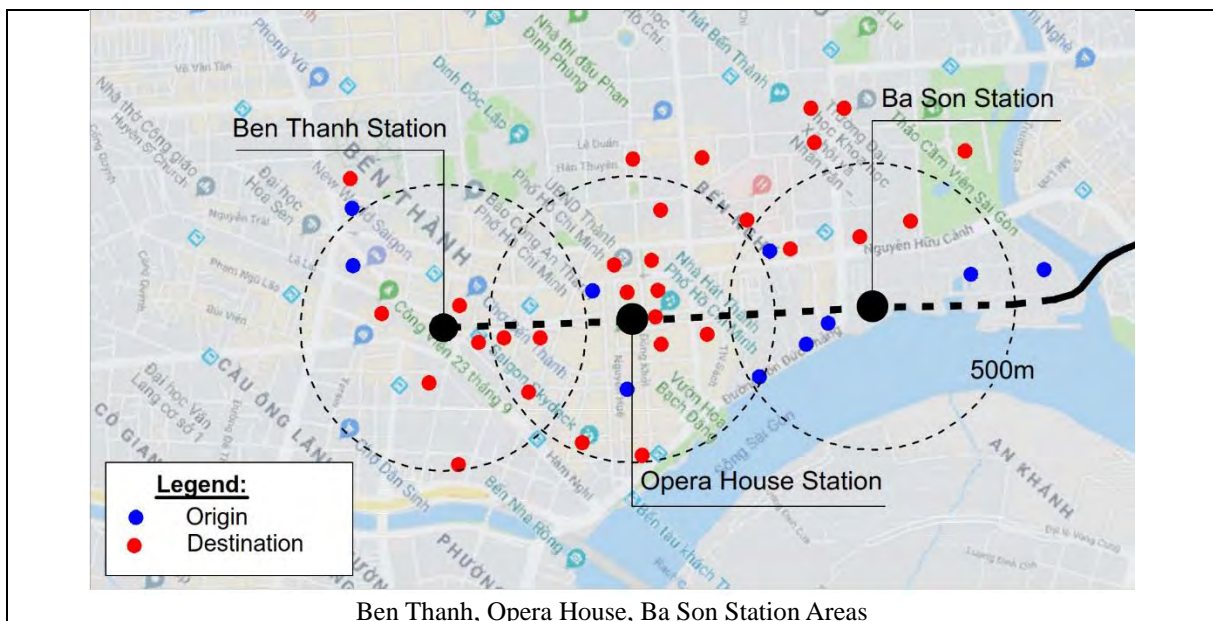
2) CBD area (Ben Thanh, Opera House, Ba Son, Van Thanh, and Tan Cang Stations)

In CBD along Line 1, there are many urban facilities and many tourists. Any future development is limited as there are many high-rise commercial facilities. A large-scale urban development project on a military site is also underway at Ba Son Station. In addition, although there are sidewalks, they are not wide enough. Since there is a lot of traffic in the city center, crossing roads is barely safe.

Table 3.2 Major Urban Facilities of Station Areas in CBD

Stations	Educational Facilities	Offices	Commercial Facilities	Public Facilities
Ben Thanh (underground)	Cao Thang college	Ben Thanh market, HCMC stock exchange, Saigon square, Saigon Center	New World Saigon, Rex	23 Thang 9 park, HCMC Art museum, Saigon hospital,
Opera House (underground)	Cao Thang college, Tran Dai Nghia highschool,	Saigon square, Saigon Center, Union square, Parkson plaza, Saigon Times square,	Rex, Sheraton, Caravelle, Vincom, Majestic, The Landmark,	Children's hospital, HCMC post office, Opera House
Ba Son (underground)	Sai Gon university-campus 2, Trung Vuong highschool, University of Social Sciences and Humanities, University of Medicine and Pharmacy	-	The Landmark, Lotte Legend, Le Meridien, Vinhomes Goden River	Children's hospital, Saigon Zoo, and botanical gardens
Van Thanh	HCMC University of Transport, University of Technology	Pearl plaza	The Manor, Cantavil Hoan Cau, Pearl plaza, Wilton Tower, My Duc, Vinhomes Central Park	Van Thanh Park, Vinmec Hospital
Tan Cang	-	Pearl plaza	Vinhomes Central Park, Pearl plaza	Tan Cang tourist area, Vinmec hospital

Source: JICA Study Team

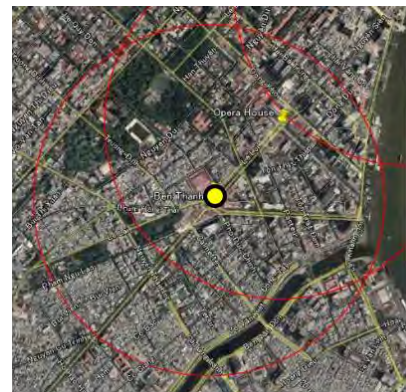


- **Opera House Station:** As an access point to opera houses, hotels, commercial facilities, etc., we will develop cultural and attractive station facilities and pedestrian spaces mainly targeting tourists, middle- and high-income earners, and young people.
- **Ba Son Station:** As an underground station integrated with large-scale mixed-use development, an underground space integrated with commercial business facilities will be developed.
- **Van Thanh Station:** As a station to be built in a residential area, safety of pedestrians and the connection with the feeder service, and promote the improvement of the area around the station integrated with the adjacent park, are considered.
- **Tan Cang Station:** A transportation hub station that secures access by pedestrians and feeder services to large-scale development areas and residential areas on the south side of the Hanoi Highway, residential areas, and universities on the north side of the station, and is integrated with the green space around the station. Consider the possibility of introducing transportation hub facilities and district service facilities by utilizing military land on the south side of the Hanoi Highway. A transport hub function is strengthened by developing a station plaza for city buses and considering how to connect the elevated station to Line 5 station in the future. Provide tourism transportation services linked to river transportation on the Saigon River.

Ben Thanh Station Area	
TOD Concept	To develop an integrated station with underground space for convenient transfer to other lines (2, 3A, 4) and bus terminals, as well as the comfort of users.
Transport development strategies	<ul style="list-style-type: none"> • Improve bus terminal (A) • Improve pedestrian facilities (pedestrian crossing, sidewalk, etc.) • Provide on-demand services, shared cycle, MaaS, etc.
Railway development strategies	<ul style="list-style-type: none"> • Expand underground space to connect various MRT lines and promote Non Rail Business (B)
Urban development strategies	<ul style="list-style-type: none"> • Utilize green park space (at-grade, underground) for multi purposes (transport, public service, amenity, commercial, etc.) (C) • Create pedestrian-friendly district

■ Issues to be discussed

- Development of terminal for various modes
- Coordination to develop underground space (role sharing, cost sharing, etc.)
- Potential to utilize park space



Source: JICA Study Team

Figure 3.4 TOD Concept Plan of Ben Thanh Station Area

Van Thanh Park Station Area	
TOD Concept	As a park front station , improve pedestrian safety and feeder service, and upgrade existing residential area
Transport development strategies	<ul style="list-style-type: none"> • Develop ITFs within MRT1 ROW (A) • Improve pedestrian space (A) • Improve connectivity to Van Thanh Park and western area to enhance station catchment area (B)
Railway development strategies	<ul style="list-style-type: none"> • Develop ITFs within MRT1 ROW (A)
Urban development strategies	<ul style="list-style-type: none"> • Redevelop existing built-up area (C)

- Issues to be discussed
 - Confirmation of intermodal transfer facility layout
 - Possibility to expand station catchment area (park, western area)
 - Possibility of redevelopment of built-up area to develop access roads

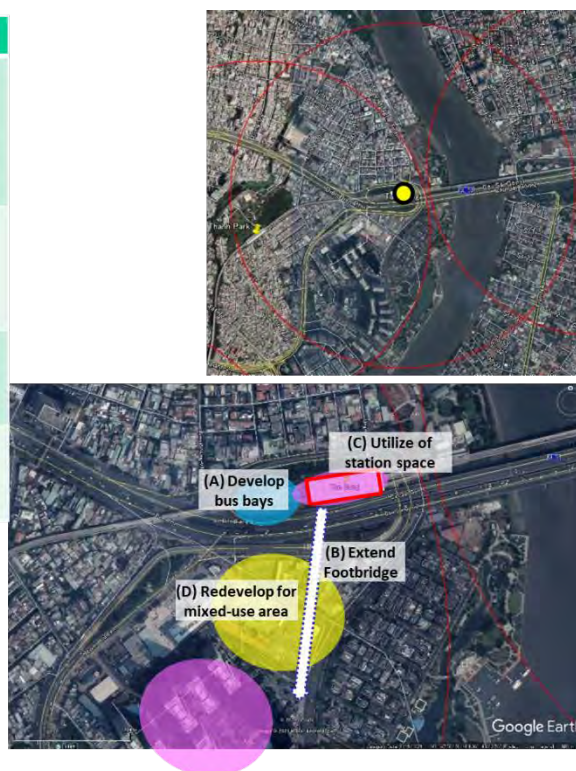


Source: JICA Study Team

Figure 3.5 TOD Concept Plan of Van Thanh Station Area

Tan Cang Station Area	
TOD Concept	As an intermodal station as well as a gateway of the city center, various functions/ services (feeder service, pedestrian space, commercial service, etc.) are added.
Transport development strategies	<ul style="list-style-type: none"> • Develop bus bays for smooth and convenient transfer (A) • Expand/ extend footbridge (B) • Provide river port service
Railway development strategies	<ul style="list-style-type: none"> • Utilize the ground floor and space under the viaduct of station for non-rail business (café, kiosk, etc.) (C)
Urban development strategies	<ul style="list-style-type: none"> • Redevelop an army land for mixed-use area including transport functions (D)

- Issues to be discussed
 - Confirmation of location and connectivity of MRT5 station (MAUR)
 - Confirmation of intermodal transfer facility layout (MCPT)
 - Potential to utilize ground floor for NRB (MAUR)
 - Potential of army land redevelopment (DPA)



Source: JICA Study Team

Figure 3.6 TOD Concept Plan of Tan Cang Station Area

3) Urban Residential Area (Thao Dien, An Phu, Rach Chiec Stations)

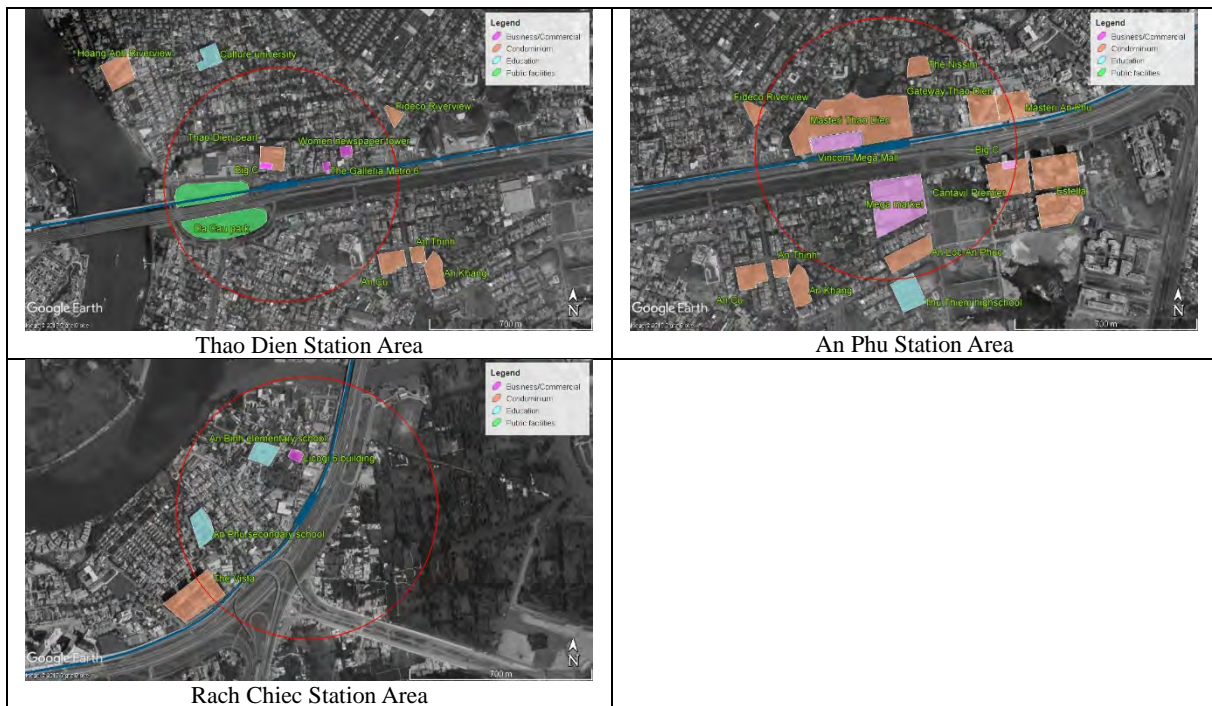
While low-rise residential areas are widespread, there are few public facilities. Large-scale

commercial facilities are concentrated around An Phu Station. At Rach Chiec Station, a BRT station will be built on the south side of the Hanoi Highway, which will be connected to the station by a pedestrian bridge. In addition, the development of a sports and health center, which is one of the innovation hubs of Thu Duc City, is planned.

Table 3.3 Major Urban Facilities of Station Areas in Residential Area

Stations	Educational Facilities	Offices	Commercial Facilities	Public Facilities
Thao Dien	Cultural university	Thao Dien Pearl, Women Newspaper building	An Cu, An Think	-
An Phu	Thu Thiem high-school	Mega market, Vincom Mega Mall	An Cu, An Think, An Loc, An Phu, Fideco Riverview, Masteri Thao Dien, Masteri An Phu, Parkson Cantavil, Estella	-
Rach Chiec	An Binh elementary school, An Phu secondary school		The Vista An Phu	-

Source: JICA Study Team

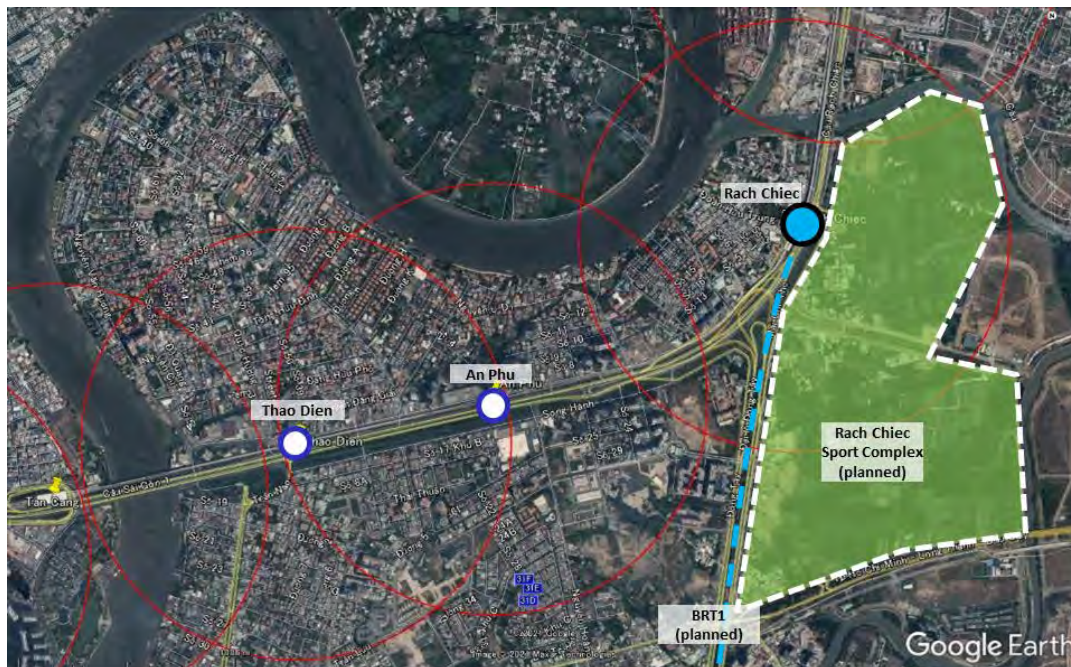


Source: JICA Study Team

Figure 3.7 Major Urban Facility Location Map in Urban Residential Station Areas

The TOD orientation of the urban residential area are as follows.

- Improve access to surrounding facilities and residential areas and improve station facilities and surrounding areas that serve as service bases for residential areas.
- Promote a comprehensive urban development project, including access road development in the residential area on the north side of the station.
- Provide comprehensive public transportation services, including feeder services to existing residential areas.



Source: JICA Study Team

Figure 3.8 Railway Alignment and Station Location Map in Urban Residential Area

The TOD orientations of each station area are as follows:

- **Thao Dien Station:** As an intermediate station for residential areas, access roads, and urban infrastructure around the station are required.
- **An Phu Station:** Since there are multiple commercial facilities around the station, it is a promoted infrastructure development through public-private partnerships, such as ensuring accessibility to the station and developing transportation hubs integrated with commercial facilities.
- **Rach Chiec Station:** Since it will be a railway station and a transportation hub station for BRT, developing commercial business facilities and affordable housing to stimulate demand and strengthening its function as a hub for urban services and transportation hubs are promoted. Improve access to the sports and health center developed on the south side of the station, and develop feeder services and walking spaces that match the image of a healthy city.

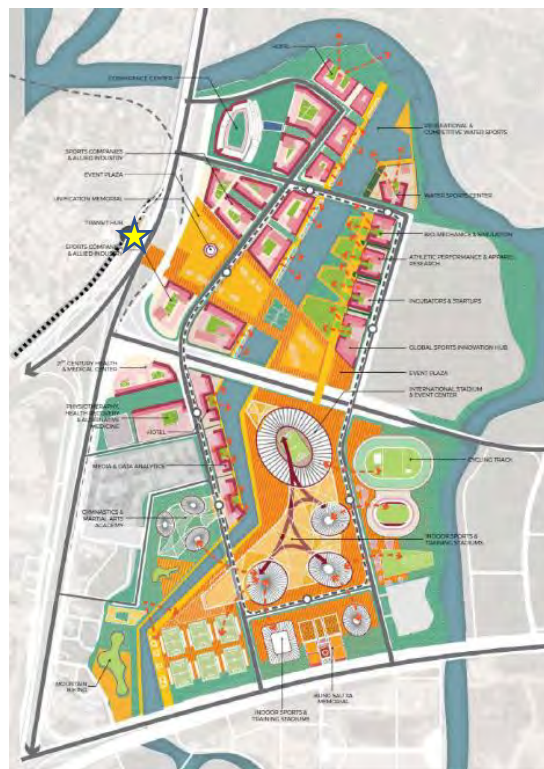
Rach Chiec Station Area	
TOD Concept	As a transfer station of BRT and a gateway to the Sports Complex, pedestrian and transport space is improved to formulate a healthy amenity station area.
Transport development strategies	<ul style="list-style-type: none"> • Expand footpath to accommodate capacity of various visitors (A) • Develop a transport hub to provide feeder service, share cycle, MaaS, etc. (B)
Railway development strategies	<ul style="list-style-type: none"> • Develop a bus bay at the ground floor of station
Urban development strategies	<ul style="list-style-type: none"> • Redevelop existing built-up area at west (C) • Promote Sports Complex development



- Issues to be discussed
 - Confirmation of BRT station location and facilities (DOT)
 - Coordination with the plan of Sport Complex to develop transport and pedestrian facilities connecting to MRT and BRT (DPA, DOT)
 - Possibility of redevelopment of built-up area to develop access roads (DPA, DOT)

Source: JICA Study Team

Figure 3.9 TOD Concept Plan of Rach Chiec Station Area



Source: Development Orientation of Innovation Hub of Thu Duc City, DPA

Figure 3.10 Development Image of Rach Chiec Sports Complex

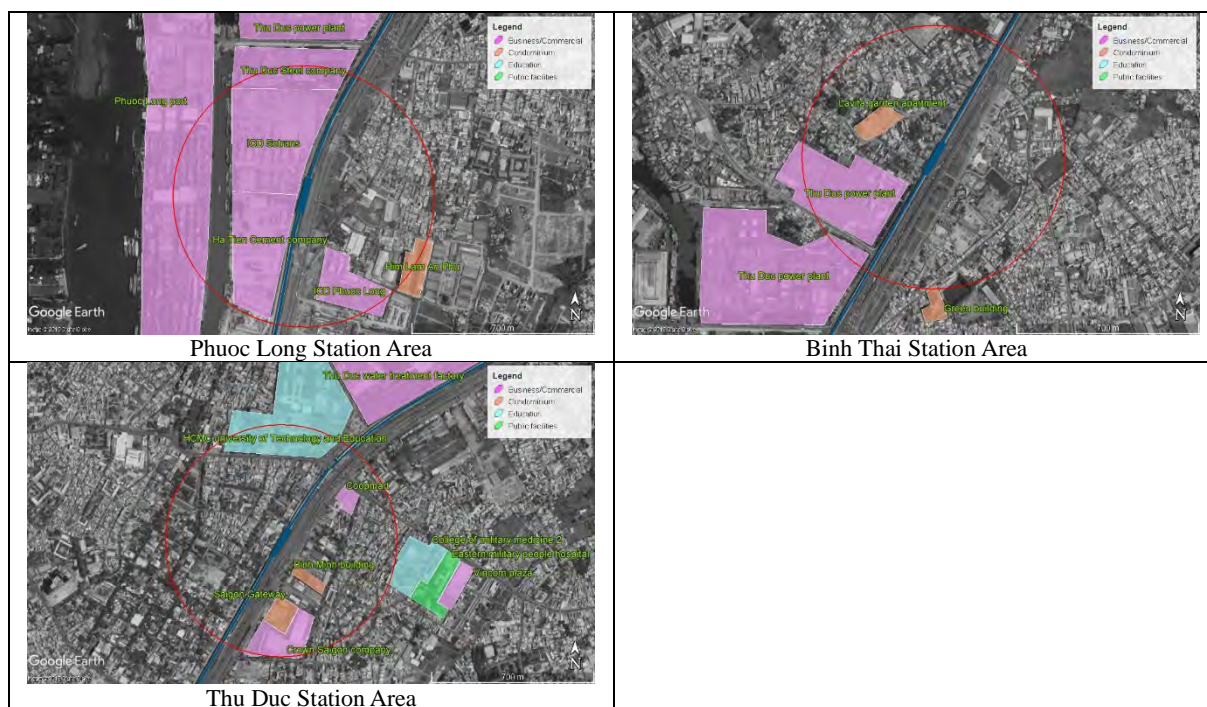
4) Industrial and Residential Area (Phuoc Long, Binh Thai, Thu Duc Stations)

It is an area for many industrial parks. Commercial and public service facilities are limited. There are many container yards and logistics facilities west of Phuoc Long Station and Binh Thai Station. Roads and infrastructure are also vulnerable in existing residential areas. The container yard on the west side of Phuoc Long Station is a mixture of public and private lands, but a large-scale urban development project for Thuong Thu Future City, one of the innovation hubs, is planned.

Table 3.4 Major Urban Facilities of Station Areas in Industrial and Residential Area

Stations	Educational Facilities	Offices	Commercial Facilities	Public Facilities
Phuoc Long	-	Phuoc Long port, Ha Tien Cement Co., Thu Duc steel Co.,	Him Lam An Phu building,	-
Binh Thai	-	Thu Duc power plant	Green apartment, Lavita Garden apartment	-
Thu Duc	HCMC university of Technology and Education, College of Military Medical 2	Vincom Plaza, Coopmart supermarket, Thu Duc Water treatment plant, Crown Saigon company	Binh Minh apartment	Eastern people military hospital

Source: JICA Study Team



Source: JICA Study Team

Figure 3.11 Major Urban Facility Location Map in Industrial and Residential Station Areas

The TOD orientations of the industrial and residential areas are as follows.

- Promote the renewal of urban functions due to the relocation of existing industrial areas.
- Promote integrated development, including public infrastructure, such as transportation and public service facilities, at newly developed sites.

- Develop access roads and feeder services in the surrounding residential areas to stimulate demand for railway use from outside the station area.
- Provide new transportation services, including tourism, in smart cities and integrate with river traffic on the Saigon River.

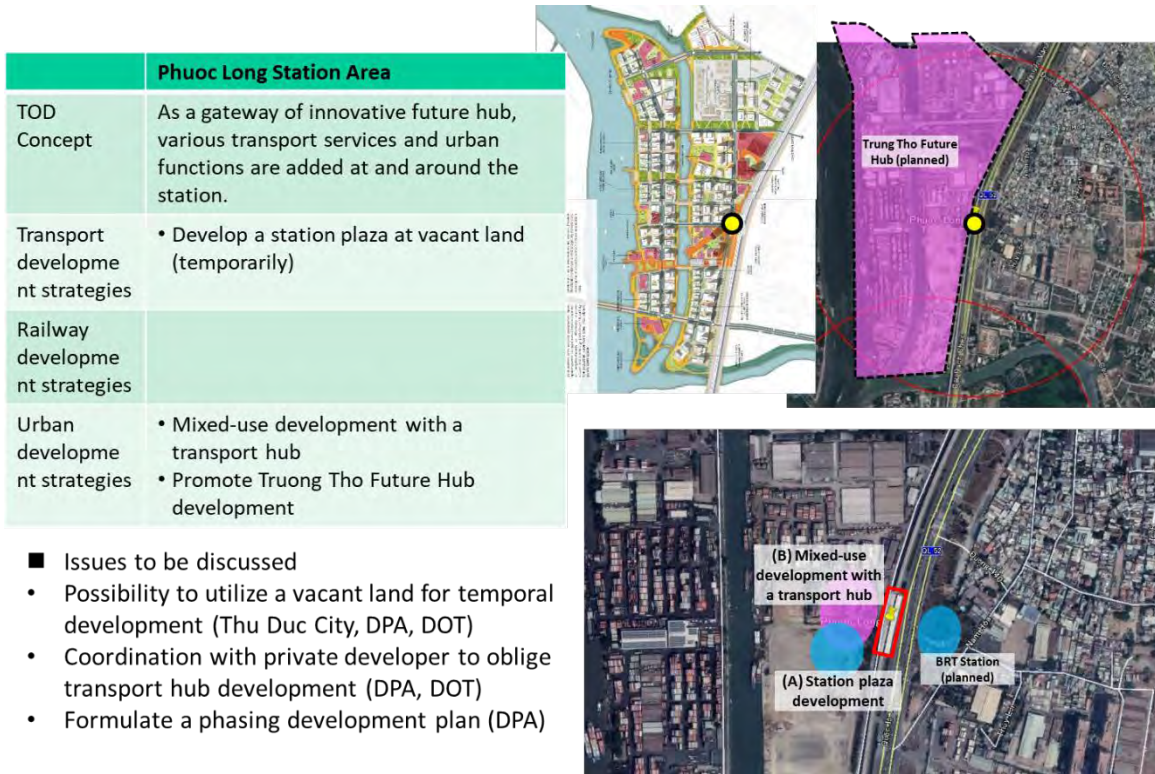


Source: JICA Study Team

Figure 3.12 Railway Alignment and Station Location Map in Industrial and Residential Area

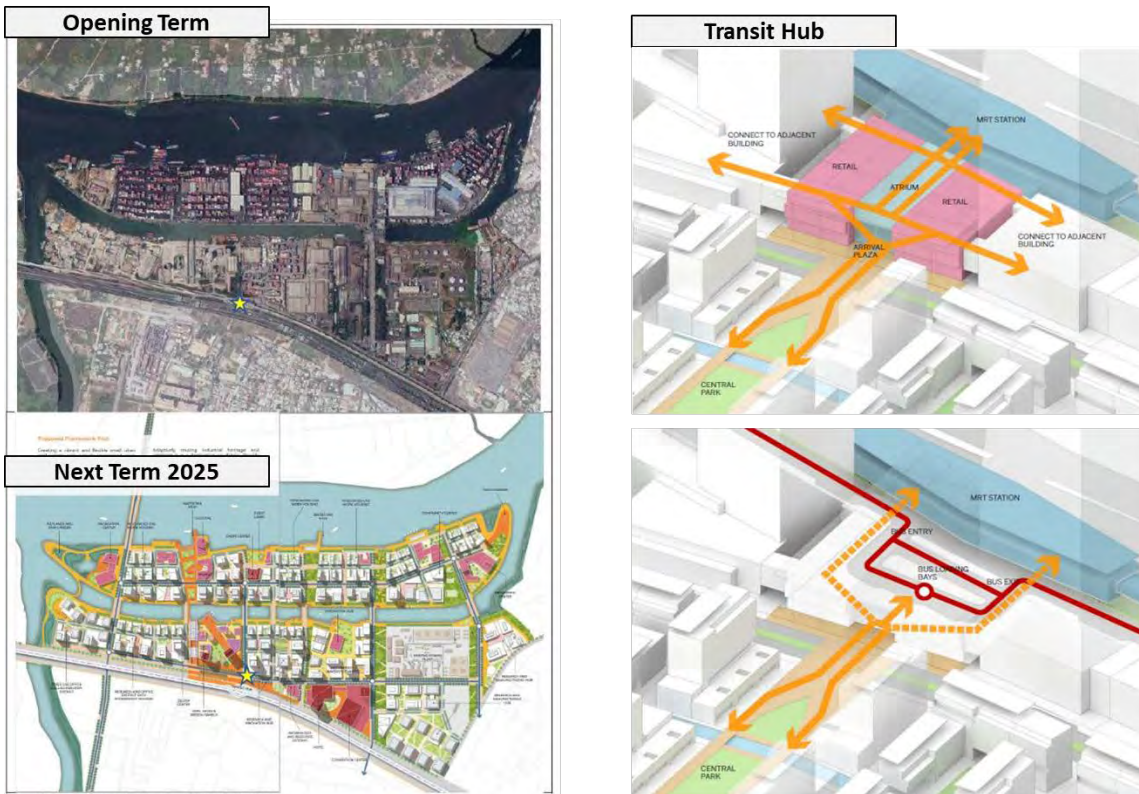
The TOD orientation of each station areas are as follows.

- **Phuoc Long Station:** Create an attractive station square space as a base station for the innovation hub of Thu Duc City by redeveloping the present industrial area. Provide new mobility services, such as smart transportation and river transportation from the station.
- **Binh Thai Station:** Short-term access road development in front of the station, medium- to long-term redevelopment of existing residential areas, and development of former sites due to relocation of industrial areas.
- **Thu Duc Station:** Develop access roads in front of the station in short-term, provide feeder services to universities, and redevelopment of existing residential areas in the medium to long term.



Source: JICA Study Team

Figure 3.13 TOD Concept Plan of Phuoc Long Station Area



Source: Development Plan of Innovative Hub of Thu Duc City, DPA (left), Refico (right)

Figure 3.14 Image of Innovative Hub Development around Phuoc Long Station

5) R&D and University Area (High-Tech Park, National University Stations)

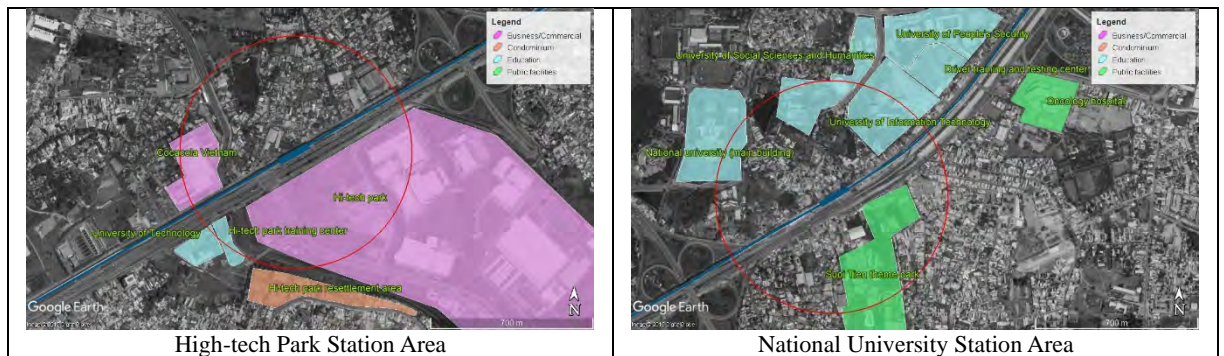
Many large-scale facilities, such as high-tech parks, multiple national universities, and Suoi Tien Park, are in this area, and the demand for commuting and school users to these facilities is expected. On the other hand, commercial facilities and public facilities are limited, and there are few urban facilities to attract users outside the district, such as the weak surrounding road network.

Around these two stations, there are three innovation hubs: a high-tech production centre, a human resources education / advanced science and technology research centre, and a corporate start-up centre. It is expected to be developed as a research and development / advanced education district.

Table 3.5 Major Urban Facilities of Station Areas in R&D and University Area

Stations	Educational Facilities	Offices	Commercial Facilities	Public Facilities
High-Tech Park	-	HCMC Coca-Cola, Hi-Tech Park, Hi-Tech Park Training Center	-	-
National University	HCMC university of Information Technology, University of Social Sciences and Humanities, National university (main building)	Suoi Tien theme park	-	-

Source: JICA Study Team



Source: JICA Study Team

Figure 3.15 Major Urban Facility Location Map in R&D and University Station Areas

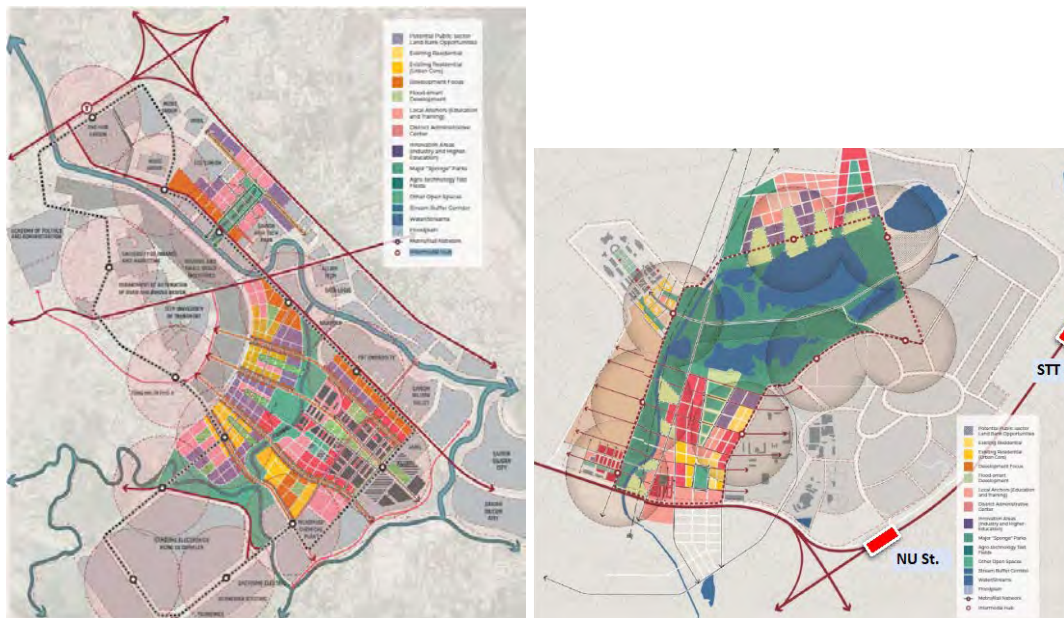
The TOD orientations of the R&D and University Area are as follows:

- to facilitate various types of visitors and users, including residents, commuters, and students, to the innovation hubs (advanced science and technology center, high-tech park, and corporate startup center); and
- to create walkable innovative and academic districts by providing station-related services and developing pedestrian / bicycle spaces and feeder services to universities and high-tech park.



Source: JICA Study Team

Figure 3.16 Railway Alignment and Station Location Map in R&D and University Area

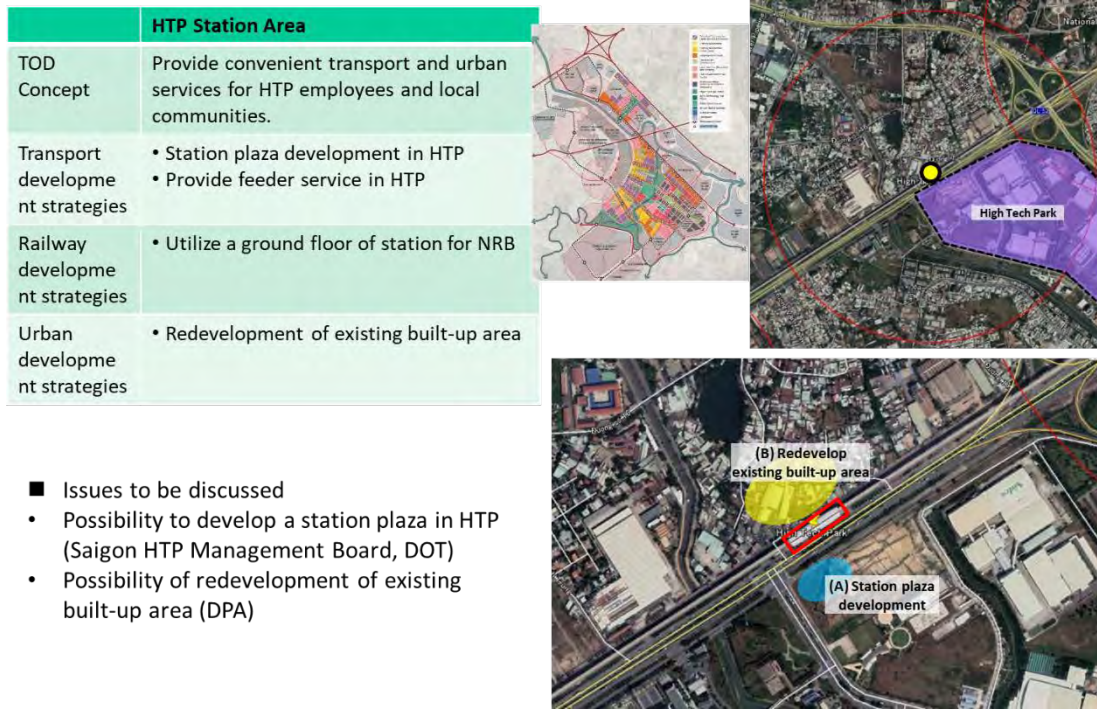


Source: Development Orientation of Innovation Hub in Thu Duc City, DPA

Figure 3.17 Development Image of High Tech Park (left) and Human Resource and Advanced Science and Technology Research Center (right)

The TOD orientations of each station area are as follows:

- **High-Tech Park Station:** Promote the development of highly convenient service facilities for users of high-tech parks and scattered R & D facilities at the station and in front of the station.
- **National University Station:** Develop commercial and entertainment facilities targeting local residents and commuters, business support service facilities to support students and entrepreneurs, and public spaces as lively and hangout spaces.



Source: JICA Study Team

Figure 3.18 TOD Concept Plan of High-Tech Park Station Area

6) Suburban Transport Hub Area (Suoi Tien Terminal Station)

The north side of the station has a low-rise residential area, a national university dormitory, and the Ho Chi Minh City Institute of Technology. The front of its south side has a 16-ha development area, including Line 1 depot and Tobu Bus Terminal. There are few commercial business facilities or public service facilities. In addition, there is no place to cross the Hanoi Highway, and access to the bus terminal can only be from the east side, which is inconvenient.

Table 3.6 Major Urban Facilities of Station Area in Suburban Transport Hub Area

Stations	Educational Facilities	Offices	Commercial Facilities	Public Facilities
Suoi Tien terminal	National university dormitory, HCMC university of technology	-	-	New Mien Dong bus terminal

Source: JICA Study Team



Source: JICA Study Team

Figure 3.19 Major Urban Facility Location Map in Suburban Transport Hub Area

The TOD orientation of the suburban transport hub area are as follows.

- Form a TOD district integrated with commercial service functions as a transportation hub for BRT and intercity / intracity buses.
- Improve accessibility from stations and residential areas on the north of Hanoi Highway, and promote railway use from outside the station area.
- For the convenience of transferring between the station and the bus terminal, the station square and pedestrian deck will be developed through public-private partnership (PPP).



Source: JICA Study Team

Figure 3.20 Railway Alignment and Station Location Map in Suburban Transport Hub Area

	Suoi Tien Terminal Station Area
TOD Concept	As a north terminal station, expand station catchment area connecting to neighboring provinces by promoting TOD mixed use development.
Transport development strategies	<ul style="list-style-type: none"> • Extend a footpath to north (B) • Develop a station plaza along Hanoi Highway at north (C)
Railway development strategies	<ul style="list-style-type: none"> • Utilize MRT ROW for station plaza (bus bay & pedestrian space) development (A)
Urban development strategies	<ul style="list-style-type: none"> • Promote mixed use development at south

■ Issues to be discussed

- Possibility to develop a station plaza at south (MAUR, DOT, private)
- Confirmation of **plan of Hanoi Highway** and possibility to extend a footpath (DOT)
- Possibility of redevelopment of existing built-up area (DPA)



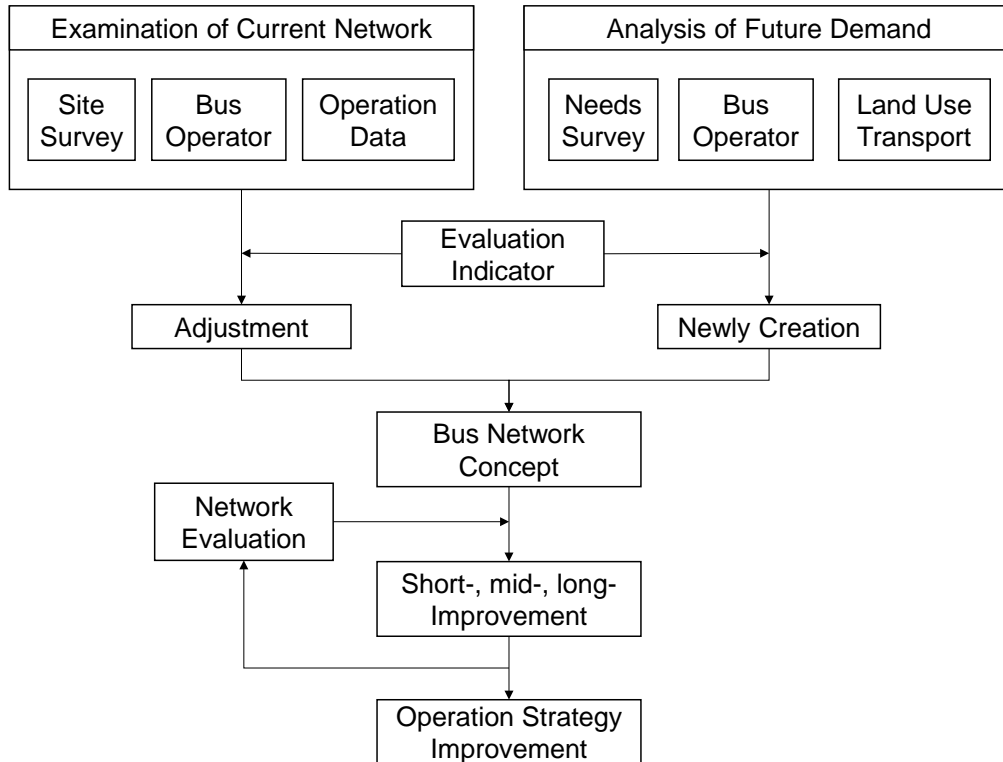
Source: JICA Study Team

Figure 3.21 TOD Concept Plan of Suoi Tien Terminal Station Area

3.2 Urban Transport

1) Bus Access Improvement

From the MCPT survey results in 2019, the priority for the Intermodal Transfer Facility (ITF) is public transport users, including buses and taxis, and parking space provision under the viaduct for bicyclists as well. If the plan regards taxis as part of public transportation, it may not mitigate congestion and even cause more problems; therefore, the bus network along HCMC Line 1 will be evaluated and focused on.



Source : JICA Study Team

Figure 3.22 Bus Network Planning Flow

The bus network plan will be explained in three sections: (1) examination of current network, (2) analysis of future demand, and (3) short-, medium-, and long-term bus network improvement.

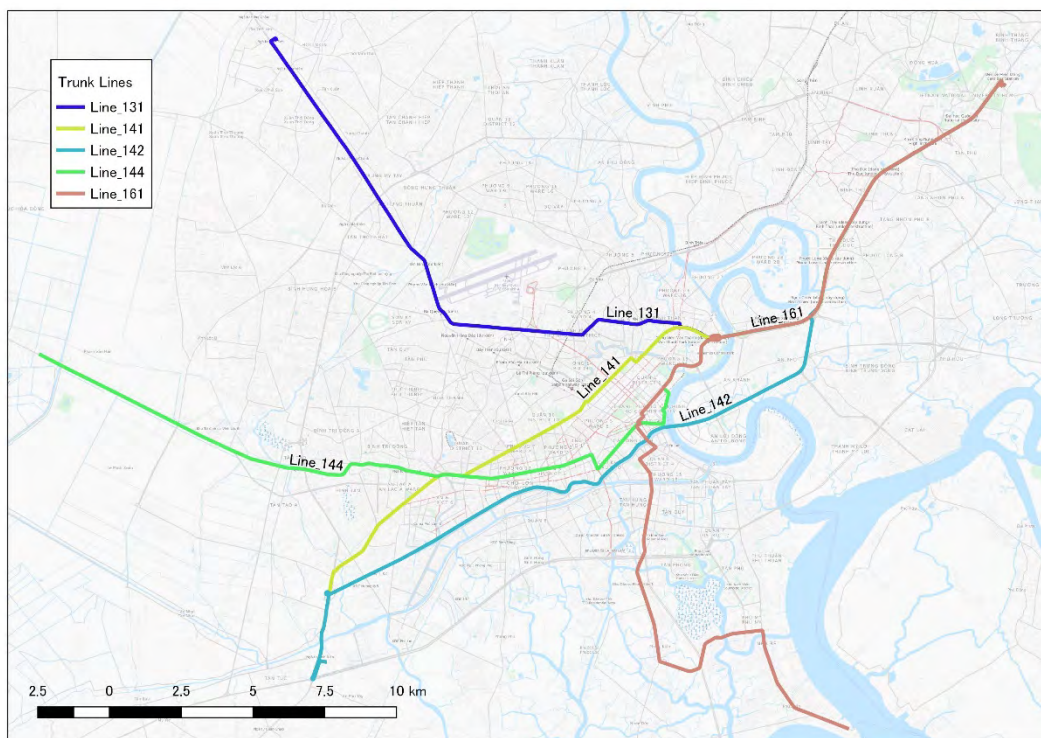
(1) Examination of current network. Based on passenger characteristics, passenger counting survey, interviews with operators, and bus route data collection, the current bus routes are reviewed using route evaluation indicators to check the efficiency of bus services. The following three items should be considered when conducting the bus plan.

- Connectivity of HCMC Line 1 and road network
- Adequacy of bus route and operating distances
- Rationality of the number and location of bus stops

(2) Analysis of future demand. New routes shall be established based on route evaluation indicators through user needs and operator surveys, land use, transport development plans, etc. Since HCMC Line 1 is not yet open, it is expected to make route plan according to the demand forecast results. The following should be considered when establishing a new route:

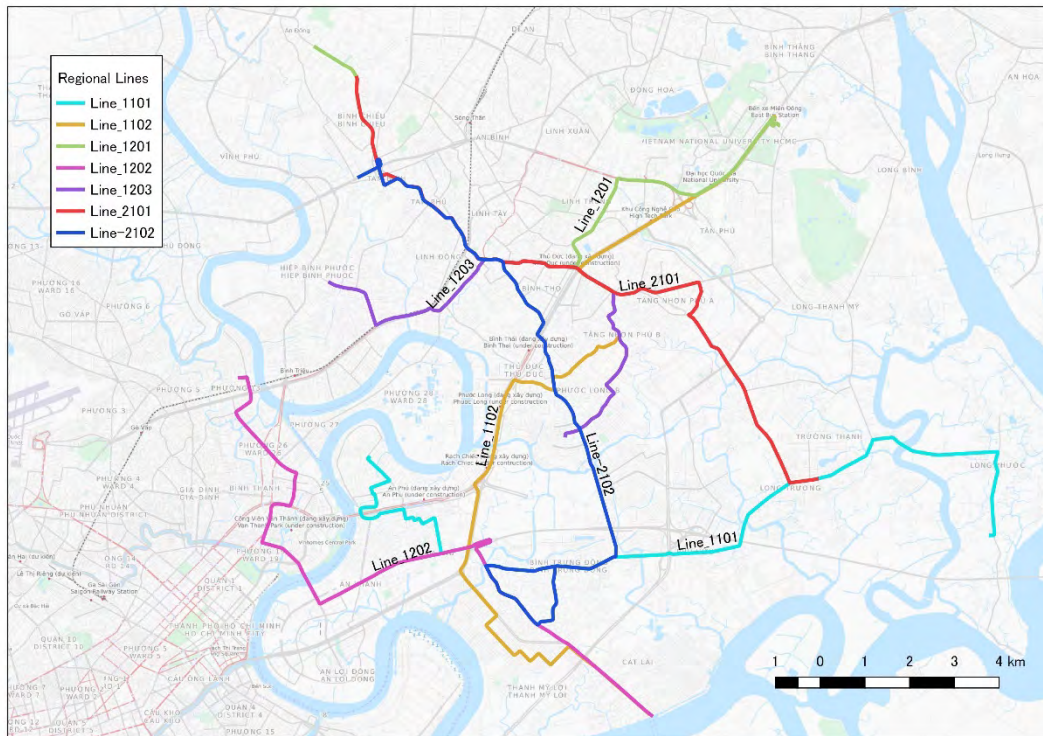
- connectivity to major destinations, residential areas, and terminals;
 - competition and coexistence with other transport modes (taxi-hailing services, motorcycles, private cars, etc.); and
 - modal shift from other transport modes to buses.
- (3) Short-, medium-, and long-term bus network improvement. Since bus routes will need adjustments according to operational conditions and demand, it is recommended that routes are readjusted and operational strategies are reviewed after bus network assessment. The planned routes presented by MCPT, at this time, can be improved in the bus network according to short-, medium-, and long-term scenarios after the launch of Line 1, as the demand may increase in the future due to population growth and land development along Line 1.

The latest bus network plan of MCPT has three categories: trunk lines, regional lines, and feeder lines.



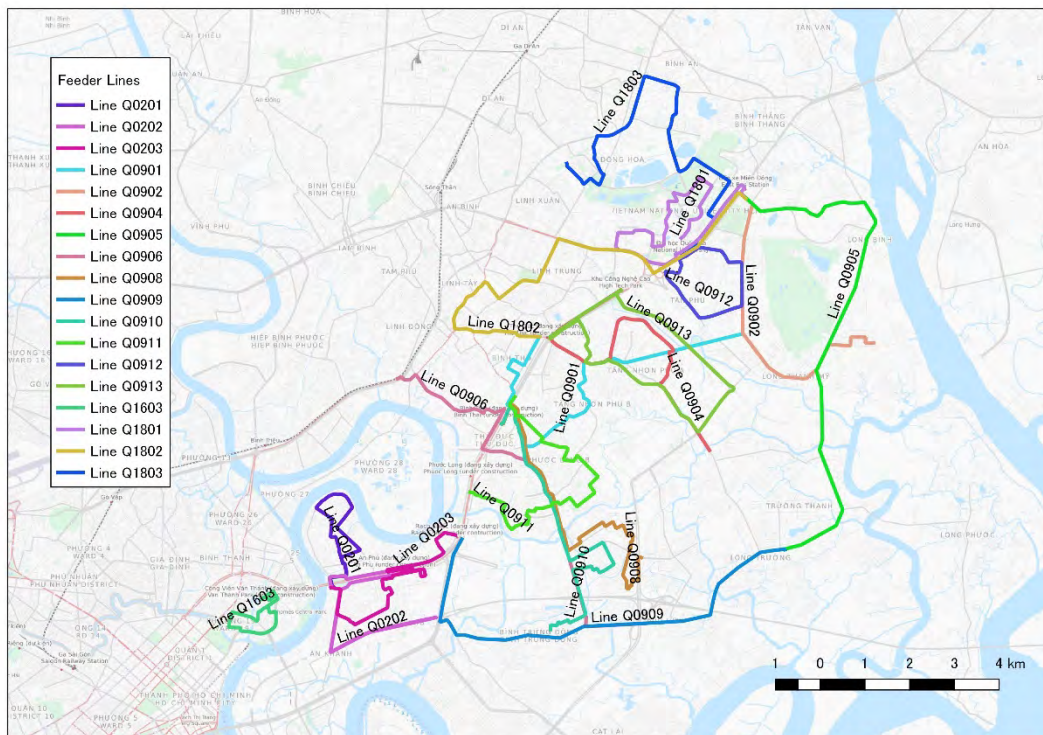
Source : JICA Study Team (based on the information from MCPT)

Figure 3.23 MCPT Bus Network Plan (Trunk Lines)



Source : JICA Study Team (based on the information from MCPT)

Figure 3.24 MCPT Bus Network Plan (Regional Lines)



Source : JICA Study Team (based on the information from MCPT)

Figure 3.25 MCPT Bus Network Plan (Feeder Lines)

Evaluation indicators can be quantified to examine route network by some route and network criteria.

- Route evaluation. Curvature/bend (operating distance / shortest distance between the origin, mid-

point and destination of the route).

- Network evaluation. Service coverage (the ratio of the number of residents, employment workers or households within 300m along the metro line) and bus routes meet needs of OD (the main user's OD routes of HCMC Line 1 if included in the bus route).

Bus route alignment and service coverage by comparing distances and population along MCPT's bus network are evaluated.

(1) Curvature/Bend

All the MCPT bus routes are measured by GIS to calculate the curvature. The evaluation criteria for curvature are divided into four levels: A (<1.3), B (1.3-1.6), C (1.6-1.9), and D (>1.9). Level A is the ideal result, in which the bus route does not detour and users conveniently and smoothly arrive at their destination. Level D is the less preferred case since the operating hours may become long.

The results show that all trunk lines are rated A, indicating highly efficient routes that do not detour. The feeder lines seem to go around residential areas to serve more passengers, but the D-rated lines seem to waste the time of passengers. It would be better to split them into two lines or revise the routes.

Table 3.7 Curvature Evaluation

	Route	Operating Distance (km)	The shortest distance among origin, midpoint, destination (km)	Curvature	Evaluation
Trunk Lines	Line 131	37.1	31.4	1.2	A
	Line 141	36.9	31.3	1.2	A
	Line 142	37.1	31.4	1.2	A
	Line 144	44.7	38.9	1.1	A
	Line 161	39.5	30.2	1.3	A
Regional Lines	Line 1101	22.1	14.3	1.5	B
	Line 1102	22.7	16.3	1.4	B
	Line 1201	16.3	13.2	1.2	A
	Line 1202	17.4	12.3	1.4	B
	Line 1203	12.2	8.7	1.4	B
	Line 2101	16.9	13.7	1.2	A
Feeder Lines	Line 2102	19	10.8	1.8	C
	Line Q0201	6.6	4.2	1.6	B
	Line Q0202	12.2	2.6	4.7	D
	Line Q0203	8.1	3.2	2.5	D
	Line Q0901	10.2	5.9	1.7	C
	Line Q0902	7.4	6.1	1.2	A
	Line Q0904	8.9	4.3	2.1	D
	Line Q0905	12.1	8.7	1.4	B
	Line Q0906	10.5	7.9	1.3	A
	Line Q0908	8.8	4.7	1.9	C
	Line Q0909	10.9	8.2	1.3	A
	Line Q0910	9	5.2	1.7	C
	Line Q0911	8.3	5.5	1.5	B
	Line Q0912	5.6	3.1	1.8	C
	Line Q0913	12.2	5.2	2.4	D
	Line Q1603	4.8	1.7	2.8	D
	Line Q1801	10.2	3.3	3.1	D
	Line Q1802	11.3	6.4	1.8	C
	Line Q1803	10.7	6.3	1.7	C

Source : JICA Study Team

(2) Bus Service Coverage

The bus service coverage is defined as the ratio of the number of working people (daytime

population) or the number of residents (nighttime population) within 300 m along the bus route to the total population. The daytime ratio should be at least 70% and the nighttime ratio at least 80%.

(3) Bus Stop Interval (Distance)

The distance between bus stops on urban transportation in Vietnam tends to be long compared with that of other countries, and depending on the user, the longer the travel distance to a bus stop, the lesser intent to use the bus. For service improvement, the interval of bus stops should be 400–600m, which gives a good access environment. It will compete with highly convenient motorcycles.

(4) Road Infrastructure

In some road sections, bus stops are on the side of roads without pedestrian crossings and nonfunctional pedestrian signals. The bus stop environment always requires maintenance, and the aging facilities are one of the reasons why bus users do not increase. Improving safety and accessibility through road infrastructure will increase bus users.

(5) Operation Service, Convenience

The key to the success of feeder buses is the convenient connection with the railway. If the level of bus service (comfort, space, etc.), on-time rate, frequency of service, and convenience of station transfers are improved, users will shift from other transport modes and start to use buses.

(6) Reasonableness of Fares

If the fares of bus and rail are lower than that of a motorbike or private car, users are expected to increase. In addition, it is possible to introduce a fare discount system or commuter pass through the use of mutual transit from bus to rail. Since Vietnamese people are highly sensitive to fares, the government could continue to provide low fares through subsidies in the initial operation and return to the original cost after securing long-term bus users. An operational strategy that meets the needs of the users, e.g., flexibility to set special fares for students and the elderly, is desirable. Promoting bus usage is more likely to be subsidized by the government because it can mitigate traffic congestion.

2) Development of Integrated Intermodal Facility

In order to realize the above MCPT proposed network and bus facility development plan, the bus terminal and station will be required to integrate to improve the bus network and bus access and promote the transfer of railways and buses as part of the improvement of connectivity. The development of an ITF will realize it.

After MCPT reviewed the JICA-SAPI report, the ITF development concept has already been proposed, but the Ho Chi Minh City PC still has not. Based on the previous plan, the JICA Study Team proposes to review and update the plan for five stations on Line 1 as a case study (refer to 3.3 in this report).

3) Transport Service Smart Mobility

Improving urban mobility and making cities smarter are necessary by incorporating digital technology into the development of the social infrastructure, including transport services, as well as promoting modal shift from motorbikes and other private vehicles to public transport. The keywords are "personalized," "real-time," "pursuit of continuity," and "MaaS". Through collaboration with various partners beyond the framework of mobility, various efforts will be made to realize "ease of

movement" for each person living along the HCMC Line 1.

The smart card for Line 1 will create added value for rail use. In terms of access from the origin, such as home, to the station, new mobility options will be provided, including hauling taxis and shared bicycles, in addition to the existing transport options (taxis and buses). Moreover, as shown in the figure below, a platform that provides not only transport information but also tickets and events will be established, which are attractive to people active along the rail line, as an effort to increase the attractiveness of Line 1.

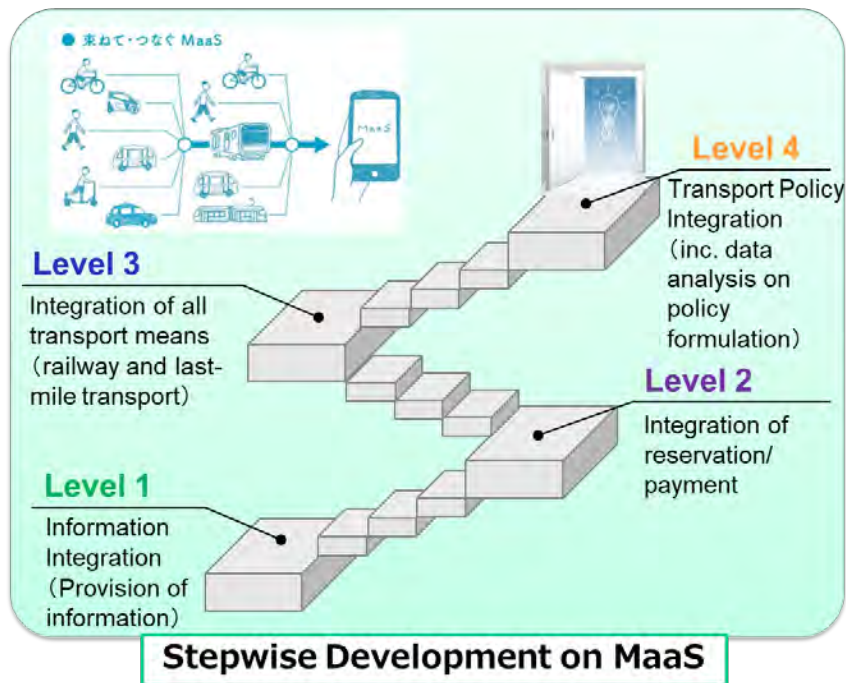


Source : TOYOTA: my route YOKOHAMA

Figure 3.26 TOYOTA's "My Route" MaaS Concept

MaaS is specified in four levels, and as a roadmap for MaaS implementation along Line 1, the project is planned to focus on Level 1 and Level 2 activities, as shown below.

- Level 1 activities: centralization and provision of information related to public transport, provision of operation information, provision of real-time information, and provision of P&R services.
- Level 2 activities: discounted fares during P&R, linkage with in-station business (*Ekinaka*) payment, linkage with reservation, and payment for last-mile transport (taxis and motorbikes)



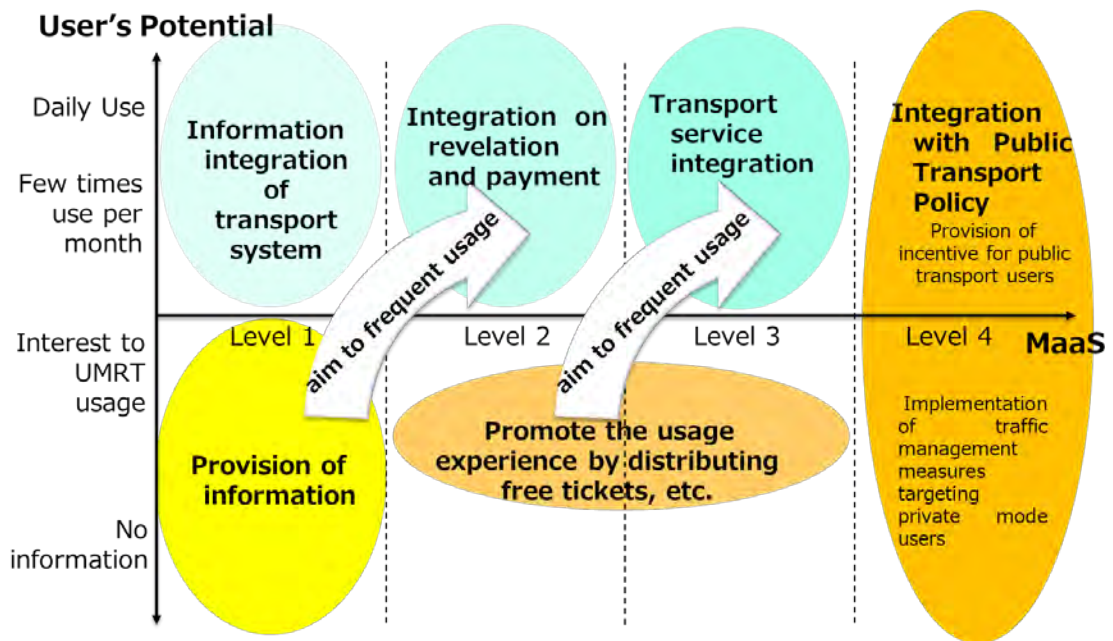
Source : JICA Study Team

Figure 3.27 MaaS Roadmap Proposal

The targets are divided into the following segments, and effective activities will be conducted.

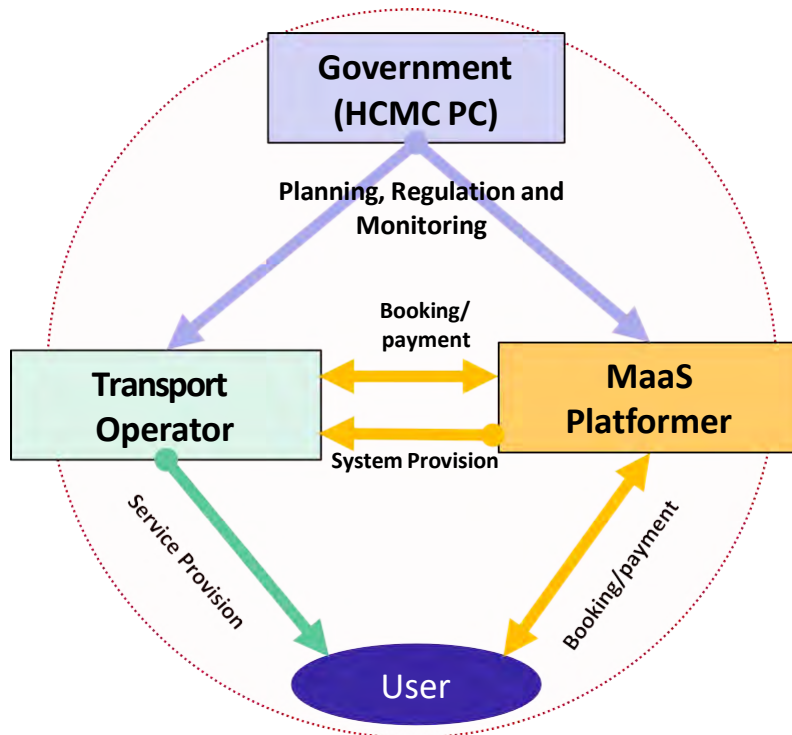
In Ho Chi Minh City, MaaS is highly feasible because it can provide "value-added mobility services" along Line 1 by integrating various transport services such as MRT, BRT, buses, and other feeder services. In addition, Line 1 and the MaaS operator can earn non-fare revenues that will ensure the sustainability of the business for non-profitable public transport.

In order to implement the project, a PPP between the government, which provides and manages public transport services, and the private sector, which provides transport services, is necessary, especially with proper planning, regulation, and monitoring by the government. DOT and MCPT are also considering the formulation and implementation of MaaS policies, and some private transport operators in Vietnam have expressed their interest.



Source : JICA Study Team

Figure 3.28 Urban Rail Usage Promotion Strategy (tentative)



Source : JICA Study Team

Figure 3.29 MaaS Implementation Cycle

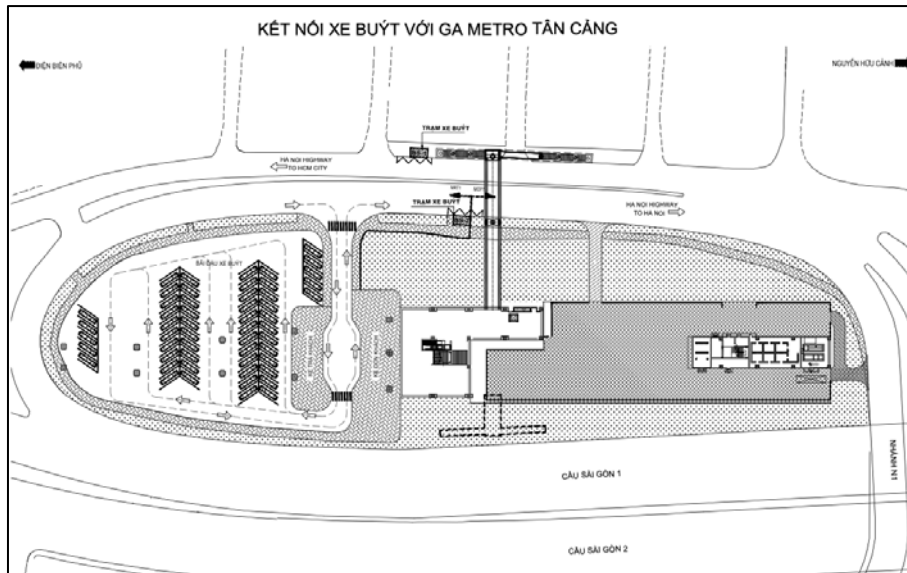
3.3 Intermodal Transfer Facility Development

1) Methodology

The JICA Study Team reviewed previous SAPI Study and relevant JICA study, MCPT draft conceptual plan and MAUR conceptual plan as follows:

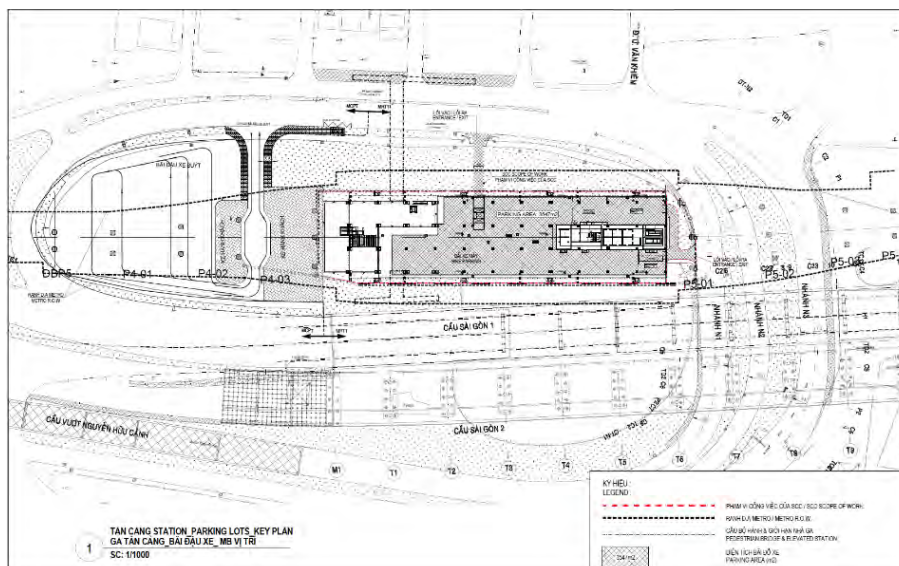
- SAPI study (JICA, 2014): Studied concept plan for intermodal facility in each station. Underground stations (Ben Thanh, Opera House and Ba Son) and Suoi Tien Terminal Station were excluded because these stations were studied by other projects as below:
- Ben Thanh Station: Preparatory Survey on Ben Thanh Central Station Project (JICA, 2012)
- Suoi Tien Terminal Station: Preparatory Survey on Transit Oriented Development in Binh Duong Province and BRT Development Project (JICA, 2016)
- MCPT already reviewed SAPI study and updated a conceptual plan of intermodal facility at each station. As this conceptual plan was not approved by HCM PC, Study Team can propose a new conceptual plan.
- MAUR made “Design concept for Parking space for motorcycle & bicycle at stations”. This report provides technical / contractual bases and design concept for Parking Space for motorcycle and bicycle at stations.

Based on the above review, the study team will propose a conceptual plan at prioritized stations.



Source : MCPT

Figure 3.30 MCPT Draft Conceptual Plan (ex. Tang Can St.)



Source : MAUR

Figure 3.31 Drawing of Metro Line 1 Station (ex. Tang Can St.)

The concept plan of intermodal facilities for each station area is summarized.

Table 3.8 Summary of the Concept Plan of the Intermodal Facilities

Location	No	Station	Under Ground /Elevated	Bus Service		P&R Facilities		Taxi	Car	Station Plaza	
				City Bus	Feeder	Car	MC/ Bicycle			Phase-1	Phase-2
Westside of Saigon River	CBD	1 Ben Thanh	Underground	●							
		2 Opera House	Underground	●				●			
		3 Ba son	Underground	●				●			
	Binh Thanh	4 Van Thanh Park	Elevated					●	●	●	●
		5 Tan Cang	Elevated	●		●	●	●	●	●	
Eastside of Saigon River	Dis.2	6 Thao Dien	Elevated		●		●	●	●	●	
		7 An Phu	Elevated		●		●	●	●		
		8 Rach Chiec	Elevated	●BRT	●	●	●	●	●	●	
	Thu Duc Dis.9	9 Phuoc Long	Elevated	●	●		●	●	●		●
		10 Binh Thai	Elevated		●		●	●	●		
		11 Thu Duc	Elevated	●	●	●	●	●	●		
		12 High Tech Park	Elevated		●		●	●	●	●	
	Di An Dis.9	13 National Univ.	Elevated		●		●	●	●		●
14 Suoi Tien Terminal		Elevated	●	●	●	●	●	●	●		

Remark: Orange color - Priority Station; Red color – to be added in this survey

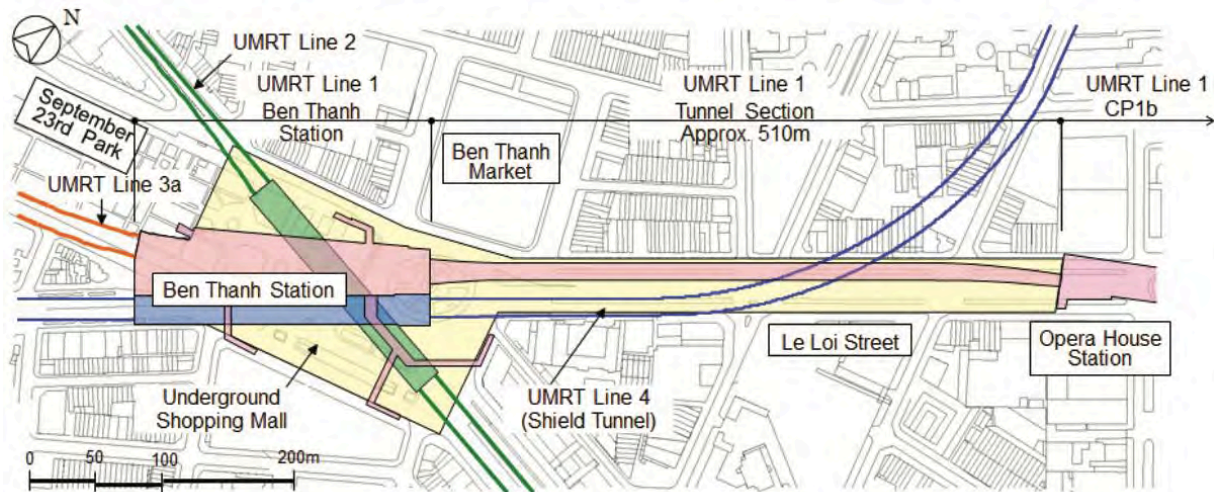
Source: JICA Study Team

2) Ben Thanh Station

There are 5 entrances to Ben Thanh Station, which are: 1) 23/9 Park, 2)&3) In front of East side building, 4) In front of Railway Company building, 5) In front of Ben Thanh Market West Entrance.

At the present, the city keeps studying the concepts of underground shopping mall and underground bus terminal, but, due to the absence of private investors, these developments cannot keep up with the progress of Metro Line 1 construction. In the near future, as Line 2, 3, and 4 will also be developed, it is necessary to consider the phase-wise development and public-private partnership in the strategy.

The current bus terminal locates on the ground at the southeast side of the station, and in some conceptual plan it is suggested to be relocated to the basement of the station or the basement of the 23/9 park, together with the development project of the underground mall. In that case, taxi stand, parking lot will also be built underground.



Note: Red : station facility (already built), Yellow : proposed underground mall (out of coverage of Line1 Construction Project)

Source: PPP Study of Ben Thanh Station Area Development, JICA

Figure 3.32 Scope of Ben Thanh Station Development



Source: JICA Study Team, Bottom right photo is from www.thanhvien.vn

Figure 3.33 Photos of Ben Thanh Station

Ben Thanh Station is expected to be the largest transportation hub in Ho Chi Minh City with plans to connect to Line 2, 3A, and 4 and a bus terminal on the ground. In the current Line 1 construction project, only the space required for Line 1 operation with necessary station facilities are being developed. But in the future, when expanding underground station for other line development, there will be demand for multiple lines and it is desirable to develop sufficient transfer / accumulation space and commercial space for developing attractive station services.

In addition, at underground stations constructed in the city center, it is expected that the underground space will be expanded, convenience will be improved by connecting underground to adjacent facilities, and demand will be stimulated by private facilities. Study team is planning to discuss with Ho Chi Minh City related authorities about the public-private sharing and financial burden for these ideas.

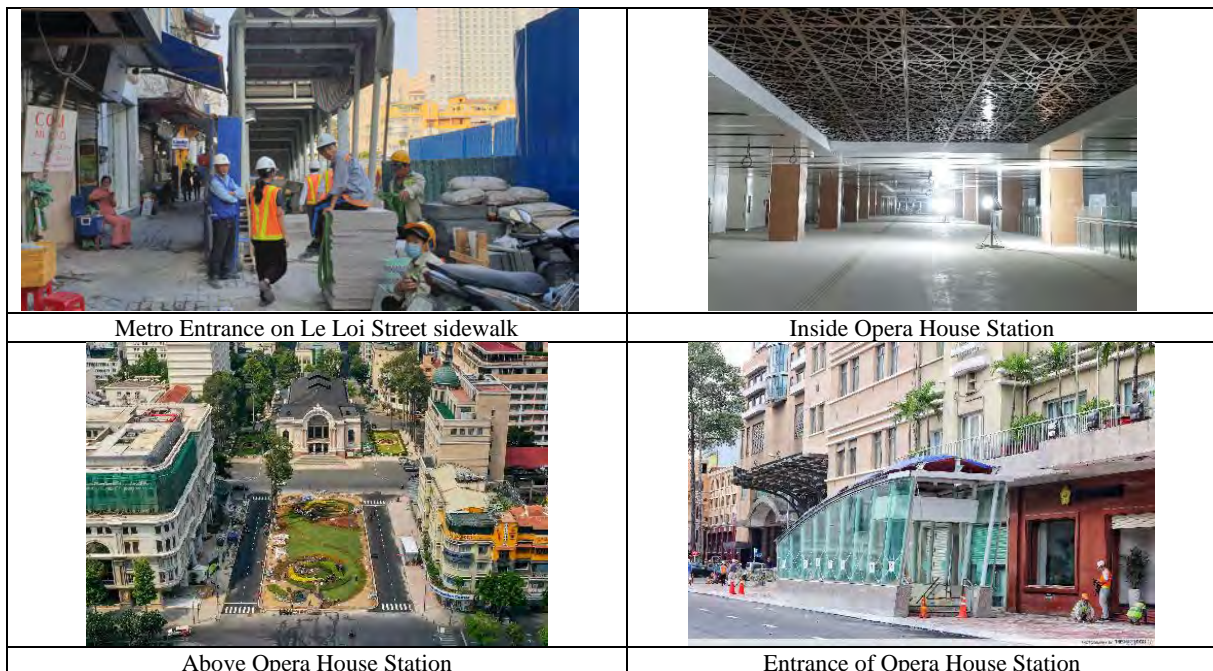


Source: Tokyo Metro

Figure 3.34 Photos of Underground Station before and after Renovation in Japan

3) Opera House Station

In the area of the Opera House station, the underground station is close to Nguyen Hue Street and Le Loi Street and there are various historical facilities in the vicinity, so it is positioned as an activity base centered on pedestrians.



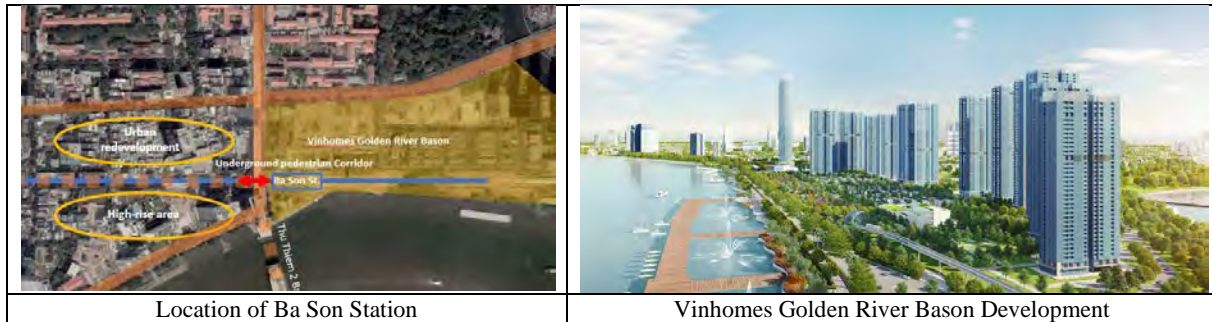
Source: JICA Study Team, Bottom right photo is from “The Smart Local Vietnam HP”

Figure 3.35 Photos of Opera House Station

4) Ba Son Station

The Ba Son station area will be positioned as a redevelopment area along the new urban axis with waterfront development along the Saigon River and extension of Le Loi Street. Bason Station will be located within the Vinhomes Golden River Bason Development Area. About 500m on the east side of Ba Son station the railway runs up to the ground, and from there are elevated sections.

As a concept plan for public transportation facilities, we propose the development of an underground walkway connecting the redevelopment facility along Le Loi Street and Ba Son Station, and taxi stands and parking lots at private commercial facilities.



Source: JICA Study Team (left), Vinhomes (right)

Figure 3.36 Ba Son Station and Surrounding Area

5) Van Thanh Park Station

(a) Overview of SAPI proposal

- In the Van Thanh Park station area, it is required to form an urban space in harmony with the adjacent Van Thanh Park and a transportation hub as the core of future redevelopment in the South of the station.
- To secure a safe transit space for urban railway users and park users, a station square (4,400m²) will be placed in the current park/pond area. There is no plan to connect feeder buses to this station, but a boarding area for sightseeing buses will be set up. Considering that the current site is a pond, the station square will be constructed with foundation piles similar to the station building facilities, and a box culvert will be buried to maintain the water connection between the pond and the western river.
- For convenience, a parking lot for motorcycles and bicycles will be placed under the station building and under the viaduct within 200 m from the station building. Public parking lots for private cars will not be provided because the station area is small and the surrounding area is walkable, while the road conditions are fragile, making it difficult to assume P&R use. It is assumed that private parking lots will be constructed in the future redevelopment of the surrounding area.
- Regarding the access road, the existing road along the railway will be widened to 16m. Railroad land shall be utilized to prevent new land acquisition for this widening. In addition, a 6m-wide road for access to the parking lot under the station building and for maintenance of the station building will be located at the south side of the station.
- The 25m-wide road in the zoning plan of Binh Thanh District, will be positioned as the main

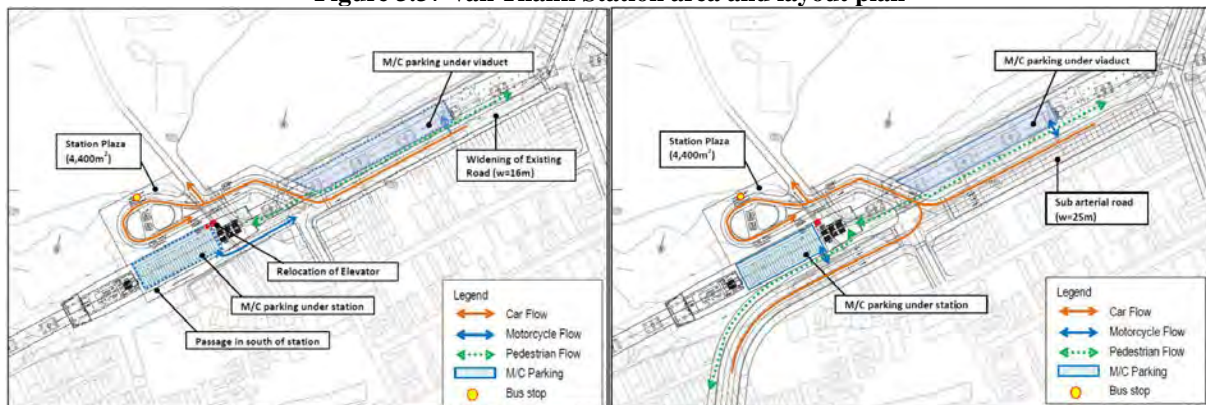
access road in the future.

- The elevator planned in the station building will be relocated to the North side in consideration of the pedestrian flow between the station ticket gate and Van Thanh Park.



Source: JICA SAPI Study

Figure 3.37 Van Thanh Station area and layout plan



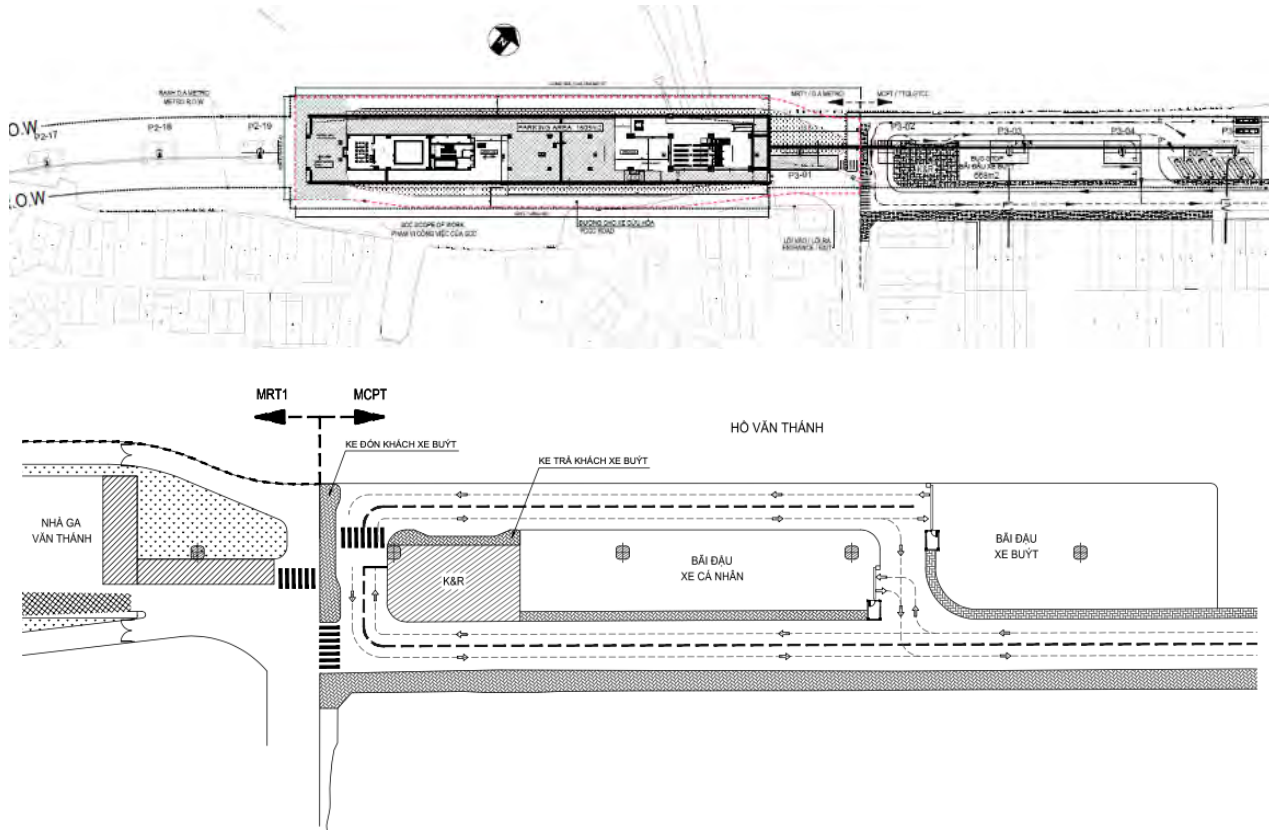
Note: Left: after starting operation; Right: in the future

Source: SAPI

Figure 3.38 Layout of transportation connection facilities at Van Thanh Park in SAPI

(b) Current Plan and Issues

- There was a station square planned in the North side of the station in SAPI's proposal, but in the plan of MCPT, bus parking area and K&R are planned under the station viaduct.
- It is necessary to confirm the feeder bus network, bus operation and improvement status of connecting roads, etc., but from the viewpoint of feasibility by land acquisition, utilizing the space under the viaduct is considered to be effective.



Above: Station design drawing, Below: Proposal of intermodal facility by MCPT
 Source: Top: MAUR, Bottom: MCPT

Figure 3.39 Plan of facilities on the ground floor of Van Thanh Park Station



Source: JICA Study Team

Figure 3.40 Photos of current situation around Van Thanh Park Station

6) Tan Cang Station

(a) Overview of SAPI proposal

Tan Cang Station is positioned as a transportation hub connecting Ho Chi Minh City CBD and its eastern part. In addition, after opening, it will be a terminal for accessing the CBD. The concept is planned based on the following points.

- Utilizing the existing green space on the north side of the station and under the railway viaduct (public land), a station square with a bus terminal and sufficient pedestrian space will be placed.
- To avoid traffic conflicts between buses and general vehicles, the bus terminal will be located on the west side, while taxis and general vehicle boarding / alighting spaces will be located on the east side. The taxi stand and car stand will be located near the station entrance considering the convenience and pedestrian safety.
- One bus entrance was located on the west side, and intersections will be improved, including installation of traffic signals.
- To secure access to the bus terminal area, the pedestrian deck will be extended to the west, and elevators and escalators will be installed at major facilities to improve comfort for pedestrian access.
- Parking lots for motorcycles and bicycles will be placed under the station building and under the viaduct. Due to the complexity of the surrounding area, i.e. the station locates in the highway junction, it is reasonable to suggest that general automobile traffic should be limited to the area. In addition, as the station is close to the city center, P&R users are limited. Therefore, public parking lots for private cars will not be considered for this area. It is assumed that private parking lots will be installed in the future redevelopment of the surrounding area.
- Retail shops will be set up on the first floor of the station building for the convenience of transit users.



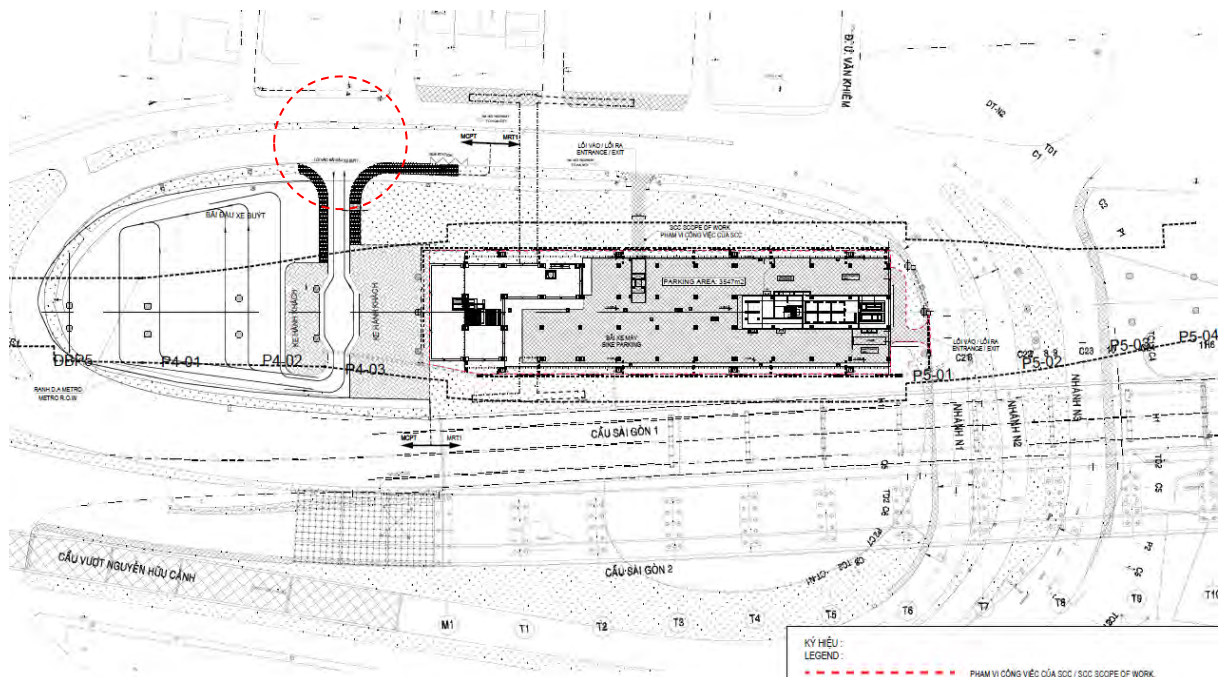
Source: SAPI

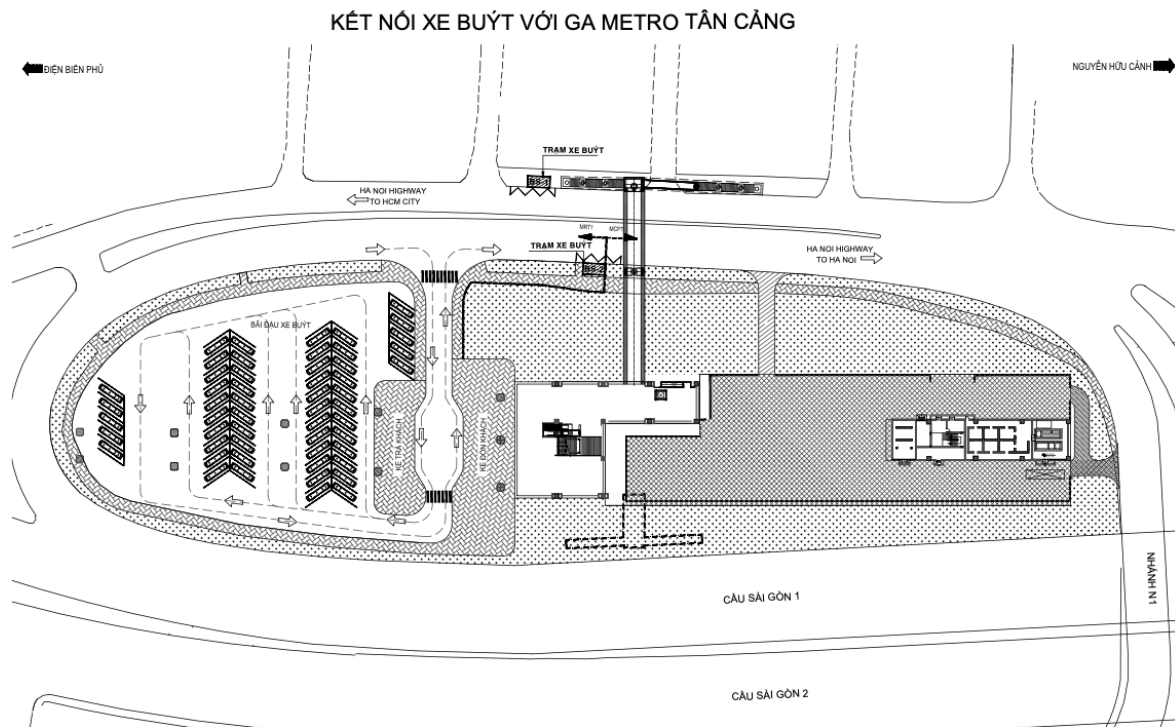
Figure 3.41 Layout plan of Tan Cang Station area and transportation connection facilities

(b) Current Plan and Issues

- In SAPI, there were two station squares for bus and taxi planned on the north side of the station, but currently there is only bus terminal and no taxi berths are planned.
- The location of the entrance and exit of the bus terminal is different from that of SAPI, and the entrance and exit are only in one direction, so it is anticipated that bus operation will be difficult. Also, the bus route will intersect with the pedestrian flow from the station.

- At the ICR meeting, Binh Thanh District PC representative pointed out that MCPT is planning a bus terminal near Thao Dien station, about 1 km away from Tan Cang Station. There are also local voices saying that there is no need for a bus terminal at this station. Since the bus parking area and the bus platform are separated, the bus platform in the station square is essential. But it is necessary to foster a basic understanding of the connection between railway and bus at the station square.
- In the south area of the station, a large-scale complex development (Vinhome Central Park) by a major Vietnamese real estate development group (Vingroup) was completed in 2017. It is a large-scale development with an area of 44ha and a planned population of 16,000 people.
- Considering accessibility of these residents, it is essential to improve access to the south side. The straight-line distance from Tan Cang Station to Vinhomes Central Park is just several hundred meters, which is within walking distance, but it is blocked by Saigon Bridge and Nguyen Huu Canh flyover, making it difficult to access the station at the present.
- To improve access to the south side, the SAPI proposed the triangular area on the south side as a future development site, but at the ICR meeting of this survey, concerns about development were also expressed by Binh Thanh district PC. (Because the land ownership of this area belongs to the Ministry of Defense and it is difficult to adjust at the city level)
- Consideration of the extension plan of Line 5: Tan Cang Station is a connecting station of Lines 1 and 5 in the Urban Railway Development Master Plan of Ho Chi Minh City, but the progress of this plan and the way of access should be considered.





Note: Above: Station design drawing, Below: Proposal of intermodal facility by MCPT

Source: Top: MAUR, Bottom: MCPT

Figure 3.42 Plan of facilities on the ground floor of Tan Cang Station

(c) Considerations in next steps

Consider and discuss concepts such as bus boarding / alighting, taxi boarding / alighting, fostering a basic understanding of the station square, improving access to the south side, and considering the Line 5 extension plan.



Source: JICA Study Team

Figure 3.43 Photos of current situation around Tan Cang Station

7) Thao Dien Station

(a) Overview of SAPI proposal

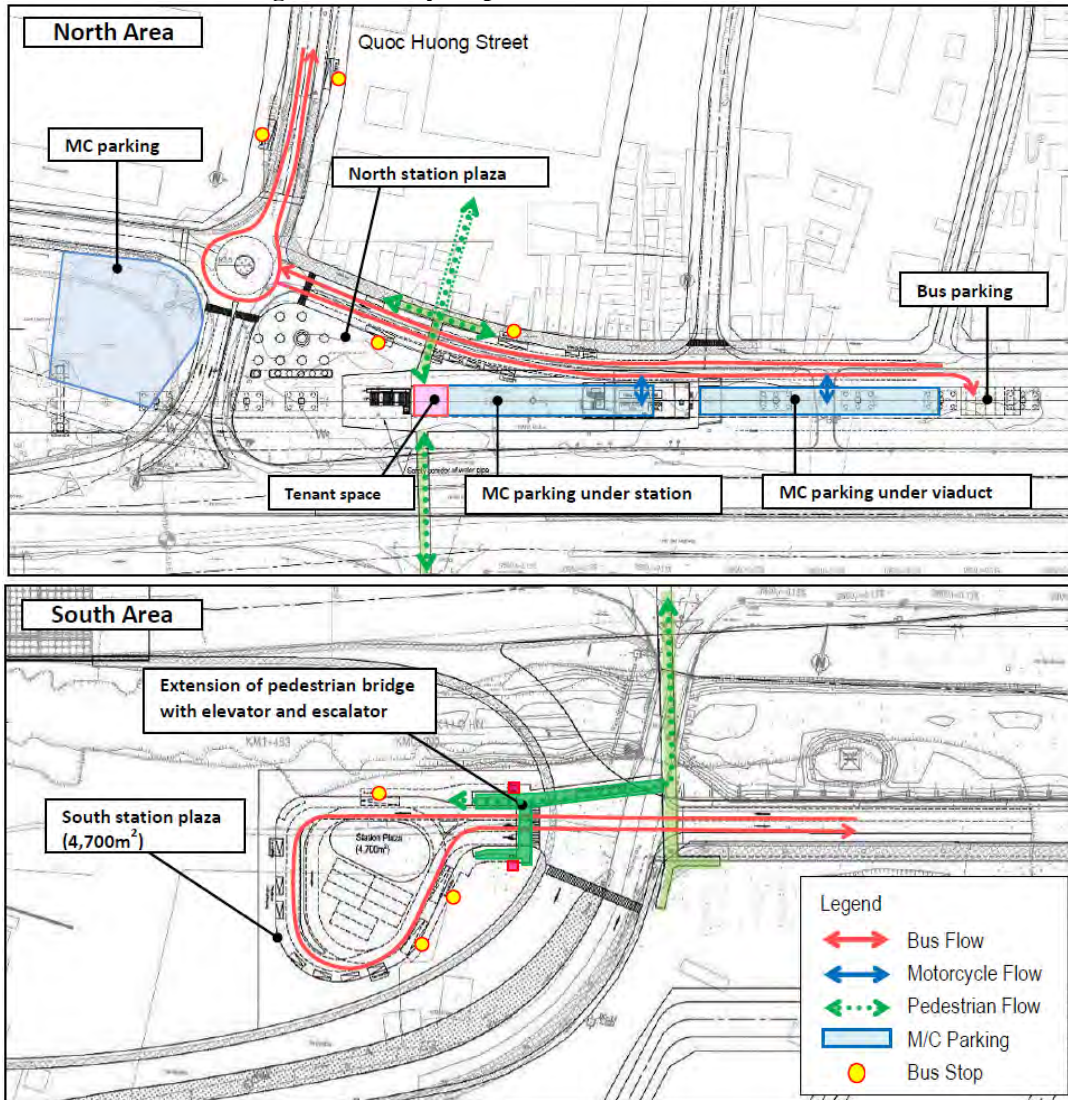
Thao Dien Station is the gateway to a high-class residential area, and it is required to establish a new lifestyle based on public transportation and to form an attractive urban space around the station by connecting with private commercial facilities. The concept is planned based on the following points.

- An open space on the public land (1,500m²) adjacent to the north side of the station, will be developed providing a relaxing space equipped with plants, benches, and monuments.
- A station square (4,700m²) will be located on the public land and a bus platform, taxi platform, and general vehicle platform will be set up on the south side of the highway. The feeder buses will start and end at the station square and will be accessed by the underpass on the west side. A bus stop will be placed on the North side's service road and near the station entrance. In addition, taxi stand and general car stand are located on the service road on the north side of the station.
- A pedestrian deck will connect the railway station to the private commercial facilities on the north side of the station for integration with the commercial space. (already planned)
- To secure pedestrian access to the station south square, the pedestrian deck will be extended, and elevators and escalators will be installed to improve comfort.
- Since the north-south access of motorcycles is easy thanks to the west underpass, the parking lot should be installed as close to the station as possible (on the first floor of the station building, under the viaduct, etc.).
- Private cars will not be provided with public parking lots because it is difficult to assume P&R use at the moment as the station is close to the center. In the future, it is assumed that a parking lot will be set up under the viaduct or on the west side of the station south square.
- A bicycle lane will be set up on the existing access road to make it easier for bicycles to access from the high-class residential area on the north side of the station.



Source: SAPI

Figure 3.44 Layout plan of Thao Dien Station area

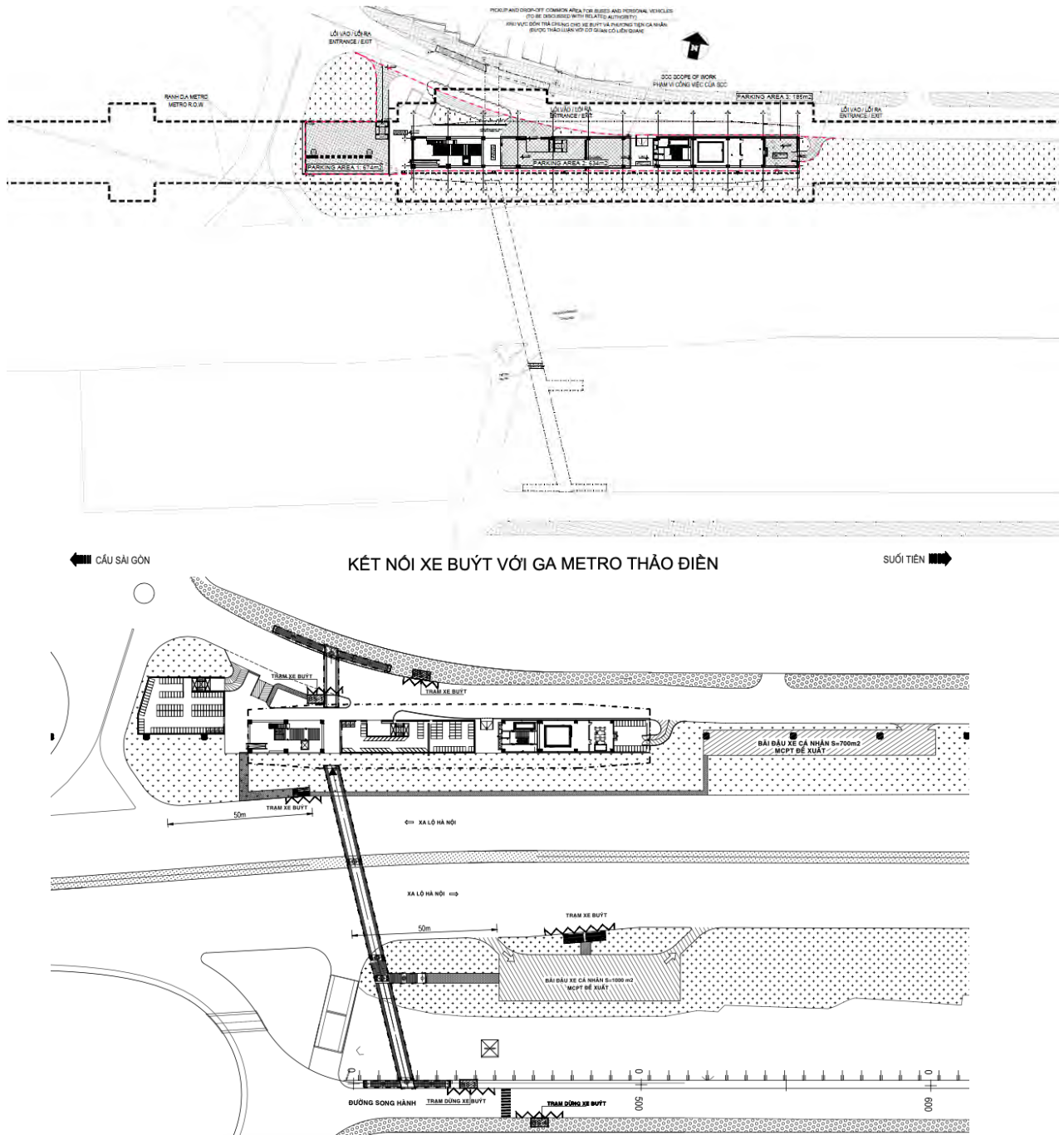


Note: Top: North side, Bottom: South side
 Source: SAPI

Figure 3.45 Layout of intermodal facilities at Thao Dien Station

(b) Current Plan and Issues

- Although the station square previously proposed by SAPI is planned on the southwest of the station after crossing the pedestrian bridge twice, the pedestrian bridges are only partially maintained in the current drawings.
- MCPT is planning one bus stop along the national highway, and two along the service road on the north and south sides of the station. The location and volume of these stops should be confirmed along with the feeder bus plan.
- In the area around Thao Dien Station, the development of high-rise residential areas on the south side has been progressing since the SAPI survey, and it is necessary to reconsider accessibility from the south in the future. In particular, it is necessary to review the feeder bus plan from residential areas and reconsider public transportation facilities based on it.
- In the future, if the demand for feeder buses around the station increases, it is conceivable to develop Saigon Bridge Park on the west side of the station as a station square.



Note: Above: Station design drawing, Below: Proposal of intermodal facility by MCPT

Source: Top: MAUR, Bottom: MCPT

Figure 3.46 Plan of facilities on the ground floor of Thao Dien Station



Source: JICA Study Team

Figure 3.47 Photos of Thao Dien Station area

8) An Phu Station

(a) Overview of SAPI proposal

Similar to Thao Dien Station, An Phu Station is the gateway to a high-class residential area, and it is necessary to establish a new lifestyle based on public transportation and to form an attractive urban space around the station by connecting with private commercial facilities. The concept is planned based on the following points.

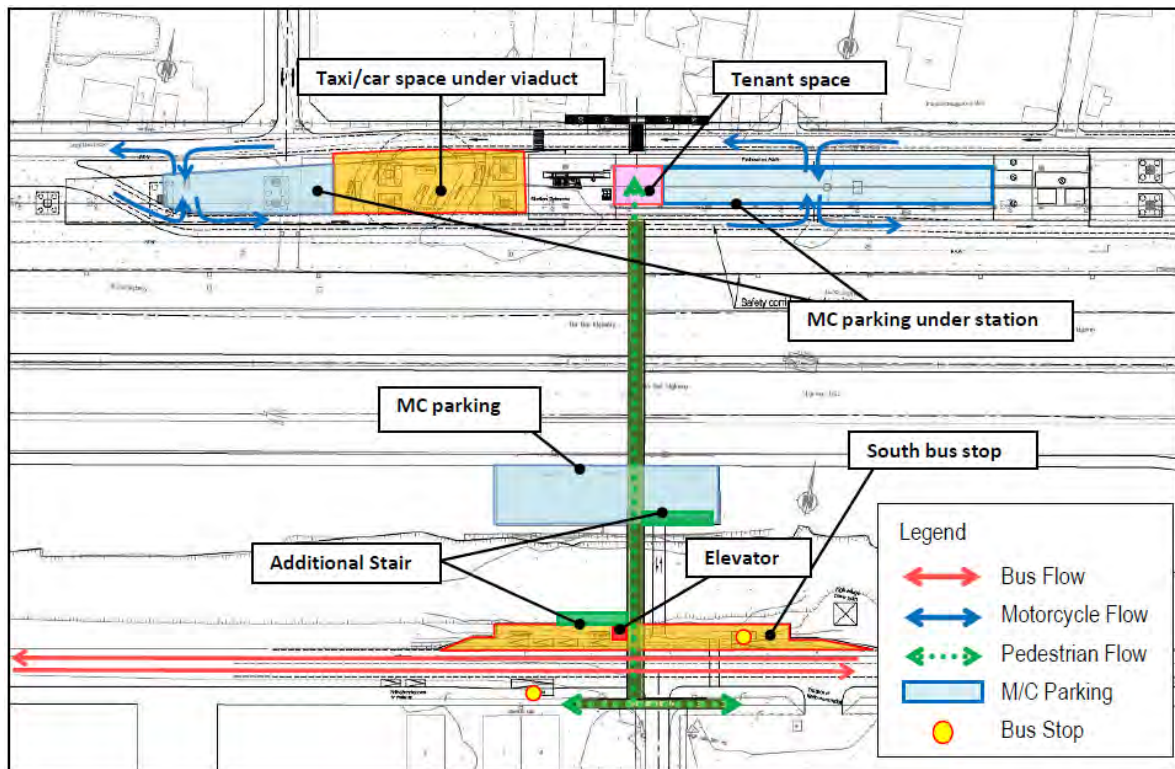
- An off-road bus stop will be set up on the service road on the south side of Hanoi Highway according to the feeder bus operation plan. Taxi stand, general car stand, and a motorcycle taxi stand will be located at this off-road bus stop. In addition, taxi stand and general car stand will also be placed under the viaduct for transit users at the station.
- Parking lots for motorcycles and bicycles will be placed under the station building, under the viaduct, and in the green zone of the highway within 200 m from the station building.
- Pedestrian decks will be installed with additional stairs to access the off-road bus stop and parking lot on the green zone. In consideration of barrier-free access, an elevator will be installed at the off-road bus stop.
- Retail shops will be set up on the first floor of the station building for the convenience of transit users.

- A U-turn bridge that crosses the highway will be installed as for smooth access to the feeder bus station and resolving the division between the north and south urban areas. In addition, a bicycle lane will be set up on the existing access road to make it easier for bicycles to access from the high-class residential area on the north side of the station.



Note: above: opening, below: future
 Source: SAPI

Figure 3.48 Layout Plan of An Phu Station



Source: SAPI

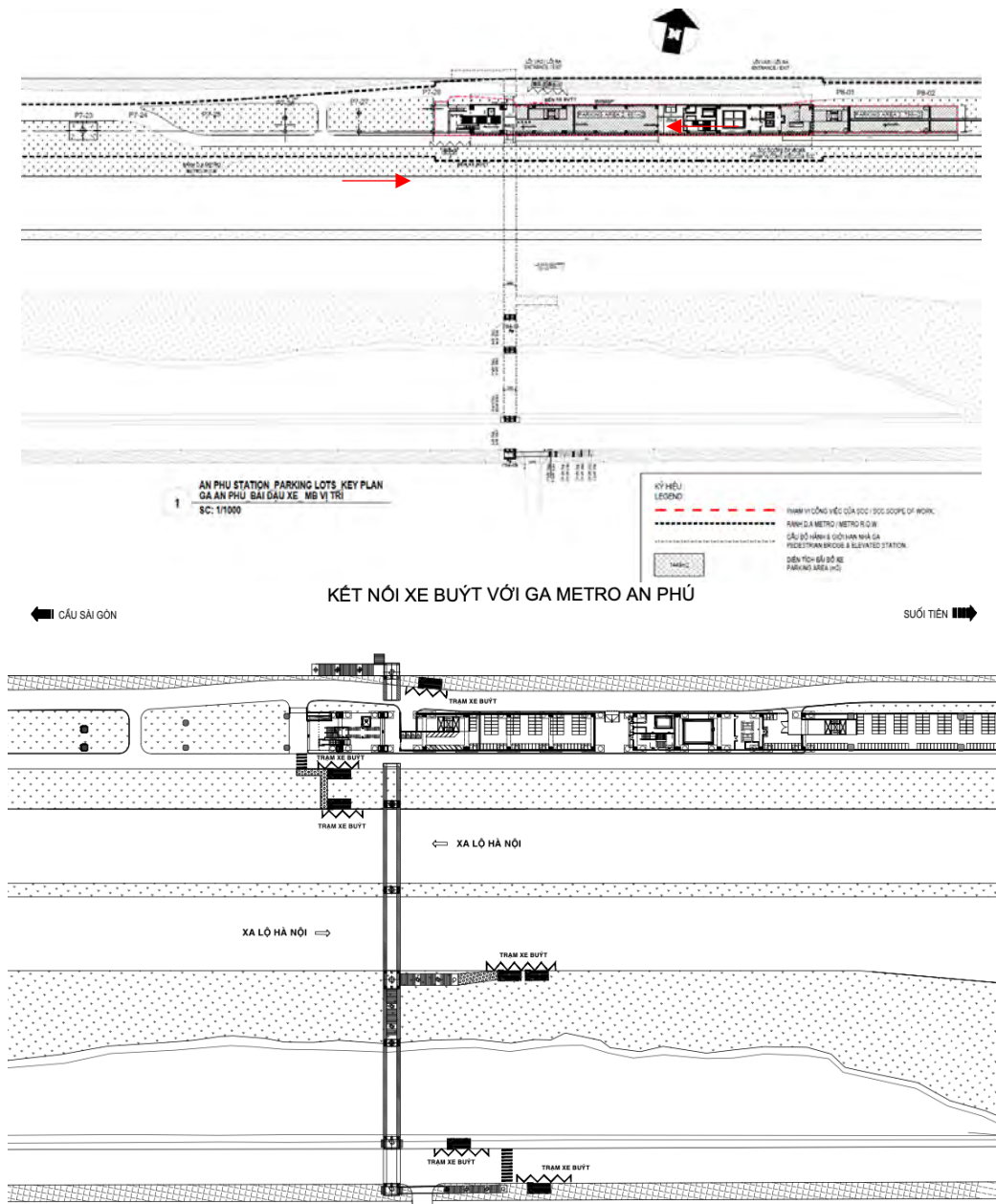
Figure 3.49 Concept Plan of An Phu Station Area

(b) Current Plan and Issues

- MCPT is planning a bus stop along Hanoi highway, and two along the service road on the north and south sides of the station. The location and volume of these stops should be confirmed along with the feeder bus plan.
- In the current drawing, two bus stops are planned on the north side and one on the south side directly under the station. (At the time of the SAPI survey, it was planned on the south side

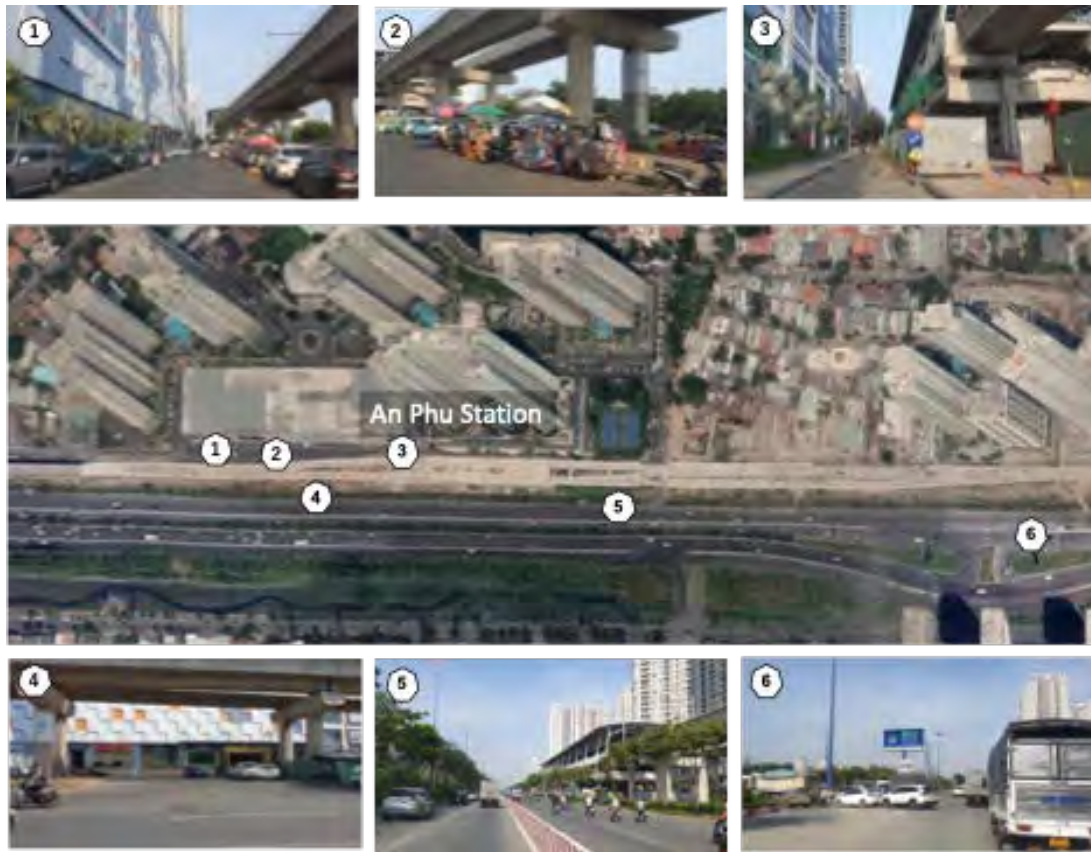
across Hanoi Highway)

- In CP2, a pedestrian bridge of about 200m-long crossing Hanoi Highway will be constructed to improve access to the south side. The parking lot proposed by SAPI needs to be developed separately. In addition, to eliminate the division of the north-south urban area, it is necessary to consider a U-turn bridge crossing the highway in the future plan, together with the review of the current feeder bus plan.
- Compared to the time of the SAPI survey, many high-rise developments such as Vincom shopping center have been developed within 500m of An Phu station.



Note: Above: Station design drawing, Below: Proposal of intermodal facility by MCPT
 Source: Top: MAUR, Bottom: MCPT

Figure 3.50 Plan of facilities on the ground floor of An Phu Station



Source: JICA Study Team

Figure 3.51 Photos of An Phu Station Area

9) Rach Chiec Station

(a) Overview of SAPI proposal

Rach Chiec Station is the gateway to a large-scale urban development area (sport city) planned on the east side. It is required to form an attractive urban space around the station by connecting with private commercial facilities, and establish a new lifestyle centered on public transportation. The concept is planned based on the following points.

- According to the feeder bus operation plan, there will be 2 bus stops: one on the east side of the station building and another on the service road on the east side of Hanoi highway. These bus stops will accommodate feeder bus and BRT connections. When installing the bus stop on the east side of the station building, a bridge will also be installed as a part of the access road to protect the existing water pipes.
- Taxi stand, general car stand, and motorcycle taxi stand will be placed on the service road on the west side of the station building for transit use.
- In the future, a station square (4,800m²) will be placed in the sport city development area, and boarding / alighting facilities for buses and open spaces will be set up.
- Parking lots for motorcycles and bicycles will be placed under the station building, under the elevated road, and in the green zone of the highway within 200 m from the station building. In the future, parking lots for private car will be set up in the sport city to promote the use of P&R.
- Pedestrian decks will be widened (to 4.4m wide) to enhance pedestrian comfort. In addition,

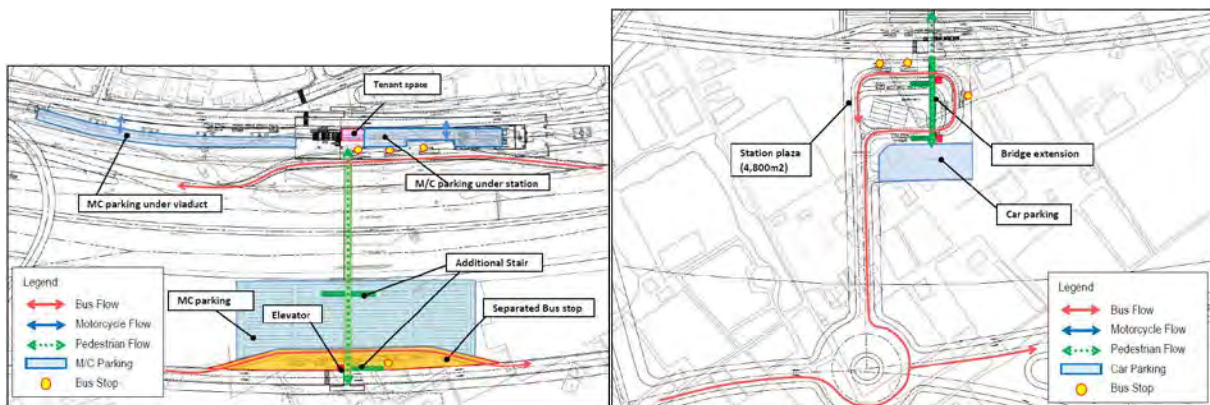
stairs and elevators will be installed for access to off-road bus stops and parking lots on green zone. In the future, the pedestrian deck will be extended to secure access to the station square in the sport city.

- Retail shops will be set up on the first floor of the station building for the convenience of transit users.
- Set up a bicycle lane on the existing access road to the high-class residential area on the west of the station.



Source: SAPI

Figure 3.52 Layout Plan of Rach Chiec Station



Note: Top: at opening, Bottom: in the future

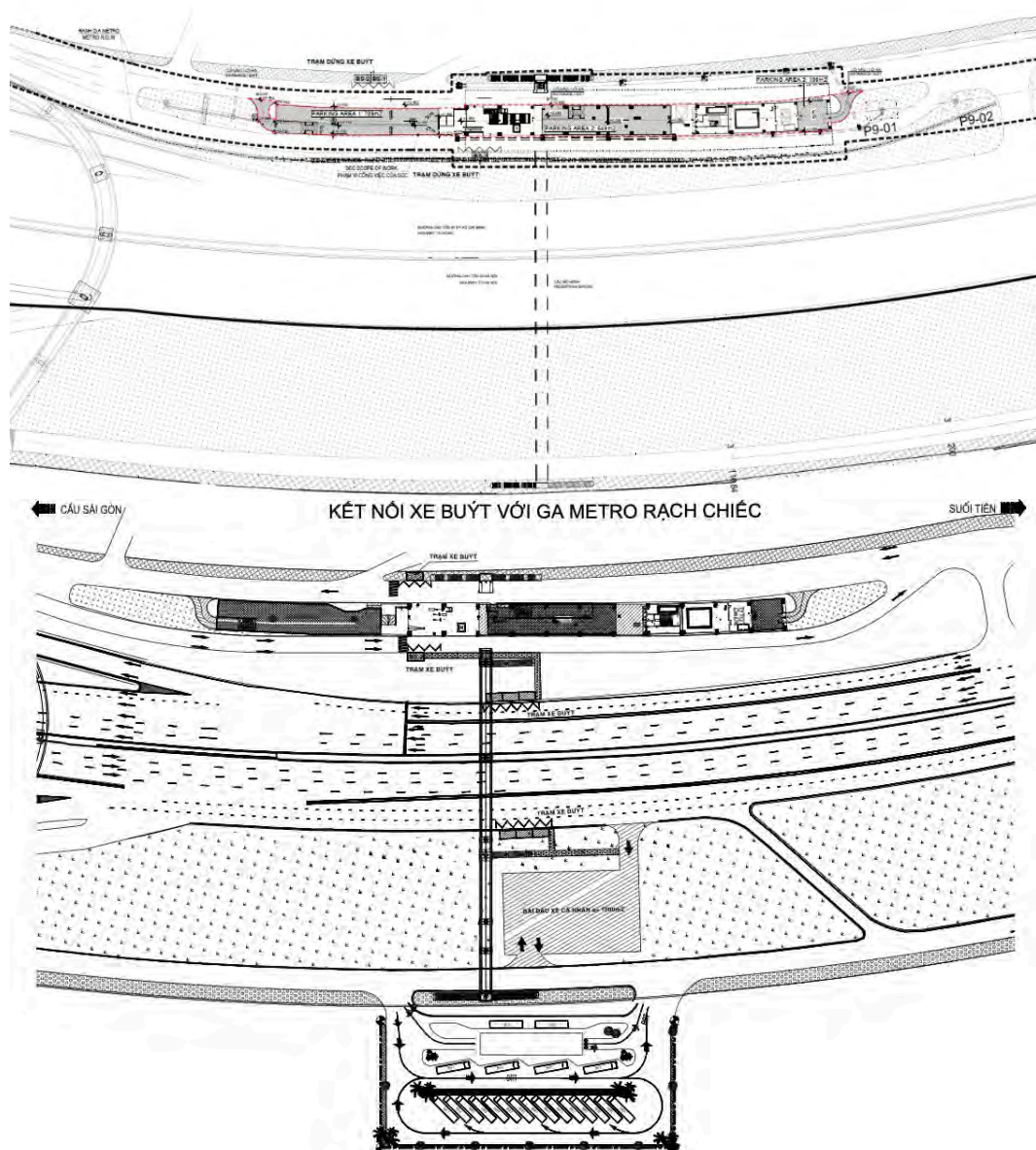
Source: SAPI

Figure 3.53 Concept plan of Rach Chiec Station

(b) Current Plan and Issues

- Bus stop: In the current drawing two bus stops are planned on the north side and one on the south side directly under the station. In addition, it is connected only from the service road, and thus, it is difficult to connect to the feeder bus (at the time of the SAPI survey, it was planned to be on the south side directly under the station and on the south side across Hanoi highway).

- Consistency with BRT Plan: Ho Chi Minh City is planning BRT Line 1 with the support of World Bank. The route will be from Mien Tay Bus Terminal-CBD-Rach Chiec Station. It is necessary to plan public transportation facilities taking the BRT plan into consideration.
- Parking lot on the south side: CP2 will be built up to the pedestrian bridge that crosses Hanoi Highway, but the parking lot and bus stop proposed in the SAPI survey are not included, so they may need to be built separately.
- Connection with Rach Chiec Sport Complex: At the end of 2020, Ho Chi Minh City DPA announced the development concept of the new eastern city (Thu Duc City) and Rach Chiec Sport Complex is one of the six hubs of the new city. In the future, it is suggested that an appropriate scale of a bus terminal and a station square should be studied according to the development plan of the Sport Complex, and if necessary, a complex of the station square and private facilities can also be considered.



Note: Above: Station design drawing, Below: Proposal of intermodal facility by MCPT

Source: Top: MAUR, Bottom: MCPT

Figure 3.54 Plan of facilities on the ground floor of Rach Chiec Station



Source: JICA Study Team

Figure 3.55 Photos of Rach Chiec Station area

10) Phuoc Long Station

(a) Overview of SAPI proposal

Phuoc Long Station is the gateway to the large-scale urban development area planned on the west side and the existing urban area extending to the east side. It should be promoted with the formation of a new urban space around the station integrating with public transportation, and P&R use by residents of the existing urban area. The concept is planned based on the following points.

- To promote integrated urban development with public transportation, a station square (4,300m²) will be placed in the large-scale development area on the west of the station, and boarding / alighting facilities for buses and open spaces will be set up. To improve user convenience, the station square, and commercial facilities around it will be connected by a pedestrian deck.
- As a temporary facility until the station square is completed, a bus stop, taxi stand, general car stand, and motorcycle taxi stand will be placed on the service road on the west side of the station. In addition, an under-viaduct parking lot will be set up for bus turning and temporary parking.
- For users from the east area, a bus stop, taxi stand, general car stand, and motorcycle taxi stand will be located on the east side of the highway.
- Parking lots for motorcycles and bicycles will be placed under the station building, under the viaduct, and in the green zone of the highway within 200 m from the station building.
- Pedestrian decks will be equipped with stairs and elevators to access the eastern bus stop and parking lot on the green zone. In addition, the pedestrian deck will be extended to the west for access to the west station square and the urban area.

- Retail shops will be set up on the first floor of the station building for the convenience of transit users.

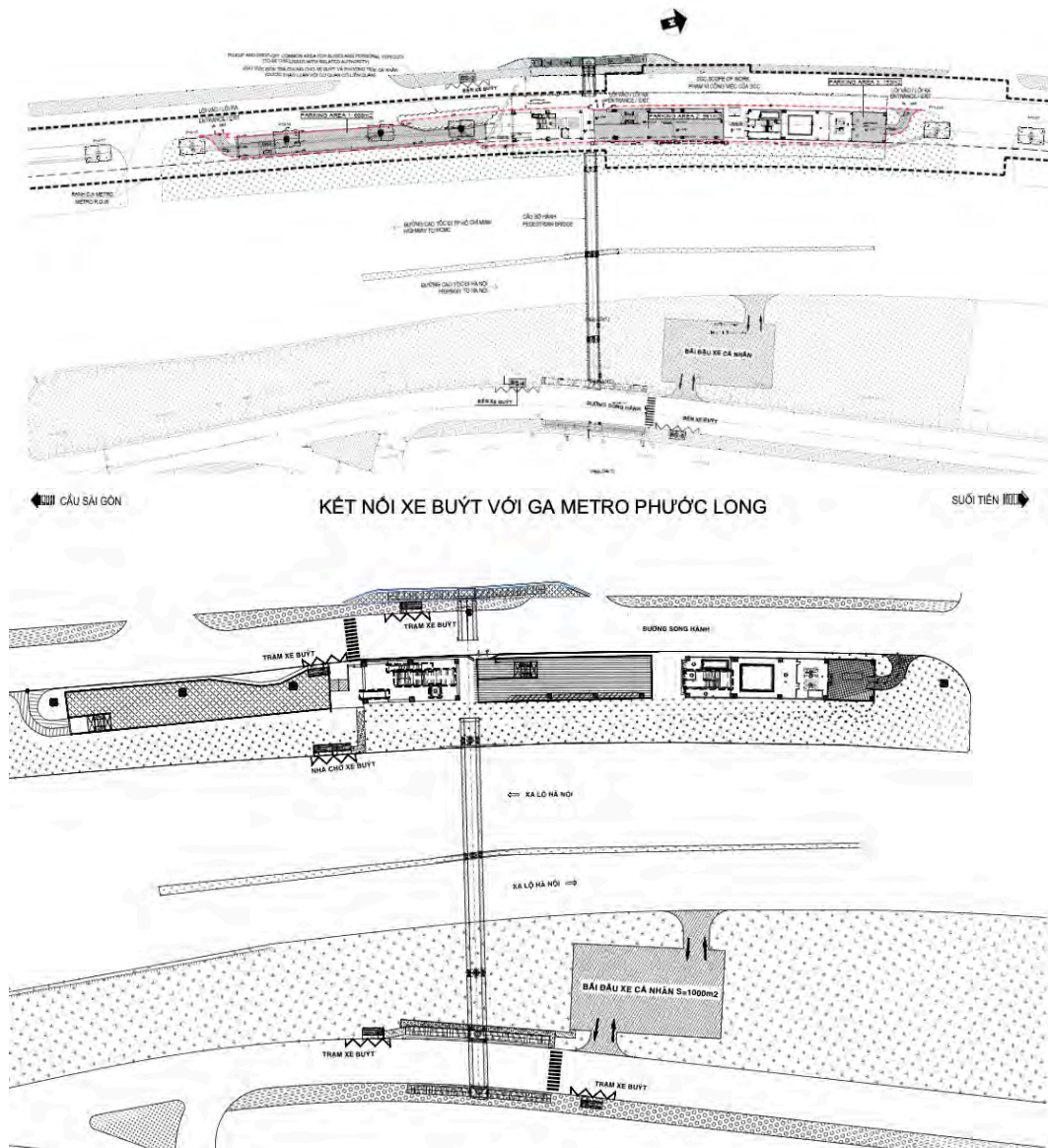


Source: SAPI

Figure 3.56 Layout plan and concept plan of Phuoc Long Station area

(b) Current Plan and Issues

- Bus stop: In the current drawing there are two bus stops on the north side and one on the south side directly under the station. However, they are connected only from the service roads, and thus, it will be difficult to connect to the feeder bus (at the time of the SAPI survey, it was planned to be on the south side directly under the station and on the south side across the highway).
- In the current plan, there are totally three bus stops, i.e., one on the north side directly under the station and two on the south side across the highway. (In the SAPI survey, the station square was planned on the north side of the station, but the land has not been secured yet.)
- Development of pedestrian bridge and motorcycle parking lot: a pedestrian bridge crossing the highway and motorcycle parking lot have been developed, and a bus stop is planned along the service road.
- The west side of Phuoc Long Station is planned as “Truong Tho Future Hub” in the plan of Thu Duc New City.
- As mentioned above, although the status and systems of land ownership, bidding, land use rights, etc. are complicated, some of the land in front of the station has already been cleared, and development through public-private collaboration can be promoted in the future. In that case, as a prime location, the north side of the station can be developed as a complex area integrated with the station square.
- Since there are many existing houses in the eastern area of the station, it is possible to construct flyovers and underpasses to improve accessibility.



Note: Above: Station design drawing, Below: Proposal of intermodal facility by MCPT

Source: Top: MAUR, Bottom: MCPT

Figure 3.57 Plan of facilities on the ground floor of Phuoc Long Station

11) Binh Thai Station

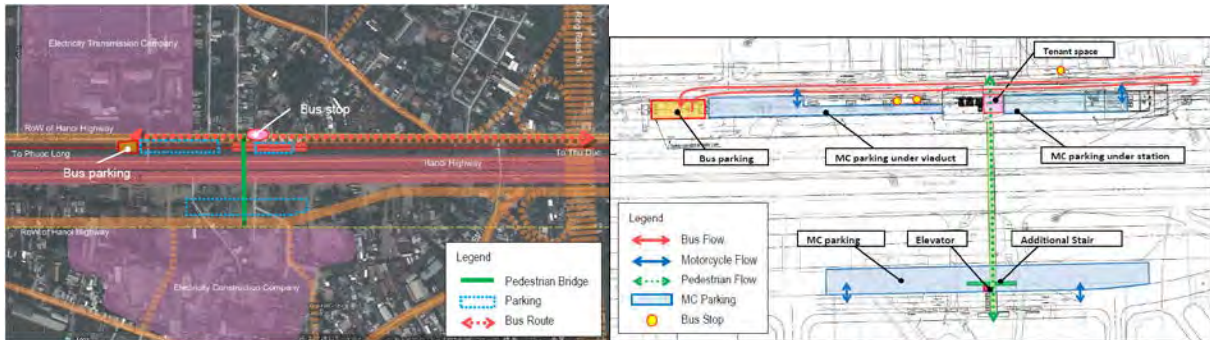
(a) Overview of SAPI proposal

Binh Thai Station is the gateway to the existing urban area spreading around, and it is expected that residents will use it for commuting after the opening of Urban Railway Line 1. Therefore, it is required to promote the use of P&R by residents of the existing urban area. The concept is planned based on the following points.

- Due to the limitation of public land, a bus stop, taxi stand, general car stand, and motorcycle taxi stand will be located on the service road on the west side of the station. In addition, an under-viaduct parking lot will be set up for bus turning and temporary parking. A taxi stand, general car stand, and motorcycle taxi stand will be located on the east side of the highway for users from the eastern area.
- Parking lots for motorcycles and bicycles will be placed under the station building, under the

viaduct, and in the green zone of the highway within 200 m from the station building.

- Pedestrian decks will be equipped with stairs and elevators to access the east side boarding area and the parking lot in the green zone.
- Retail shops will be set up on the first floor of the station building for the convenience of transit users.

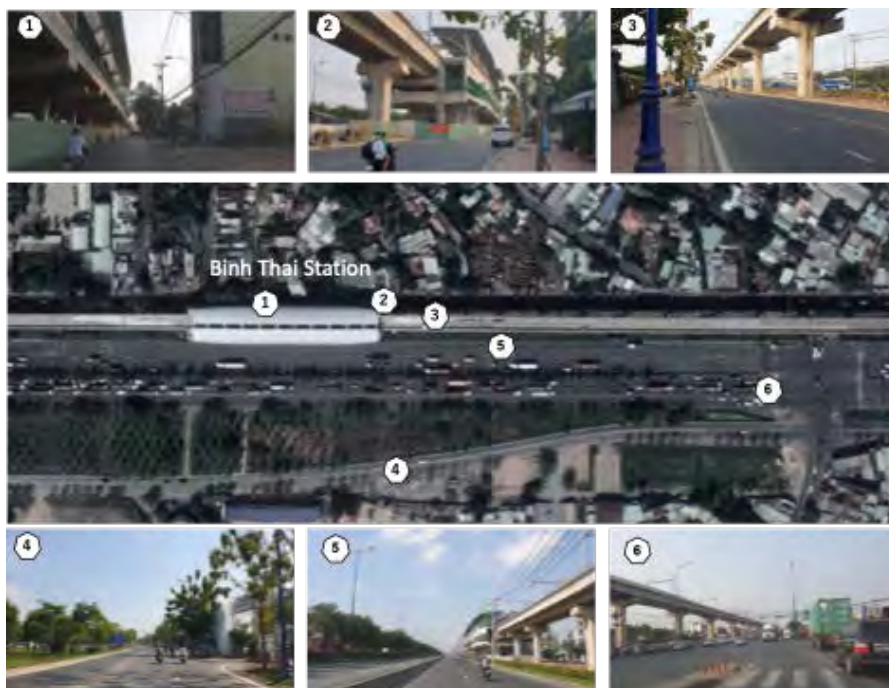


Source: SAPI

Figure 3.58 Layout plan and concept plan of Binh Thai Station area

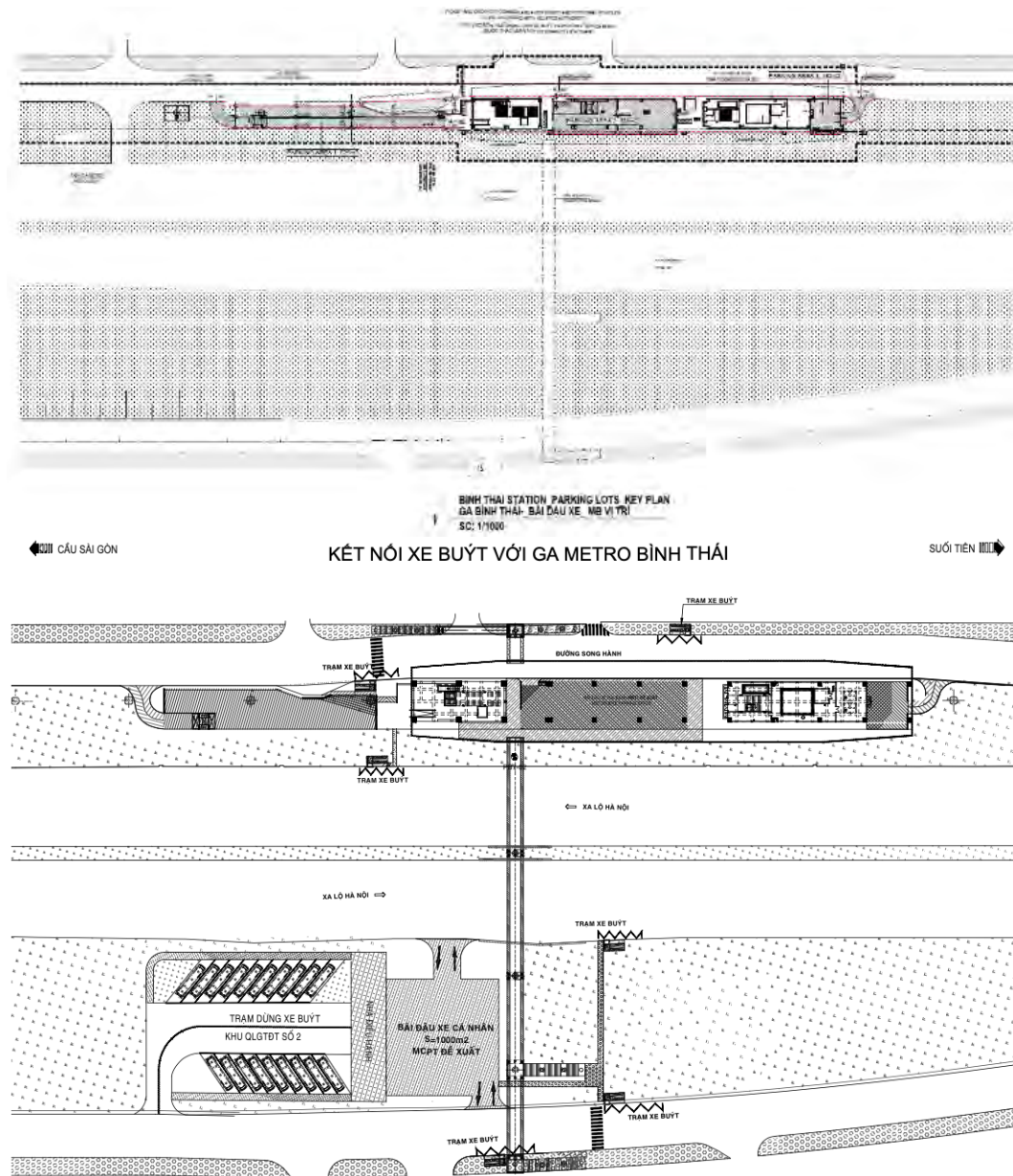
(b) Current Plan and Issues

- Bus stop: The current drawing does not have a bus stop, so the bus cannot be connected. In the SAPI survey, a bus stop and parking lot/deployment office were proposed directly under the station.
- In CP2, a pedestrian bridge of about 200m-long crossing Hanoi highway will be constructed, but a motorcycle parking lot will need to be constructed in the future.
- The area around Binh Thai Station is more densely populated with existing residential areas than other stations, and there has been little change in the development status since the time of the SAPI survey.



Source: JICA Study Team

Figure 3.59 Photos of Binh Thai Station area



Note: Above: Station design drawing, Below: Proposal of intermodal facility by MCPT
 Source: Top: MAUR, Bottom: MCPT

Figure 3.60 Plan of facilities on the ground floor of Binh Thai Station

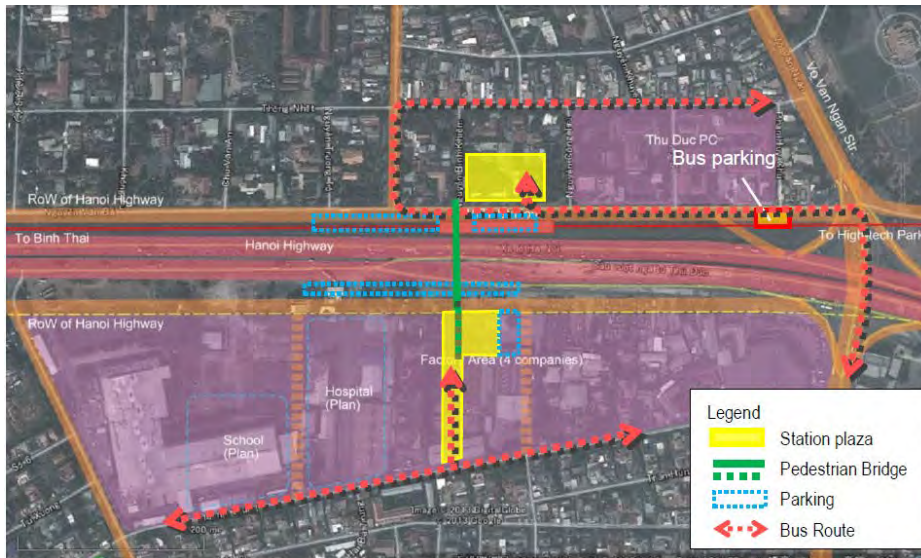
12) Thu Duc Station

(a) Overview of SAPI proposal

Thu Duc Station is close to Thu Duc intersection, which is a transportation hub of the ward, and hence, is positioned as a hub station for the existing urban area. After the opening of Urban Railway Line 1, it is expected that residents will use it for commuting. The concept is planned based on the following points.

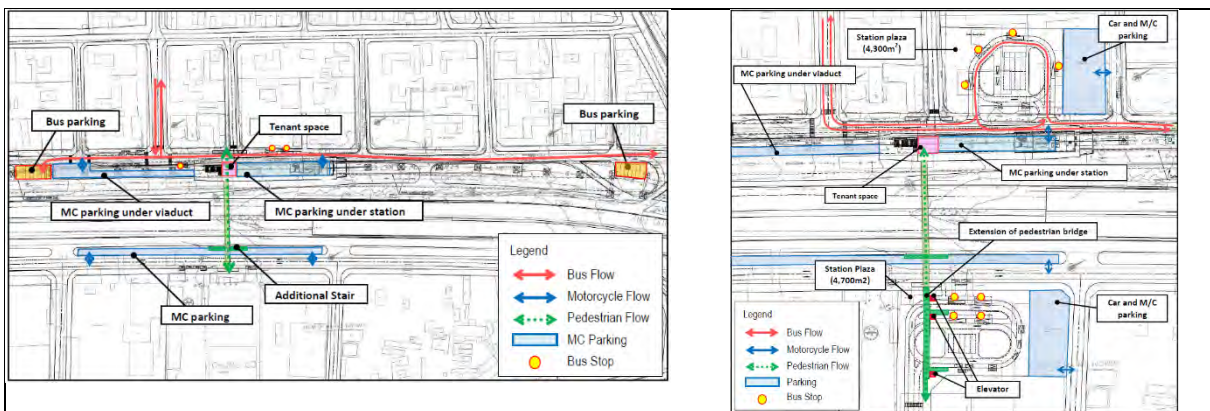
- According to the bus route plan, the bus stop is located only on the west service road (the feeder bus to the eastern area of the station is also available at the bus stop on the west side of the station).

- A curbside bus stop is located on the service road on the west side of the station.
- A temporary bus pool is placed under the railway viaduct serving as a bus turning space.
- Pedestrian deck will be equipped with stairs for access to the parking lot on the east side.
- To eliminate the inconvenience of east-west access for motorcycles, parking lots are set up in both side of the station (west side: station building 1st floor, east side: independent parking lot).
- For the convenience of commuters, necessary daily services, e.g., administrative service counters, daycare centers, etc. will be set up in the station building.
- In the future, the station square will be integrated by redeveloping the station west block and the factory area on the east side of the station.



Source: SAPI

Figure 3.61 Layout plan of Thu Duc Station



Note: above: at opening, below: future

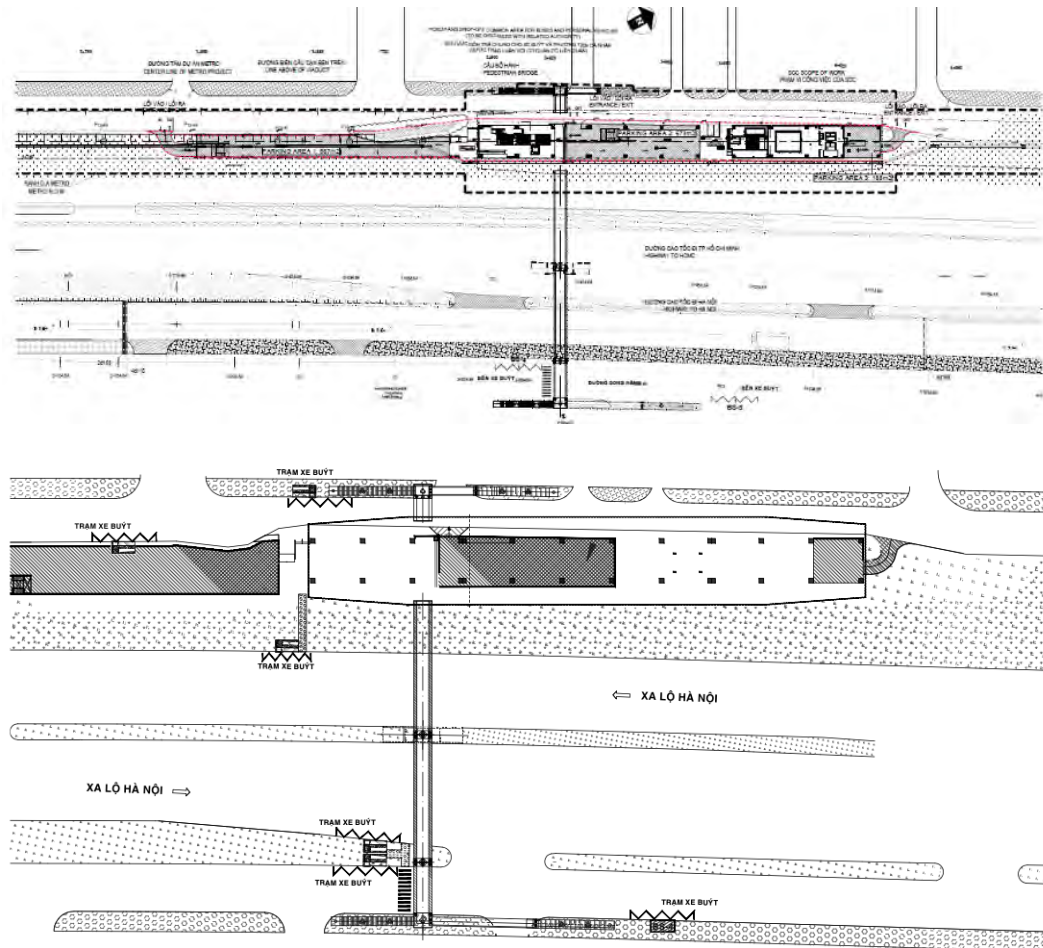
Source: SAPI

Figure 3.62 Concept plan of Thu Duc Station

(b) Current Plan and Issues

- Bus stop: In the current plan, there are no bus stops and bus parking area, so buses cannot be connected. (At the time of the SAPI survey, a bus waiting area and a turning area were planned.)
- Currently, Thu Duc Station is surrounded by the former Thu Duc District's administrative

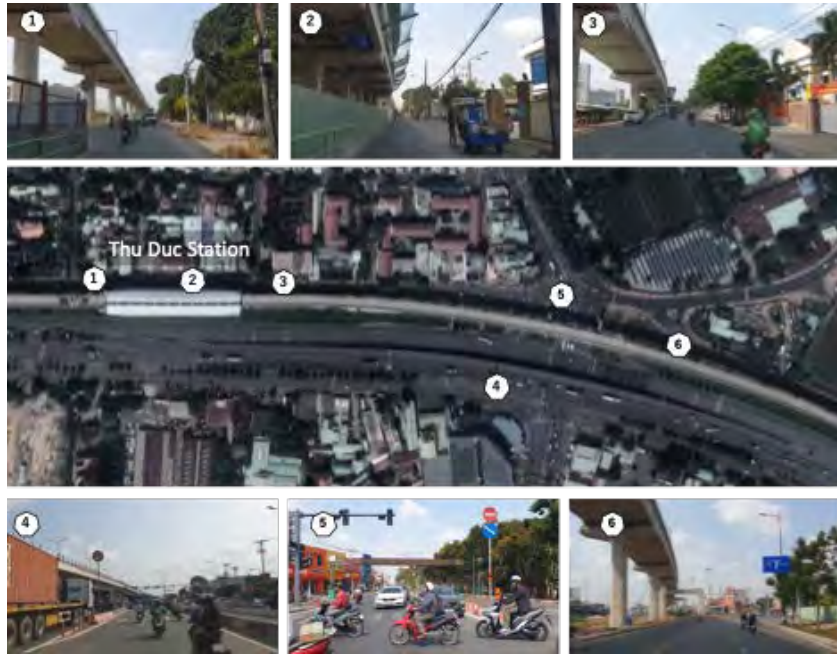
offices and universities on the west side, while low-rise residential areas, universities, and dormitories are mixed on the east side. Therefore, there is a high demand for feeder buses and future station square development, and it is necessary to implement SAPI proposals for improving accessibility.



Note: Above: Station design drawing, Below: Proposal of intermodal facility by MCPT

Source: Top: MAUR, Bottom: MCPT

Figure 3.63 Plan of facilities on the ground floor of Thu Duc Station



Source: JICA Study Team

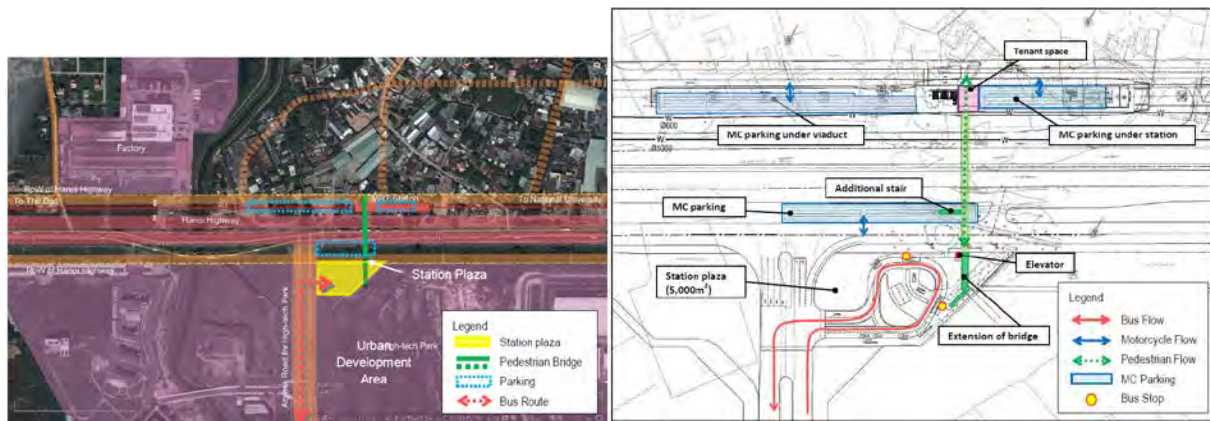
Figure 3.64 Photos of Thu Duc Station area

13) High-tech Park Station

(a) Overview of SAPI proposal

High-tech Park Station is the gateway to Saigon High-tech Park locating on its east side. It is required to promote the formation of a business base in High-tech Park connecting with public transportation, and to provide a transportation hub for High-tech Park commuters. The concept is planned based on the following points.

- To promote integrated urban development with public transportation, a station square (5,000m²) will be placed in the green zone at the entrance of High-tech Park, and bus boarding / alighting facilities, bus parking lot, and an open space will be set up. In addition, to secure access from the station, the pedestrian deck will be extended to connect to the station square and commercial facilities.
- For users from the western area, a taxi stand, general car stand, and motorcycle taxi stand will be located on the service road on the west side of the station.
- Parking lots for motorcycles and bicycles will be placed under the station building, under the viaduct, and in the green zone of the highway within 200 m from the station building. Public parking lots for private cars are not provided, assuming that they will be installed in private urban development and high-tech parks.
- Pedestrian decks will be equipped with additional stairs to access the parking lot on the green zone. In addition, the pedestrian deck will be extended to the east and an elevator will be installed to access the station square and commercial facilities.
- Retail shops will be set up on the first floor of the station building for the convenience of transit users.

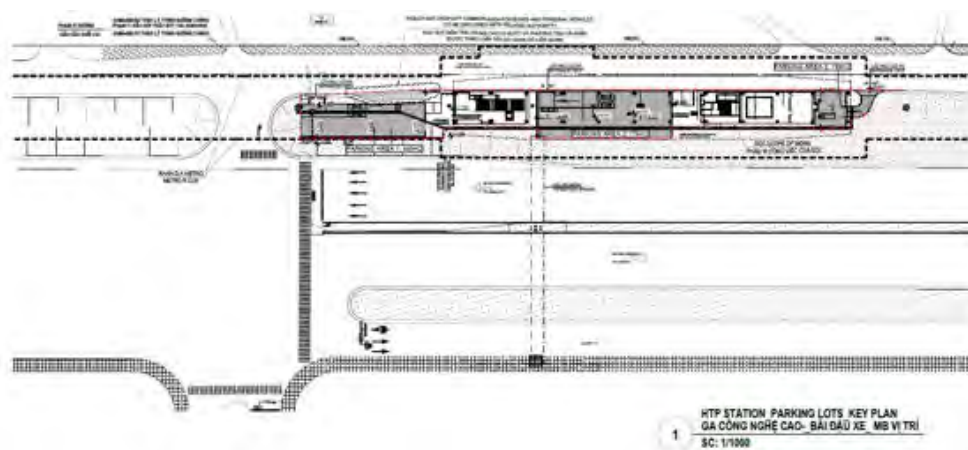


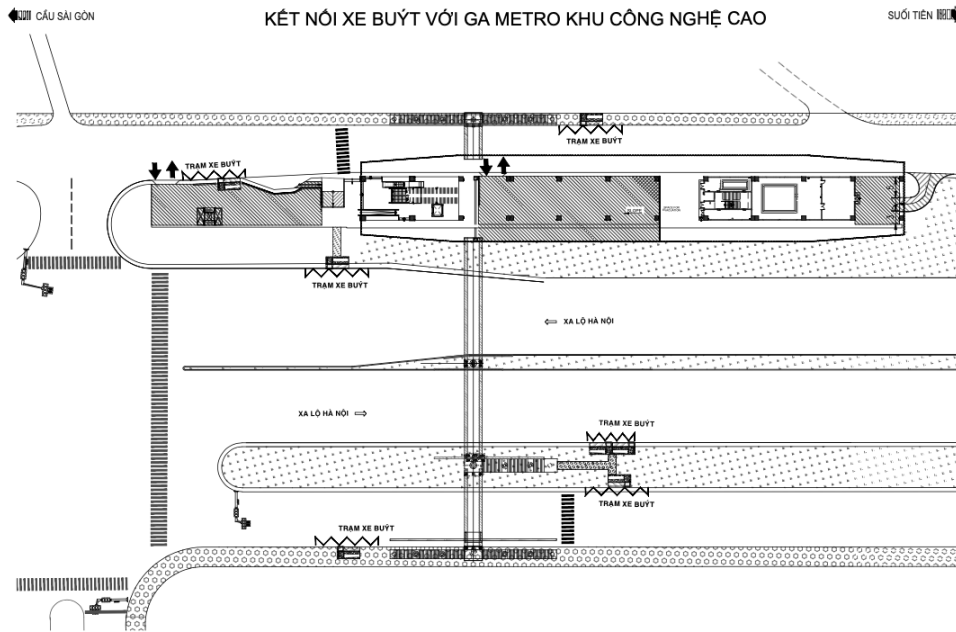
Source: SAPI

Figure 3.65 Layout plan and concept plan of High-tech Park Station

(b) Current Plan and Issues

- In the current plan of MCPT, bus stops are set up along the highway and the service road.
- Saigon High-Tech Park is one of the 6 hubs that make up the new Thu Duc city, and a feeder bus network is also planned. At the present, the accessibility of SHTP is not sufficient, and at the ICR meeting of this survey, the PC representative of Thu Duc City raised the issue of improving accessibility.
- In SAPI, the station square is proposed on the south side, and since **the land is owned by the SHTP Management Board, it can be maintained after changing the administration authority to DOT.** In the future, the appropriate scale of bus terminal and station square should be studied according to the SHTP development plan.

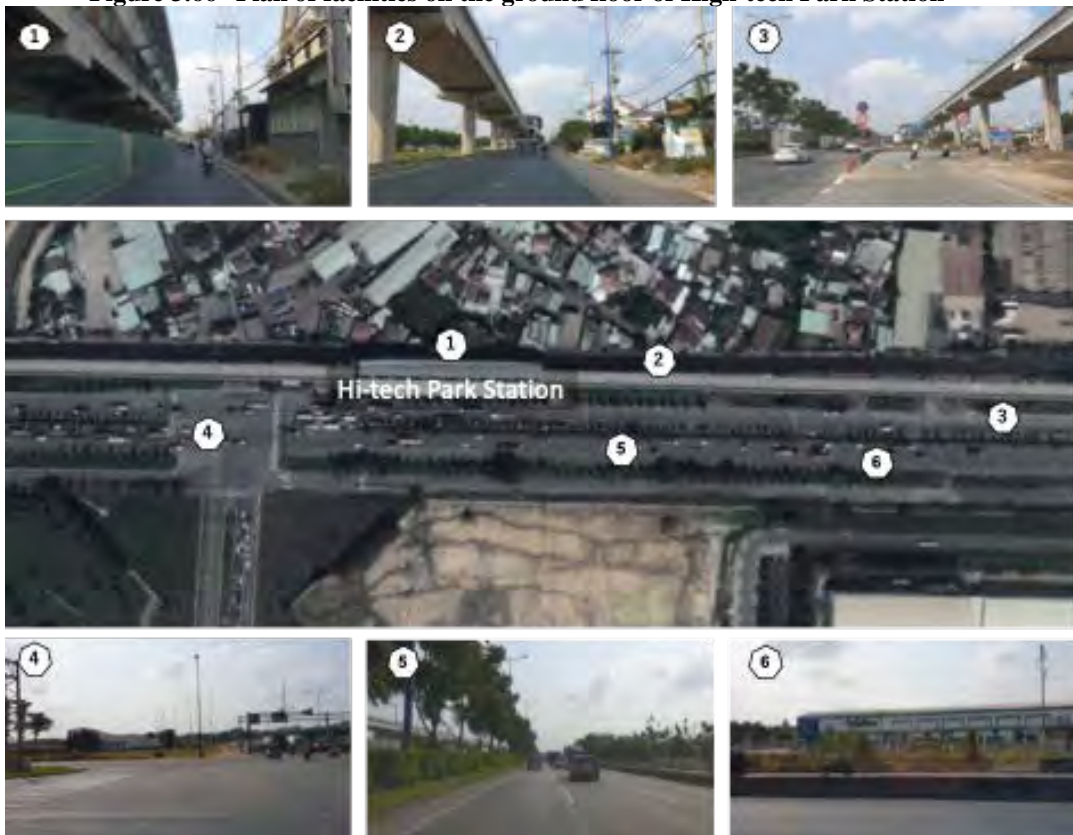




Note: Above: Station design drawing, Below: Proposal of intermodal facility by MCPT

Source: Top: MAUR, Bottom: MCPT

Figure 3.66 Plan of facilities on the ground floor of High-tech Park Station



Source: JICA Study Team

Figure 3.67 Photos of High-tech Park Station area

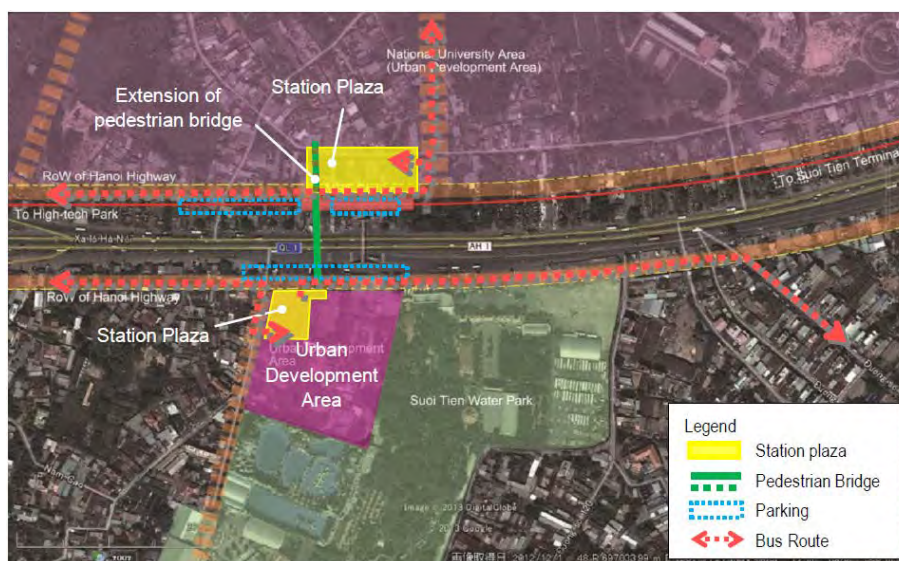
14) National University Station

(a) Overview of SAPI proposal

National University Station is the gateway to the national university area on the west side and Suoi Tien Water Park on the east side, and thus, it is required to form a transportation hub for

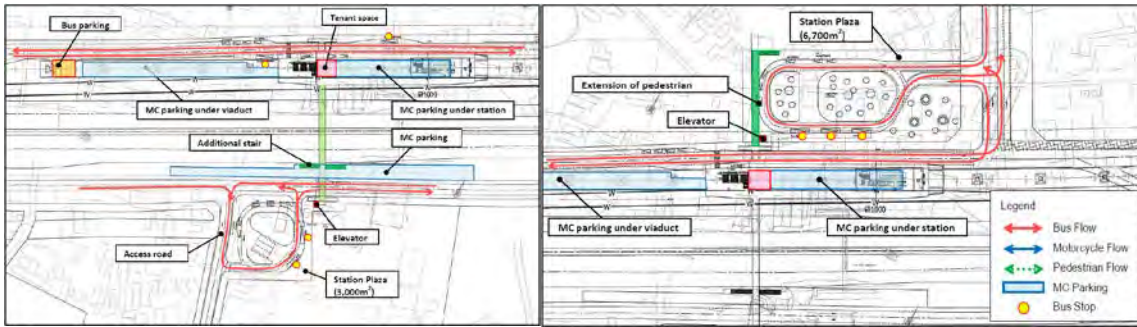
students and a tourism area linked with the western urban development area. The concept is planned based on the following points.

- To promote urban development integrated with public transportation, a station square (3,000m²) will be set up in the urban development area on the east side, and bus boarding / alighting facilities, a bus parking lot, and an open space will be set up. In addition, to secure access from the station, the pedestrian deck will be extended to connect to the station square and commercial facilities.
- In the future, on the east side of the station, a station square (6,700m²) will be placed in the national university development area, and other bus boarding / alighting facilities, bus parking lot, and open space will be set up. In addition, to secure access from the station, the pedestrian deck will be extended to connect to the station square and commercial facilities.
- Before the opening of the urban railway, temporary facilities, e.g. bus stand, taxi stand, general car stand, and motorcycle taxi stand, will be placed on the service road on the west side of the station. In addition, an under-viaduct parking lot will be set up for bus turning and temporary parking.
- Parking lots for motorcycles and bicycles will be placed under the station building, under the viaduct, and in the green zone of the highway within 200 m from the station building. Public parking lots for private cars are not provided, assuming that they will be installed in private urban development area.
- Pedestrian decks will be equipped with additional stairs to access the green zone parking lot. In addition, a pedestrian deck will be extended, and an elevator will be installed to access the station square on both sides of the station and commercial facilities.
- Retail shops will be set up on the first floor of the station building for the convenience of transit users.



Source: SAPI

Figure 3.68 Layout plan of National University Station area



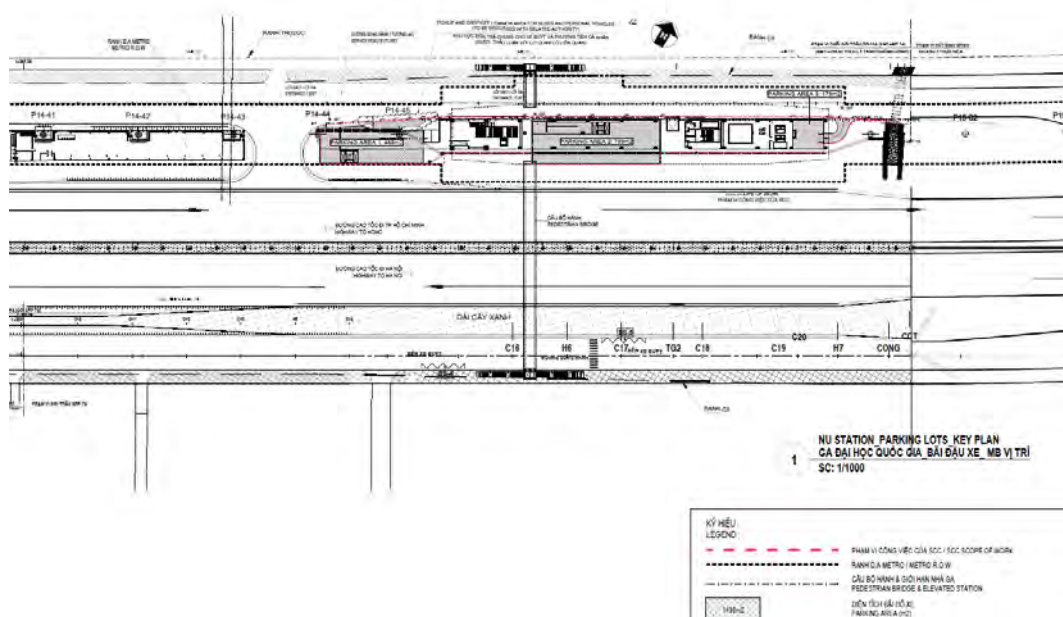
Note: Left: at the opening, Right: in the future

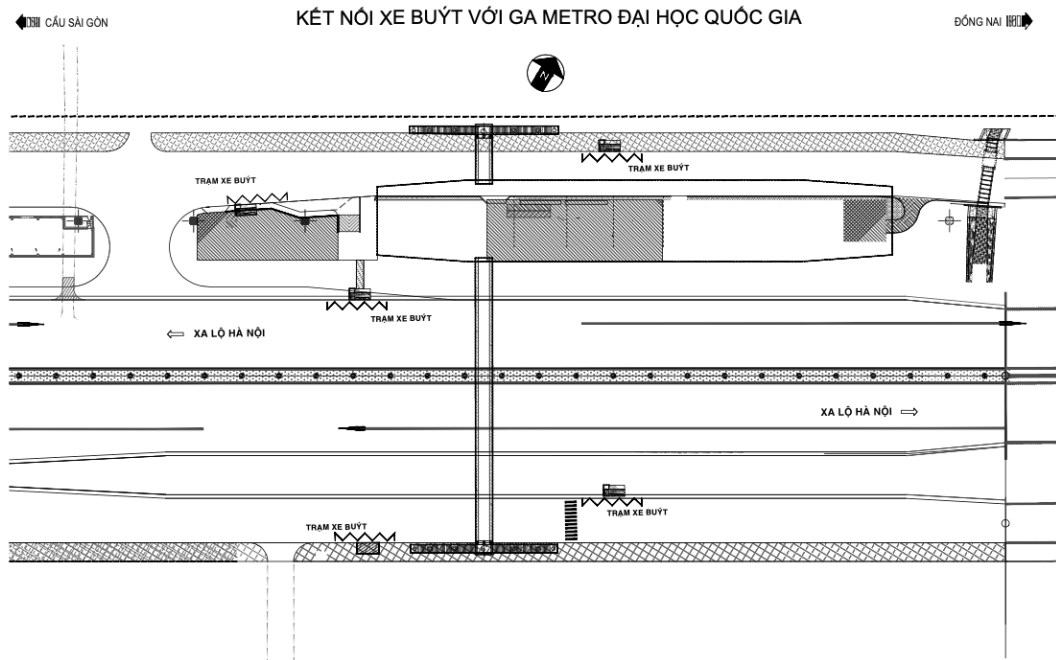
Source: SAPI

Figure 3.69 Concept plan of National University Station

(b) Current Plan and Issues

- Currently, MCPT plans to set up bus stops along national roads and service roads.
- The station square previously planned in SAPI survey was on the privately owned land and the land could not be secured.
- Connection with National University: National University is one of the 6 hubs that make up the new Thu Duc City. At present, accessibility from National Universities is not fully considered. At the ICR conference of this survey, a concern about the accessibility of National University and the railway station was raised by the PC representative of Thu Duc City.
- In the future, the feeder bus plan, the appropriate scale of the bus terminal and the station square should be considered according to the development plan of the National University.





Note: Above: Station design drawing, Below: Proposal of intermodal facility by MCPT
 Source: Top: MAUR, Bottom: MCPT

Figure 3.70 Plan of facilities on the ground floor of National University Station



Source: JICA Study Team

Figure 3.71 Photos of National University Station area

15) Suoi Tien Terminal Station

(a) Current plan

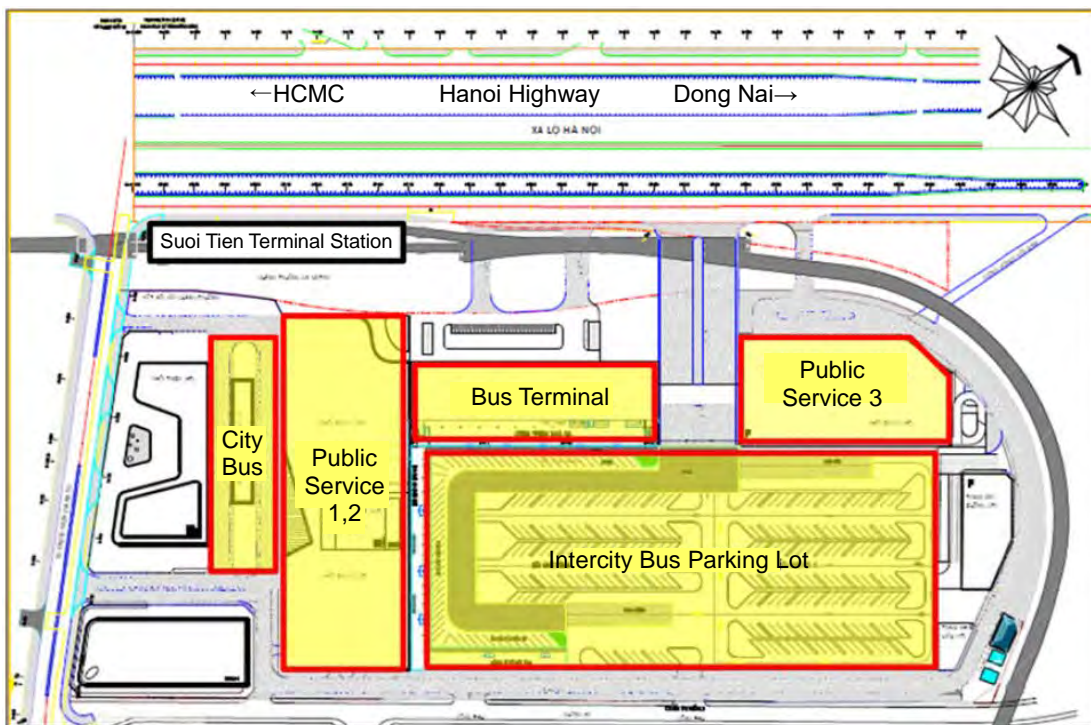
Suoi Tien Terminal Station is a terminal of Urban Railway Line 1 and is positioned as a

transportation hub connecting to BRT and buses at the Mien Dong Bus Terminal. As urban development around the station has been accelerated recently, it is required to form a new hub for the suburban station. In SAPI, a separate JICA-PPP survey was conducted for the station, so it was excluded from the basic design of SAPI.

The Mien Dong Bus Terminal is a bus terminal currently operated by Saigon Transportation Mechanical Corporation (SAMCO) in Binh Thanh District, Ho Chi Minh City, and it will be relocated to southeast of STT Station, the final station of MRT Line 1 with an area of 16ha. SAMCO received approval from Ho Chi Minh City for a detailed planning framework for the new eastern bus terminal in June 2014. However, in the PPP FS, it was studied as a "city development project by TOD", and an idea for "Suoi Tien Terminal Station Area Development Project", which covered the land use around the station, was proposed to Ho Chi Minh City and SAMCO.

In March 2016, SAMCO received approval from Ho Chi Minh City to change the 1/500 detailed plan and started construction of the bus terminal in April 2017. Since October 2020, the terminal has started operation with long and medium distance buses while other operations are scheduled to be gradually relocated from the current eastern bus terminal.

The layout of this development project (16ha, 21,000 passengers/day) based on the detailed plan is shown in the figure below.



Source: JICA "Final Report of Information Collection Confirmation Survey on Public Transport Infrastructure Development and Improvement Plans in Binh Duong Province" in 2018

Figure 3.72 Layout plan of Suoi Tien Terminal (SAMCO plan)

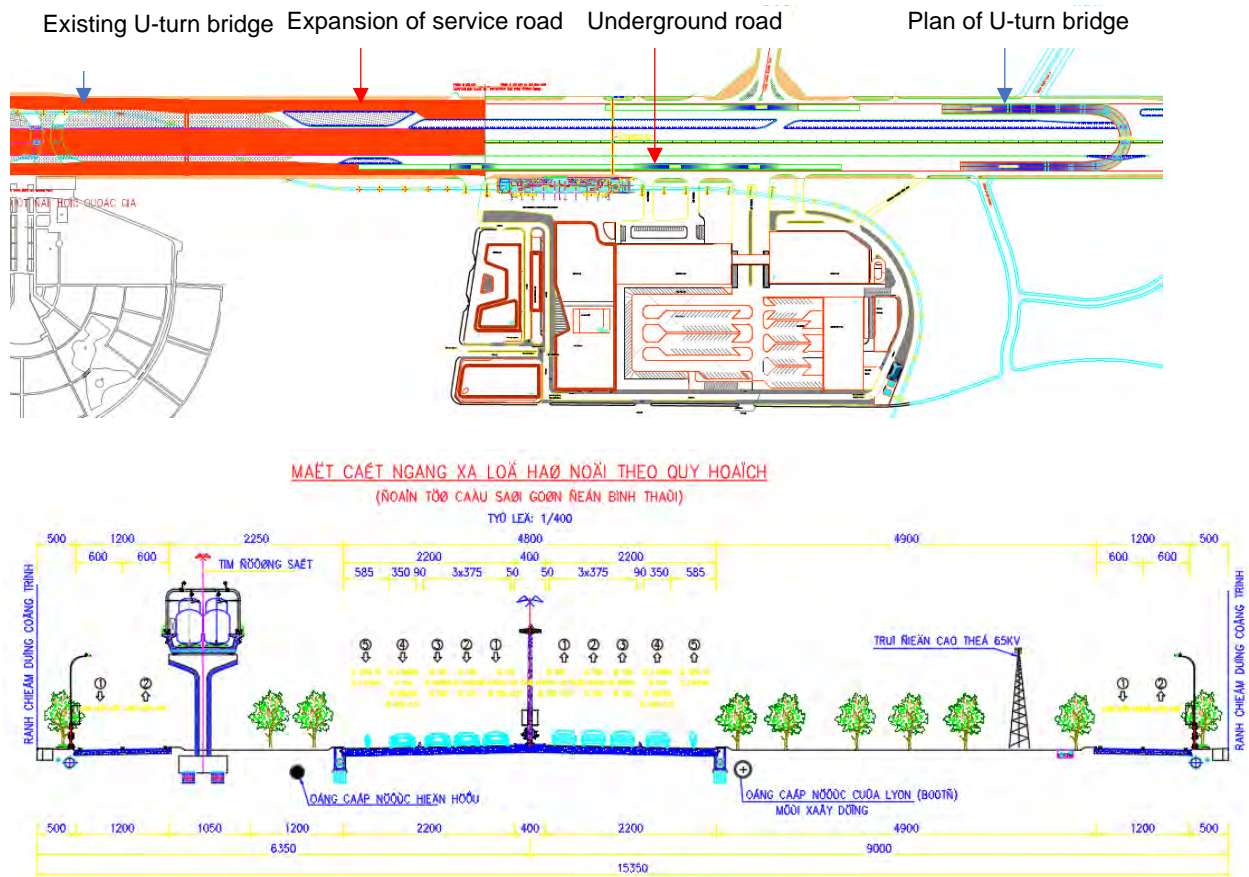


Source: SAMCO

Figure 3.73 Completion image of Suoi Tien Terminal (3D perspective)

(b) Issues

- Although SAMCO and local developers are planning urban development projects on the site, according to current regulations, especially Land Law and State-owned Enterprise Law, it is difficult to develop on the land owned by state-owned enterprises and thus, the project is not progressing.
- City bus terminal and public service facilities are planned on SAMCO's land on the south side of the station, and it is necessary to improve pedestrian accessibility (e.g., roofed walkway, etc.) to these facilities.
- In front of Suoi Tien Terminal Station, initially, there was a grade-separated road project planned for connection to the Mien Dong Bus Terminal, and bus operation plan as well as BRT plan from Binh Duong Province were considered. However, after that, grade-separated road project was cancelled, and in the current Hanoi highway expansion project, access to the Mien Dong Bus Terminal is secured by expanding the U-turn bridge and service roads. Therefore, it is necessary to reconsider connection routes for BRT plans and city bus routes according to the current access.
- The station square and the city bus terminal development in the SAMCO site have been delayed, and the access route to the station has become complicated due to U-turn roads and other structures. Since the STT station will be a transportation hub with multiple transport modes, it is necessary to ensure sufficient boarding/alighting space within the railway site (ROW) when the railway starts operation. After that, the platform can be modified according to the progress of the development of the city bus terminal and public services.



Source: Ho Chi Minh City Infrastructure Investment Joint Stock Company (CII)

Figure 3.74 Expansion plan of Hanoi Highway



Source: JICA Study Team

Figure 3.75 Photos of STT Station area

16) Typical issue of planning public transportation facilities

(1) Resolving the division by Hanoi Highway

The main issue in Ho Chi Minh TOD is that Hanoi highway divides the catchment area, limiting the access from the opposite side of the highway, and it also complicates bus access. Although the railway line 1 project has planned pedestrian bridges to secure the minimum access for the opposite side, it is necessary to consider more proactive access improvement measures to improve the convenience of the railway users.

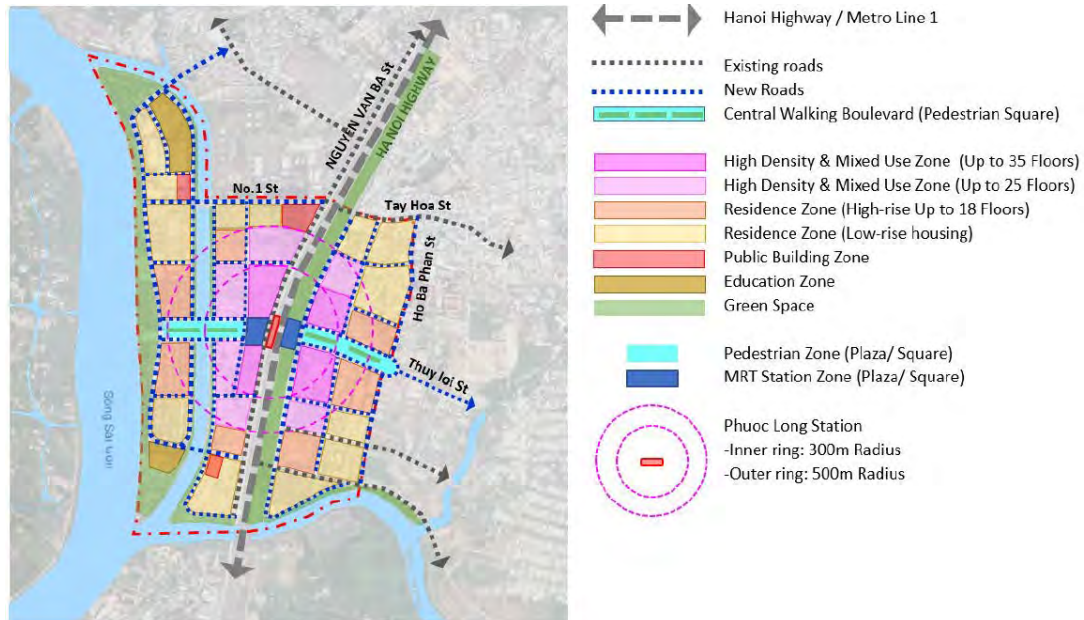


Source : VN Explorer

Figure 3.76 Division of urban space and walking space by Hanoi Highway

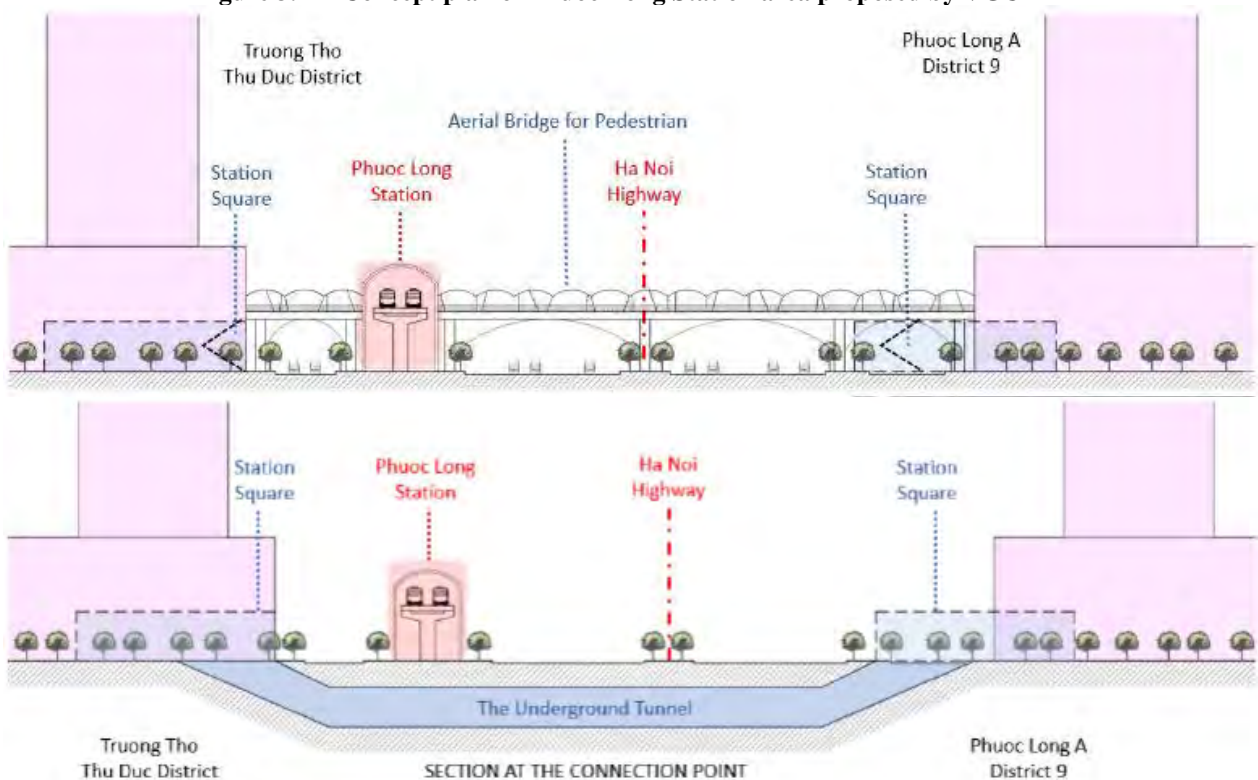
Viet Nam - German University (VGU) is proposing a TOD concept plan using Phuoc Long Station as a model case. Underpasses and viaducts have been proposed to improve access to the eastern area across the highway.

On the other hand, the eastern area currently has been filled up with existing residential areas. To implement such TOD concepts, it is necessary to develop legal schemes such as redevelopment scheme, land readjustment scheme, and land expropriation laws.



Source: VGU

Figure 3.77 Concept plan of Phuoc Long Station area proposed by VGU



Source: VGU

Figure 3.78 Cross-sections of pedestrian bridge and underground walkway proposed by VGU

(2) Preserving land for public facilities in front of the station

According to SAPI, most of the proposed facilities were located on the public land of Urban Railway Line 1 and Hanoi Highway due to the difficulty of acquiring land along Urban Railway Line 1. However, the station squares of Van Thanh Park Station, Phuoc Long Station, High-tech Park Station, and National University Station were proposed to be installed in areas other than the above public land. The table below shows the proposed land area of each station and the land acquiring method at the time of SAPI survey.

In the current drawings and plans by MCPT, all the station square plans that need land acquisition have been changed, and the facilities will be developed only in the public land and the space under the viaduct.

Table 3.9 Required land area and land acquiring method (at the time of SAPI survey)

District	Station	Type of facility	At the time of SAPI survey Land owner→acquiring method	MCPT Plan
Binh Thanh	Van Thanh Park	Station square 4,400m ²	Saigon Tourist Company → Change administration authority to DOT	Change to under viaduct
Thu Duc	Phuoc Long	Station square 4,300m ²	Private land → Land acquisition by HPC	No progress on land acquisition
District 9	High-tech Park	Station square 5,000m ²	SHTP Management Board → Change administration authority to DOT	Change to another plan without land acquisition
	National Univ.	Station square Access road 4,050m ²	Private land → Land acquisition by HPC	Change to another plan without land acquisition

Source: JICA Study Team based on SAPI and MCPT plans

(3) Public transportation facility plan by MCPT (facility plan according to vacant space)

Around the station where it is impossible to acquire the land, MCPT is planning to set up bus stops on the public land.

At the time of opening, there may not be any problems occurring even if the facility capacity is small, but in the future when universities and other large-scale urban areas are fully developed, facilities such as bus stops will not meet the increased demand.

Therefore, it is necessary to review the plan of public transportation facility at the time of opening and in the future, especially, to confirm whether the plan meets the future demand.

(4) Public transportation facility plan based on the service road expansion project

From the east side of the Saigon River (east of Thao Dien Station) along Hanoi Highway, the service roads are being widened to enable traffic to travel in two directions instead of one previously. Therefore, public transportation facilities should also be planned with respect to the 2-directional service roads.

At some stations such as STT Station, bus access was considered based on the assumption that flyovers will be planned. Therefore, it is necessary to examine the bus access in detail according to the current expansion project.

4 Proposed Action Plans and JICA Cooperation Program

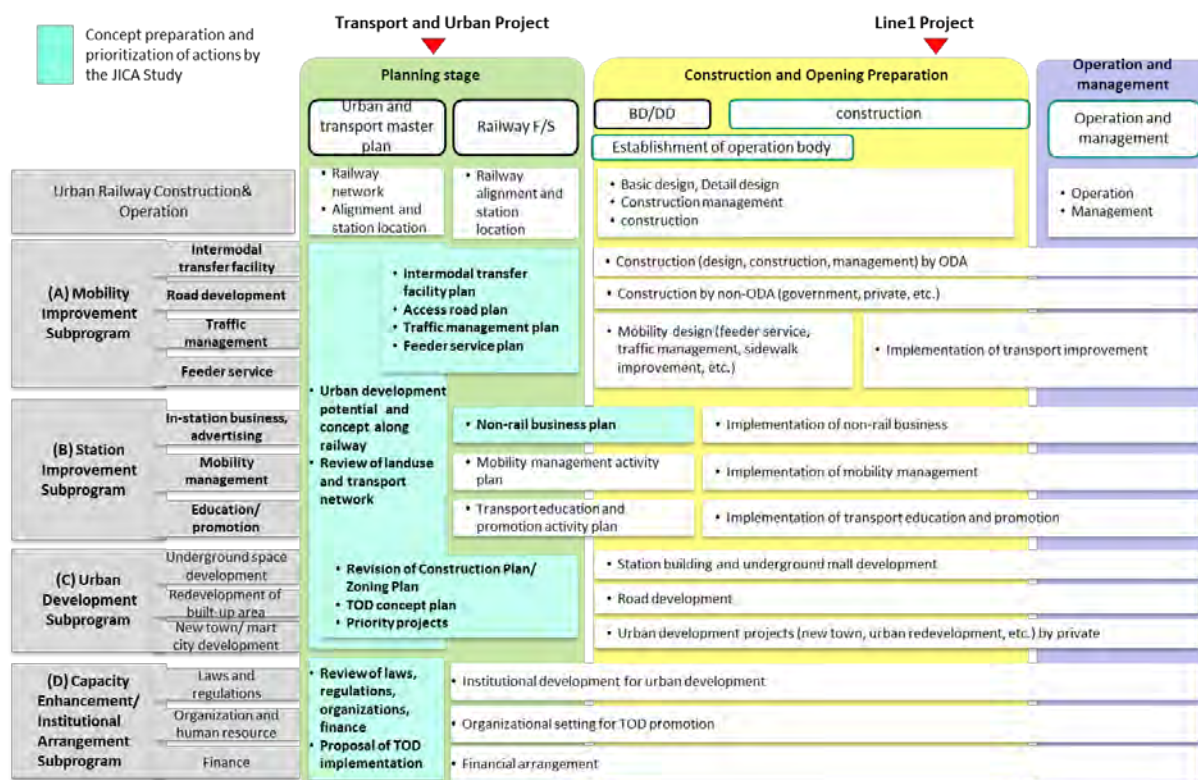
4.1 Action Plans

In considering the action plan for the realization of TOD, the main issues and the efforts from Ho Chi Minh City are summarized based on the discussions with the other organizations and the analysis of the issues related to TOD.

- MRT Line 1, which has a total project cost of 240 billion yen, is about to open, and improving the access environment to the station is an urgent issue after the opening. In the future, it is hoped that the TOD business will be promoted to shift to a lifestyle centered on public transportation.
- New mobility services, such as MaaS, the need for smarter Thu Duc new cities, and new public transportation services based on the impact of the coronavirus are being questioned.
- MAUR / HURC1 prepares railway construction and operation business for the opening of Line 1, DOT / MCPT improves public transportation, DPA revises Ho Chi Minh City Construction Plan and formulates city construction plan of Thu Duc City Line 1 stations. Zoning revisions in the surrounding area are being prepared and TOD in each role is being worked on.
- It is expected that investment opportunities will increase in Thu Duc City, especially along Line 1, but it is required to improve the legal system of TOD (including LVC) and build an organizational structure by utilizing the vitality of the private sector.

There are many individual issues and related organizations regarding TOD, so it is important to create a system comprehensively tackling these issues. For that purpose, it is necessary to clarify the "**HCMC TOD Promotion Program**" as a TOD policy of the People's Committee, which was agreed upon in consultation with the relevant departments, and then consider the necessary actions and implementation system.

The study team proposes a (draft) TOD promotion program that consists of four subprograms.



Source: JICA Study Team

Figure 4.1 Structure of HCMC TOD Promotion Program

(A) Mobility Improvement Subprogram

- Objectives: As a comprehensive program for promoting the use of public transportation, for improving district public transportation policy, including new transportation service projects, such as access improvement, feeder service, transportation facility development, last one mile, MaaS, etc.
- Implementation body: **DOT and MCPT** for planning and implementation, DPA for land preparation, and transport operators for service provision

Table 4.1 Mobility Improvement Subprogram

Action Plan	Contents
Intermodal transfer facility (ITF) development	<ul style="list-style-type: none"> • Development of ITF (boarding / alighting facilities / parking / stopping facilities for buses, taxis, motorcycles, private transportation, etc.) by utilizing road and/or railway land
Station plaza development	<ul style="list-style-type: none"> • Development of station plaza (integrated ITF) at stations where large-scale demand is expected in the medium to long term and stations where urban development projects are being promoted (Tan Cang, Rach Chiec, Phuoc Long, Suoi Tien)
Pedestrian facility development	<ul style="list-style-type: none"> • Development (extension) of pedestrian bridge/ pedestrian deck connecting to large-scale development area (Rach Chiec Station, Phuoc Long Station, etc.)
Feeder service network	<ul style="list-style-type: none"> • Review of feeder bus plan taking into consideration of Thu Duc City development • Improved access to BRT station (Rach Chiec, Suoi Tien Terminal)
Last One Mile	<ul style="list-style-type: none"> • Access road development/ improvement to stations and ITFs
	<ul style="list-style-type: none"> • Improvement of traffic environment (especially walking environment) around station
	<ul style="list-style-type: none"> • Development of secondary transportation services (Last One Mile) by MaaS such as demand-type buses, taxis, and share bicycles

Public transport promotion	• Formulation of policy for improving district public transport
	• Formulation of MaaS introduction policy
	• Building a roadmap from centralized data management to DX
	• Building a MaaS platform

Source: JICA Study Team

(B) Station facility / service improvement subprogram

- Objectives: Station facilities and services need to meet the demand and usage needs after the opening of Line 1, and the utilization of railway land and non-railway business will be promoted to increase railway demand and revenues. For Ben Thanh Station, appropriate rules for PPPs are required to promote the development of attractive underground spaces for future connections to other lines.
- Implementation Body: **MAUR and HURC1** for railway service, **DPI** for PPP promotion, and **DPA** for underground development

Table 4.2 Station Facility / Service Improvement Subprogram

Action Plan	Contents
In-station business and advertising	• Support for operation and management of in-station business and advertising
Utilization of the space under the viaduct	• Review of rules regarding utilization of space under the viaduct • Preparation of a plan at the space under the viaduct for commercial and public services • Establishment of the LVC system utilizing railway properties
Ben Thanh Station development	• Formulation of underground space development policy • Formulation of basic concept of Ben Thanh Station development connecting to Line 2, 3A, 4 with underground malls • Development of a pedestrian network, a transportation hub with other modes such as buses, BRTs, and taxis

Source: JICA Study Team

(C) Station Area Development Subprogram

- Objectives: Sustainable and attractive station area urban development by improving related legal systems and building implementation systems for TOD promotion, creating TOD policies and promoting urban development projects, and area management after opening will be promoted.
- Implementation Body: **DPA** to plan and facilitate urban plan formulation and urban development projects with regulations and incentives, **local government** to facilitate local stakeholders and communities, **private sectors** to implement urban development projects

Table 4.3 Station Area Development Subprogram

Action Plans	Contents
TOD Orientation formulation along Line 1	• Formulation of TOD orientation along Line 1 and each station area • Elaboration of TOD projects • Coordination with relevant plans and projects (Construction Plan, zoning, road and transport plan, etc.)
Area Management	• Monitoring and evaluation of stations and station areas after opening of Line 1 • Promotion of community-led development activities around the station • Promotion of mobility management activities
Pre-FS of urban development project	• Selection of potential districts • Project formation through discussions with private companies • Implementation of pre-FS/ FS for urban development projects (Tan Cang Station, Rach Chiec Station, Phuoc Long Station, Suoi Tien Terminal)

	Station, etc.)
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Source: JICA Study Team

(D) Institutional Improvement Subprogram

- Objectives: Enhance capacity development of local governments for appropriate urban management, development control, coordination with private sector and communities, etc., law and regulations, organizations and human resources, financial mechanisms are strengthened.
- Implementation Body: **All relevant stakeholders** including central governments, local governments, private sectors, and communities.

Table 4.4 Institutional Improvement Subprogram

Action Plans	Contents
Legal and organizational structure for TOD	<ul style="list-style-type: none"> • Development of policies and regulations of urban development project (urban redevelopment project, land readjustment project, land registration system, land expropriation, etc.) • Establishing rules (incentives/ burdens) for private development • Establishment of TOD related systems including LVC • Establishment of TOD coordination mechanism (including intergovernmental, private sector, local communities)

Source: JICA Study Team

4.2 Possibility of JICA’s Cooperation

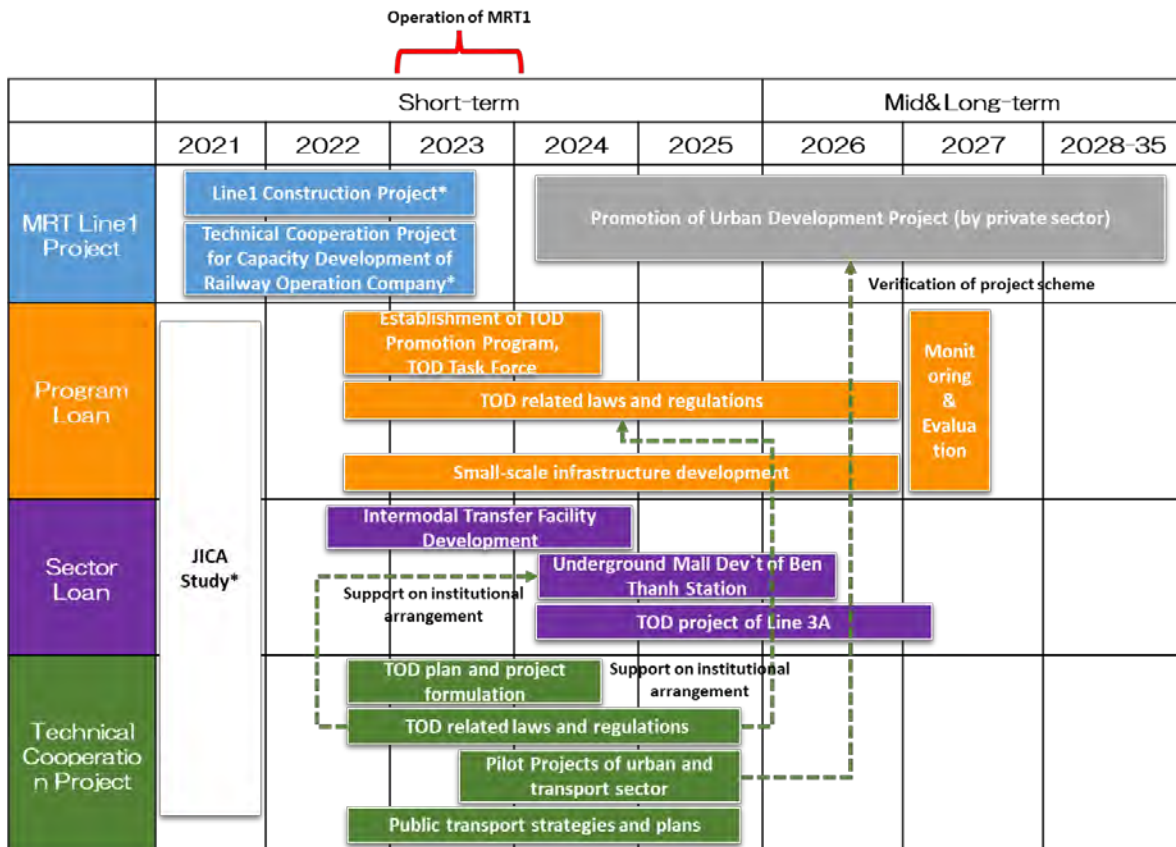
Through this study, it is expected that the above-mentioned “Program to Promote the Realization of TOD” will be created and a TOD task force (tentative) will be set up to facilitate cross-sectoral discussions among relevant departments. It will be necessary to provide support for the comprehensive management of a wide range of programs, including implementation, management, and monitoring of multiple sectors, multiple departments, and short-, medium-, and long-term actions.

Actions by HCMC

- Preparation of TOD promotion policies based on the “TOD Realization Promotion Program”
- Establishment of a TOD promotion system headed by the People's Committee and coordinated by the DPA.
- Establishment of an implementation system and budget secure for infrastructure development and management measures
- Cooperation with JICA, related donors, private companies, and landowners

Possibility of Cooperation with JICA

- Program loan to promote TOD policies (with conditions of TOD policy formulation)
- Sector loan for urban rail development and expansion
- Technical cooperation project for capacity building on TOD for urban and transport sectors



Source: JICA Study Team

Figure 4.2 Proposed Overall Schedule for JICA Cooperation Program for TOD in HCMC

4.3 Proposals for Program loans to Promote TOD

A program loan based on the TOD promotion program is proposed. It will be a general financial support for TOD promotion with the ancillary condition of institutional improvement.

Specifically, the objective is to promote the improvement of policies and institutions that will facilitate infrastructure development and investment promotion for TOD-related projects and promote the early implementation of infrastructure development, mainly in urban rails, road and transportation facilities, and utilities, to promote the realization of TOD in HCMC.

Policy actions to achieve each fiscal year will be summarized as a policy matrix linked to each loan tranche. Achievement of the matrix will be monitored by both the HCMC People's Committee and JICA. For this, the committee will establish the TOD coordination mechanism and assign DPA as a coordination body. The condition of launching the proposed program loan is for DPA, as a coordinator of TOD, to formulate a TOD policy matrix and monitor the progress of TOD policy formulation properly.

Specifically, it consists of the TOD-related policies shown in the table below. Targets like transport facilities and support for urban development projects are also proposed in other JICA cooperation schemes. Moreover, although decision-making is mainly based on action plans by HCMC-PC, it should be noted it may include the improvement of the legal system by the central government as a supplementary required condition.

The Decree 114/2021/ND-CP, “On Management and Use of Official Development Assistance (ODA) and Concessional Loans Provided by Foreign Donors,” Article 9 stipulates the requirement of approval by the Prime Minister for the policy related loan. This new decree may inhibit the program loan from being executed at the ministerial level. The promotion of the program loan requires future research to promote a program loan at the ministerial level.

Table 4.5 Program loan Proposal for Realizing TOD in Ho Chi Minh City

Strategy	Goal	Action Plan
Mobility improvement around stations	Transportation facilities are constructed along the line of the Line 1 station ¹⁾	<ul style="list-style-type: none"> - Land will be reserved for bus, taxi, motorcycle, private vehicle, etc., boarding/stopping facilities and pedestrian facilities (pedestrian bridges, pedestrian decks, etc.) on road/railway territory. [DOT, MCPT, MAUR] - At stations with huge future demand or under the framework of the urban development, transport facilities such as station plazas are planned and approved, and land acquisition is secured. [DOT, MCPT, private urban developer]
	Accessibility around the station will be improved (800 m–1 km area)	<ul style="list-style-type: none"> - Access roads and pedestrian paths to the station will be improved [DOT, district government]. - Feeder bus plan based on Thu Duc City development will be amended [DOT, MCPT, private bus operators]. - BRT line 1 will be opened, allowing transfers to and from urban rail line 1 stations (Rach Chiec, Suoi Tien Terminal) [DOT, MCPT, MAUR].
	District public transport will be improved	<ul style="list-style-type: none"> - Policies for improving public transport in the district and MaaS will be developed [HCMC-PC, DOT]. - A legal system for secondary transport services (last mile) such as on-demand buses, taxis, and shared bicycles, 1 transport (terminal transportation) to stations will be prepared [DOT, MCPT]. - A MaaS platform for MaaS operation and data utilization will be established [DOT].

Strategy	Goal	Action Plan
Improvement of station facilities and urban rail-related services	Non-rail businesses will be developed and expanded	<ul style="list-style-type: none"> - Operation and management system for Ekinaka advertising business will be established [MAUR, HURC1]. - A legal system for the utilization of space under the elevated railway tracks will be established²⁾ [MOT, HCMC-PC, MAUR, HURC1]. - Business plans for the provision of public and commercial services in the elevated space will be prepared [MAUR, HURC1]. - A mechanism for LVC through increased revenue from non-railway projects will be established and returned to infrastructure development costs [HCMC-PC, MAUR, HURC1].
	Underground space will be utilized ¹⁾	<ul style="list-style-type: none"> - Policy and legal framework for the development of underground spaces, including underground shopping malls, will be formulated²⁾ [MOT, HCMC-PC, DPA, MAUR]. - An underground shopping mall development corporation through public-private partnership will be established [HCMC-PC, private sector]. - A phased underground space development plan will be prepared for the connection of multiple lines at Ben Thanh Station [DPA, MAUR].
Promotion of urban development around stations	TOD-related legal systems and implementation systems will be established ¹⁾	<ul style="list-style-type: none"> - Legal systems for redevelopment projects, land readjustment projects, land ledger system, land expropriation, etc. will be prepared 2) [MONRE, HCMC-PC, DONRE, DPA]. - Regulations on incentives and disincentives for urban development, such as relaxation of floor area ratio and share of public facility development, will be developed [DPA]. - A TOD coordination mechanism will be established through the implementation and operational management of TOD promotion programs (including intergovernmental, private and local coordination) [HCMC-PC, DPA].
	TOD policies will be developed	<ul style="list-style-type: none"> - TOD policy for Line 1 and each station will be prepared [DPA, DOT, MAUR] - Action plans for TOD projects will be created [DPA, DOT, MAUR]. - Construction plans and zoning plans will be updated based on TOD policies and projects [DPA, district government].
	Area management will be promoted	<ul style="list-style-type: none"> - Urban development activities around stations are promoted [district government, community, private operator]. - Mobility management activities to promote rail use will be implemented [MAUR, District Government].
	Urban development projects in front of stations will be supported ¹⁾	<ul style="list-style-type: none"> - Land use change procedures, facilitation of project permits and approvals, and development regulations and incentives will be applied to promote projects (DPA, DONRE, DOT, DOC). - Infrastructure projects will be initiated in order to promote investment by the private sector and to strengthen public infrastructure and disaster prevention functions (DPA, DOT, DOC). - FS of urban development projects around stations with development potential will be implemented (e.g., around Tan Cang, Rach Chiec, Phuoc Long, Suoi Tien Terminal) [DPA, private operators].

Source: JICA Study Team

1) Other JICA cooperation schemes are also proposed

2) Improvement of the legal system by the central government may be an ancillary condition.

The HCMC People's Committee will be the executing agency, and each policy action will be carried out by the respective department in charge. The main agencies are as follows:

- DPA, for the overall coordination, preparation of urban-related policies and plans, and urban-related infrastructure development

- DOT for transport-related policy and planning, transport infrastructure development, and service improvement
- Railway Department (MAUR) for the preparation of railways-related policies and plans, improvement of railway infrastructure and services

Other related agencies are as follows:

- Department of Investment and Planning (DPI) for investment promotion
- Department of Natural Resources and Environment (DONRE) for land use management
- Department of Construction (DOC) for utility and park development
- Department of Finance (DOF) for fundraising and finance
- Line 1 Operator (HURC1) for urban rail operation and service improvement
- Public Transport Management Center (MCPT) for public transport management and public transport facility development planning

4.4 Proposal of Sector Loans for TOD Promotion

After the opening of Line 1, it is proposed to support urban rail construction projects to form an urban structure based on public transportation by expanding HCMC's urban rail network. In order to support the formation of the north-south axis and promote urban development around each station, we propose sector loan support for the following three projects. Of these, 1) and 2) are also proposed in the program loan at the same time.

- 1) Public transport facility development along Line 1
- 2) Ben Thanh Station Area Comprehensive Development Project
- 3) TOD project of Line 3A

Table 4.6 Proposed Sector Loan Projects

	Sector Loan	Contents
1)	Public transport facility development along Line 1	Public transportation facilities in the vicinity, which are not included in the current Line1 Construction Project, will be developed through a sector loan project.
2)	Ben Thanh Station Area Comprehensive Development Project	After the opening of Line 1, it is necessary to review the LVC and cost-effective development method around Ben Thanh General Station by developing an underground shopping mall in stages in line with the future development of the new railway lines (Line 2, Line 3A, Line 4). It is proposed to develop the underground shopping mall in line with the construction of the new railroad line, and to develop a public-private partnership project scheme led by the government.
3)	TOD Projects of Line 3A	In conjunction with the construction of Line 3A, which will connect with Line 1 at Ben Thanh Station and extend southwestward to form a north-south urban framework, TOD-related projects (e.g., the construction of public infrastructure facilities that will contribute to the construction of transportation nodes and station development projects) will be implemented as sector loans.

Source: JICA Study Team

1) Public transport facility development along Line 1

(a) Stepwise public transport facility planning

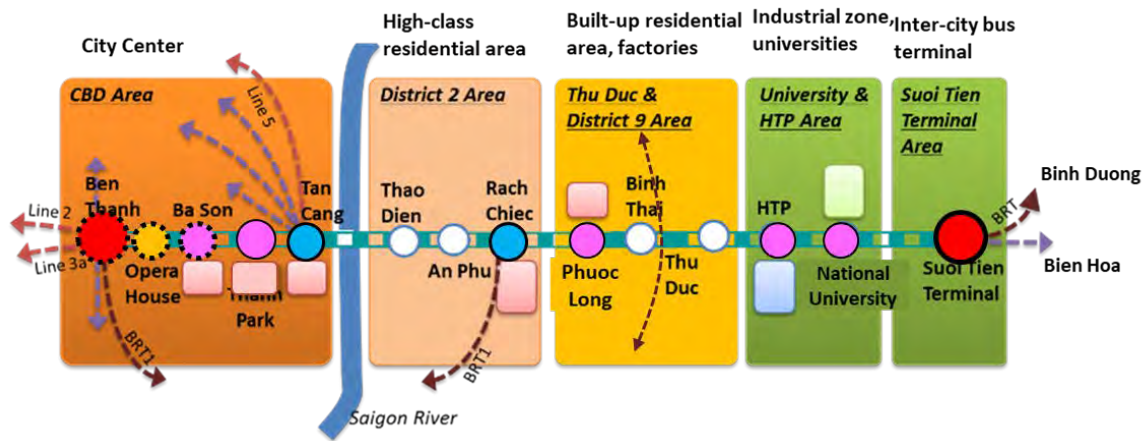
As mentioned above in "3.3 Public Transportation Facility Plan", all the transportation hub facilities considered by MCPT based on SAPI were reviewed in this study. At the priority stations, we proposed and organized public transportation plans based on the launching schedule of Line 1 in the short, medium, and long-term, in consideration of the new concept plan of Thu Duc City.

Regarding the public transport facility plan along Line 1, this survey considered the development of station plazas at eight priority stations after the comprehensive analysis of the previous JICA-SAPI survey, MCPT plan, and Thu Duc new city plan. The development is classified according to the launching schedule of Line 1 in the short, medium, and long-term.

It is proposed that ODA loan project for prioritized stations that require short-term development and determination of land areas to be utilized. In the future, we plan to discuss with DOT / MCPT the proposal's content, the yen loan, financing, business investment scheme, implementation system, etc., which are suitable for local circumstances.

TOD planning varies depending on the station types (e.g., underground station, terminal station,

multimodal hub, general station, integrated-urban development). Except for the general type, we selected eight priority stations of each type based on the discussions with DPA, DOT, and related authorities.



Type	Station	Approach
Underground Sta.	Ben Thanh , Opera House, Ba Son	Underground development and network connection
Terminal Sta.	(Ben Thanh), Suoi Tien Terminal	Phasing development plan including intermodal station development, station area development
Multi-modal Hub	Tan Cang, Rach Chiec	Intermodal transfer facility development for feeder service (bus, taxi, K&R, P&R, bicycle) Pedestrian facility development
Normal Station	Thao Dien, An Phu, Binh Thai, Thu Duc	Phasing development plan including access road development, urban redevelopment
Integrated Urban Development	Van Thanh Park, (Tan Cang), (Rach Chiec), Phuoc Long, HTP, National Univ.	Harmonization with urban development project Cooperation with private sectors for infrastructure development

Figure 4.3 Types of each station and planning approach (red ink are priority stations)

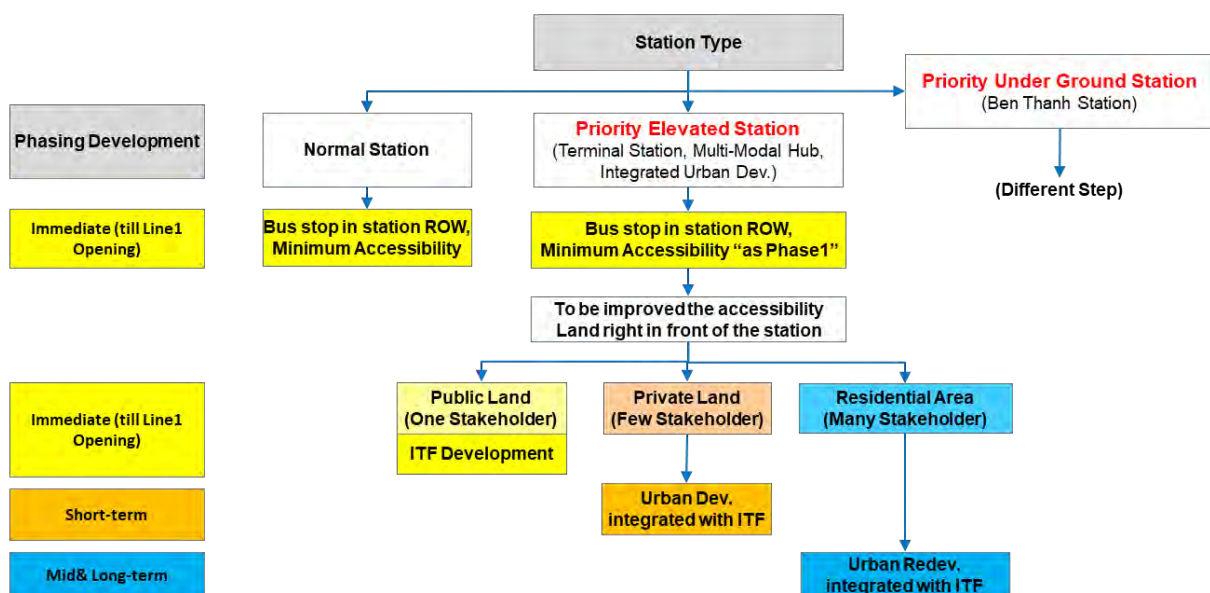


Figure 4.4 Stepwise development of public transport facility at prioritized stations

Table 4.7 Stepwise development of public transport facility at prioritized stations along Line 1

Priority Stations	Bus Service	Intermodal Transfer Facility (ITF) Development			Urban Development Potential integration with ITF)
		Immediate (at the opening of Line 1)	Short-term	Mid& Long-term	
Ben Thanh	City, BRT	(developed bus terminal)		Under Ground St. Plaza	Underground space development
Van Thanh Park	Feeder	Station plaza in station ROW	North Station Plaza in Private land	(South station plaza in residential area)	Urban redevelopment of the residential area
Tan Cang	City	North station plaza in public land	South station plaza in public (military) land		Military land (app. 3ha)
Rach Chiec	City, Feeder, BRT	Bus stop in sta. ROW Pedestrian Bridge	South station plaza in public land		Sports complex development area (app. 190ha)
Phuoc Long	Feeder	Bus stop in sta. ROW Pedestrian bridge	North station plaza in private land		Truong Tho Future Hub (Factory, Container yard) (app. 150ha)
High Tech Park	Feeder	Bus stop in st. ROW Pedestrian bridge South station plaza in public land			
National University	Feeder	Bus stop in st. ROW Pedestrian bridge		North station plaza in residential area	Urban redevelopment of the residential area
Suoi Tien Terminal	City, Feeder	South Station plaza in station ROW and private land			Ongoing urban development project (app. 16ha)

Yellow: To be developed at the opening: Station square that can be set at the opening, station with a high possibility of development because a public organization has the land use right.

Orange: To be developed in the short-term: Since there are few landowners and it is easy to secure a large land area, the station square is likely to be settled.

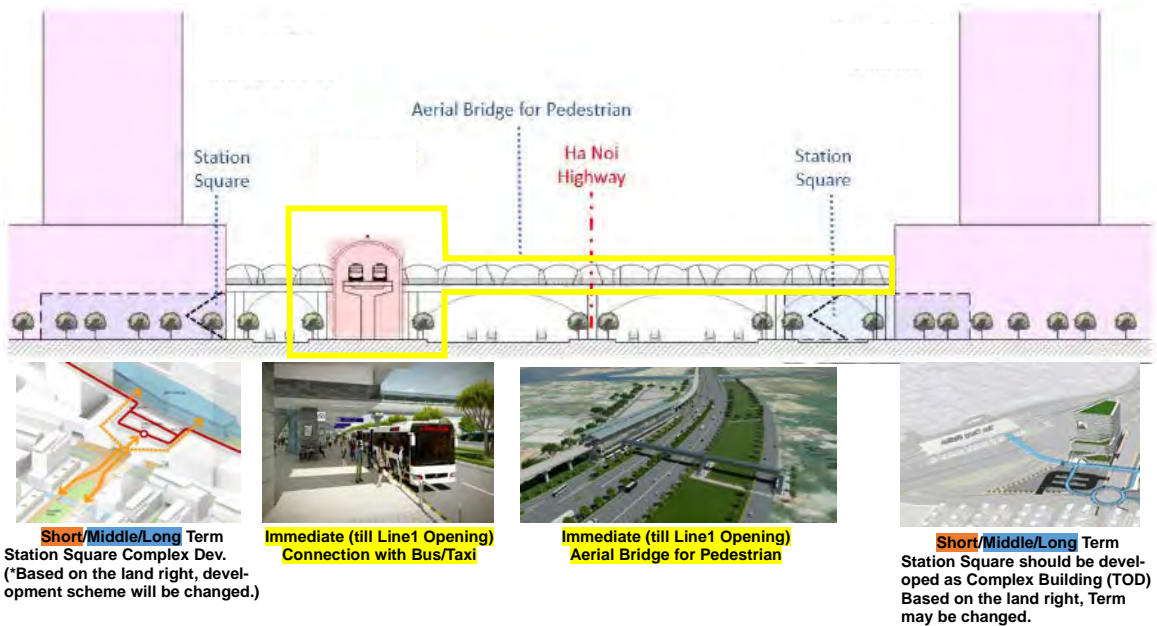
Blue: To be developed in the medium and long-term: There are many landowners. It is assumed that the station square needs to be developed in integration with urban development, such as land readjustment and redevelopment (need to be materialized in another technical project).

(b) Phase-wised development policy for public transport facility at priority elevated stations

The policy of developing a comfortable public transportation facility at the elevated station is described as follows.

- When Line 1 is launched opens, secure a minimum of bus/taxi connections and pedestrian passages to the Hanoi Highway in the space under the elevated stations.
- In the short, medium and long term, public transport facilities will be developed on both the north and south side of the station. It is necessary to secure pedestrian/bus network on the north and south sides of the Hanoi Highway.
- The development progress will vary depending on the ownership of the land in front of the station.
 - With public ownership, the station plaza should be prepared at the opening.

- With a small number of private ownership and stakeholders, public transport facilities will be developed in the short term with complex facilities.
- With a large number of private ownership and the number of stakeholders such as in the residential area, public transport facilities should be developed to integrate redevelopment projects and land readjustment projects into the medium and long term.



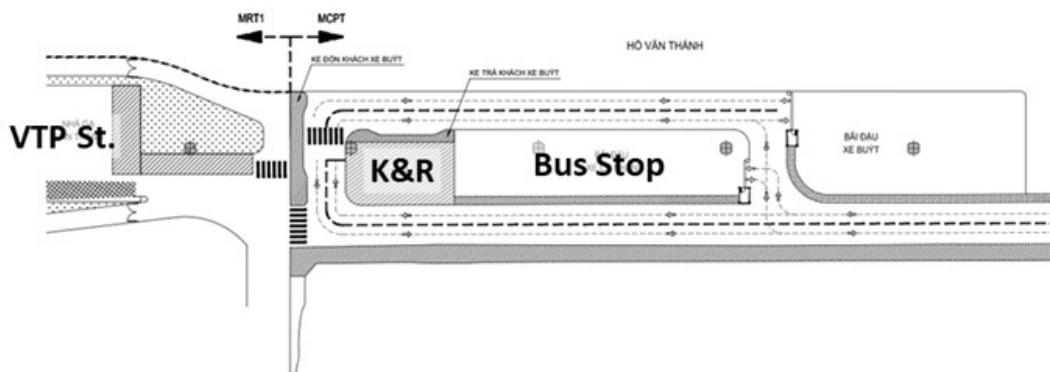
Source: Cross-sectional image of the viaduct by VGU, perspective by the study team

Figure 4.5 Ideal public transportation plaza development at elevated stations

(c) Van Thanh Park Station

Development at the opening of Line 1

- At Van Thanh Park Station, as planned by MCPT, a bus stop, and K&R will be developed by utilizing the space under the viaduct in the railway ROW at the opening of the railway .
- On the other hand, there are several issues in the surrounding area. For example, access to Van Thanh station can be secured from the northwest only; local roads are narrow and short, and the city planning road development is not in place. These issues will limit the number of users of the railway.

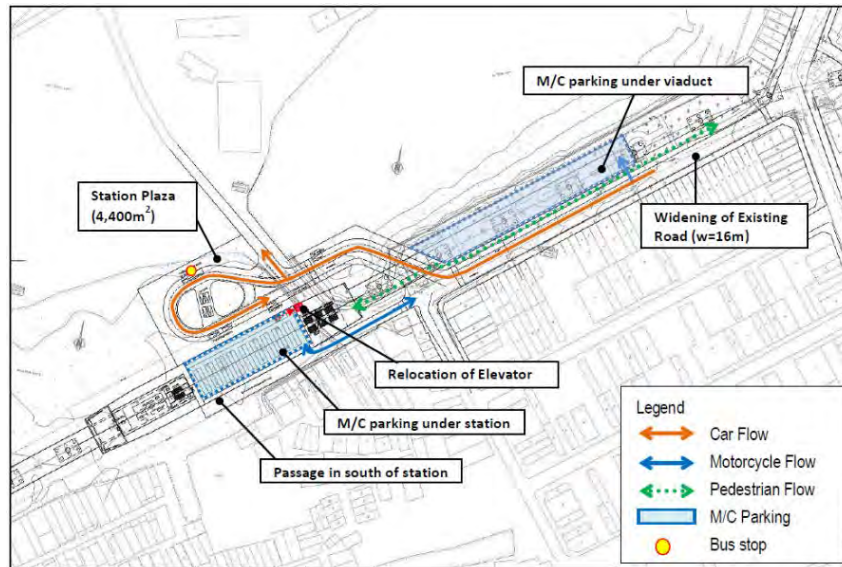


Source : MCPT

Figure 4.6 Proposed plan of transport hub facility of Van Thanh Station

Development in short term

- Since the land on the north side of the station (owned by Saigon Tourist Company) may be developed in the short term based on the discussions, we propose the development of a station building including public transportation facilities.
- We will also improve accessibility from the north area of the station by developing a pedestrian passage to the north area of Van Thanh Park.



Source: The Study Team

Figure 4.7 Proposed plan of transport hub facility at Van Thanh station

Development in medium to long term

- In the medium and long term, we propose a land readjustment project that includes the development of city roads for TOD town development. (About 28ha in the south area of Van Thanh station)
- A high-density complex facility will be constructed in the highly convenient space in front of the station. The land for resettling residents can be secured, and the development costs can be recovered by selling reserved land.
- For pedestrian access, access to Van Thanh Park on the station's north side and Phu An Bridge on the station's south side will be strengthened to improve accessibility from the station area.
- Along the urban railway line 1, there are many areas where houses are densely located in front of the station, and the development of city roads is not in progress. We propose formulating a redevelopment and land readjustment project in this area as a pilot project and looking for a method to expand the model to other sites.



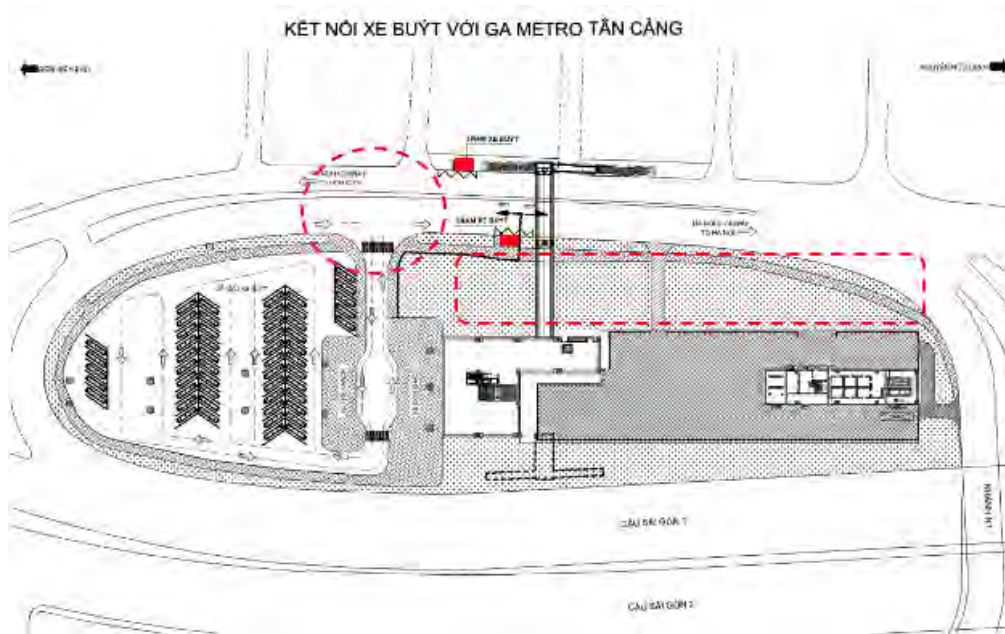
Source: The Study Team

Figure 4.8 Image of land readjustment/redevelopment proposed around Van Thanh Park station

(d) Tan Cang Station

Development at the opening of Line 1

- Tan Cang Station is a multimodal hub for urban railway Line 1 and Line 5, buses, and BRT in the future.
- MCPT plan is based on the SAPI study, but it needs to be revised to increase the station square's convenience, such as improving intersections, taxi pools, and K & R areas.
- Even after developing the northern part of station square, further improvement is still need-ed to serve the future multimodal hub and connect to the complex traffic network around the station.



Source : MCPT

Figure 4.9 Concept plan of MCPT



Source : MCPT

Figure 4.10 Planning Network of MRT•BRT•Bus (blue line)

Short-term development

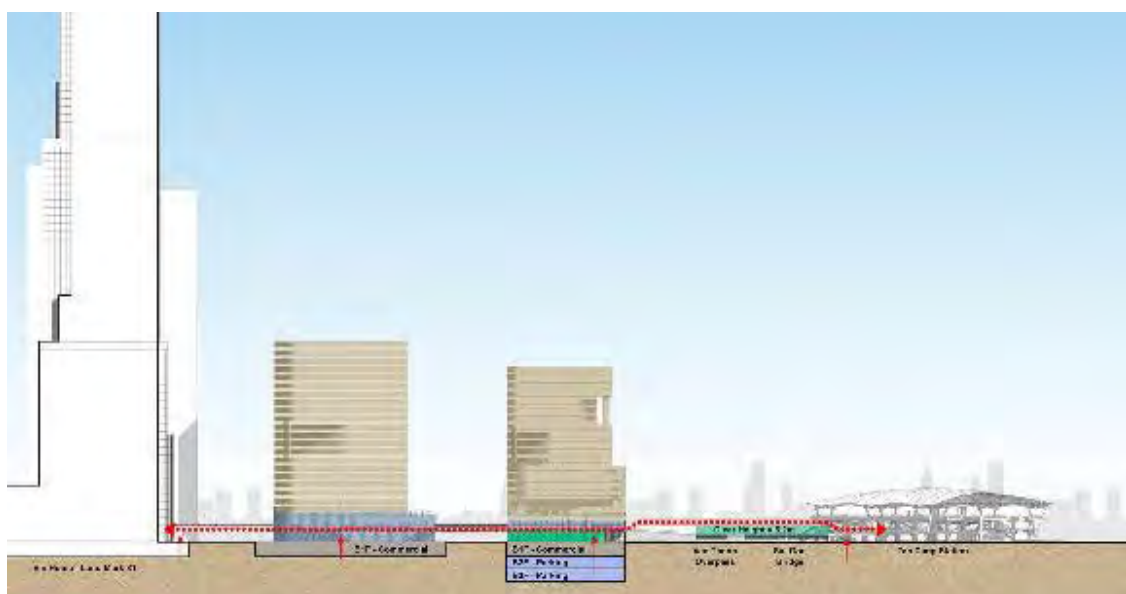
- We propose TOD mixed-use development with a bus terminal on the south side of Tan Cang Station.
- VinGroup has already developed a large-scale urban area on the station's south side with about 10,000 units, a landmark tower, condominiums, supermarkets, hotels, offices, etc. Ensuring access to Tan Cang for these residents and visitors is an urgent issue.
- On the south side of the station, public transportation facilities are planned to include a bus terminal, taxi pool, K&R, and underground parking lot.

- Tan Cang Station is placed in front of the Saigon River, separated from CBD, the airport, and Thu Duc City. It is planned to be the terminal station of Line 5 and is expected to be the intersection of the public transport system.
- The triangular site (15,000m²) on the south side of the station belongs to the Ministry of Defense, and the square site (16,000m²) belongs to the **Port Authority (confirmation required)**. It is planned to be a station square. Because this development will also benefit Vingroup, it is expected to be developed through PPP.



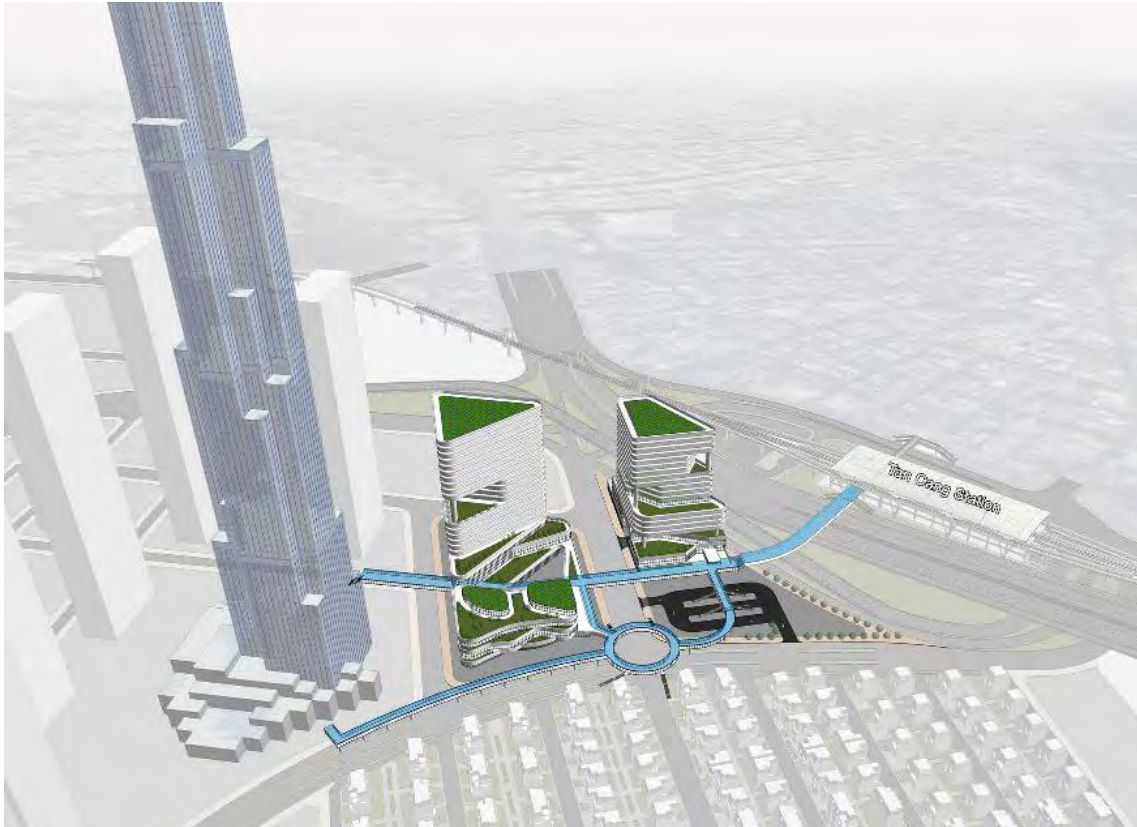
Source : JICA Study Team

Figure 4.11 Draft Concept of the south side development at Tan Cang station (plan)



Source : JICA Study Team

Figure 4.12 Draft Concept of the south side development at Tan Cang station (vertical)



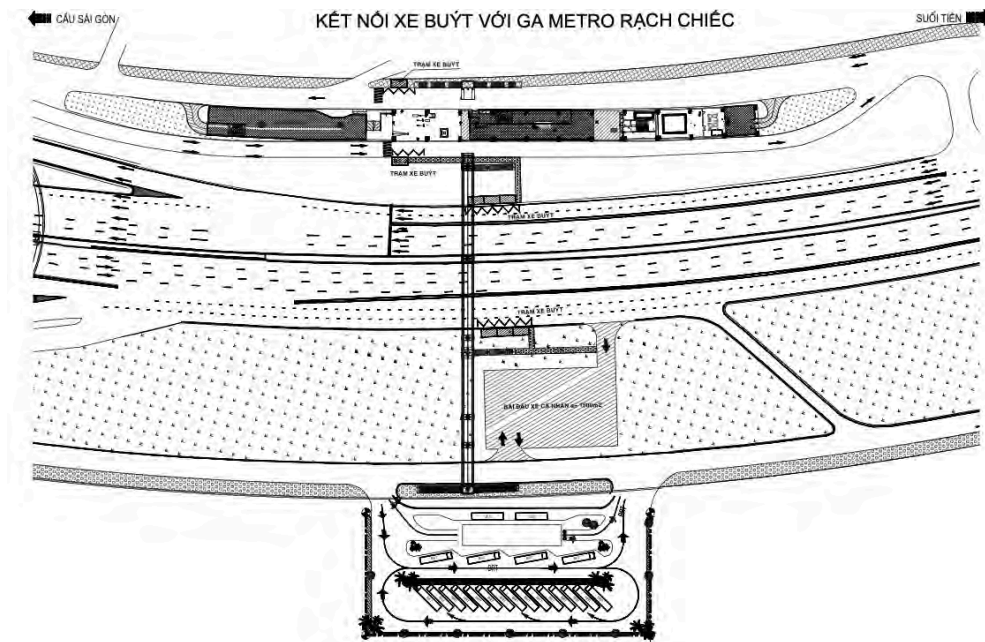
Source : JICA Study Team

Figure 4.13 Draft Concept of the south side development at Tan Cang station (perspective)

(e) Rach Chiec Station

Development at the opening of Line 1

- MCPT is working on a plan based on the SAPI study, in which bus and motorcycle parking lots are planned in the station ROW .
- There are plans to develop a BRT/bus terminal on the station's south side.
- Under the elevated station, it is necessary to organize the access flow in line with the Hanoi Highway development plan and bus boarding/alighting to ensure the connection between the station and the bus (to be discussed with DOT)



Source : MCPT

Figure 4.14 Proposed plan of transport hub facility at Rach Chiec Station



Source: The Study Team

Figure 4.15 Image of smooth bus access under the elevated station

Short-term construction

- In the short and medium term, we propose a pedestrian deck considering the large-scale urban development at Rach Chiec Sports Complex Hub (●●ha). The proposal is made for the improvement of public transportation infrastructure together with the promotion of urban development.



Source : Thu Duc City

Figure 4.16 Planning Rach Chiec Sports Complex Hub



Source: The Study Team

Figure 4.17 Image of current pedestrian bridge(Total length of 100m, width of 3m)

- In Saitama New Urban Center of Japan, a pedestrian network including pedestrian decks is developed in land readjustment projects (47.7 ha, total floor 1.8 million m², working for about 57,000 people), including Saitama Super Arena and public facility.
- At Rach Chiec Station, because the pedestrian deck is only about 2m wide at the opening of the station, by establishing a pedestrian deck together with the development of the Rach Chiec Sports Complex Hub, we will ensure the access to the south area of the station, which is divided by the Hanoi Highway.



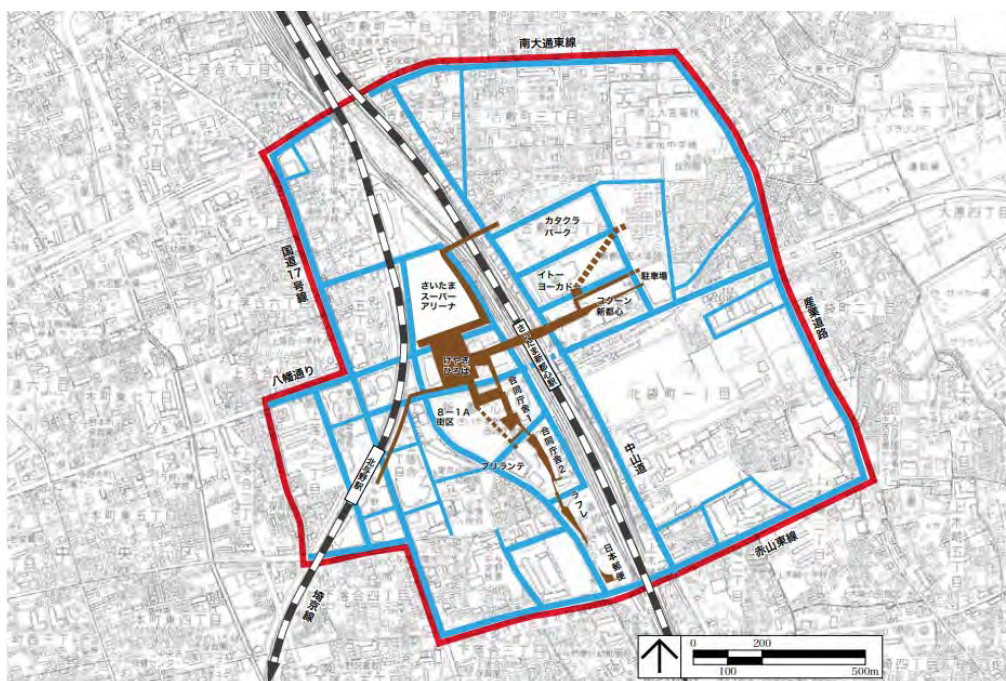
Source : Saitama City

Figure 4.18 Land readjustment project in Saitama New Urban Center



Source : Saitama City

Figure 4.19 East-West pedestrian deck (total length 85m, width 23m)



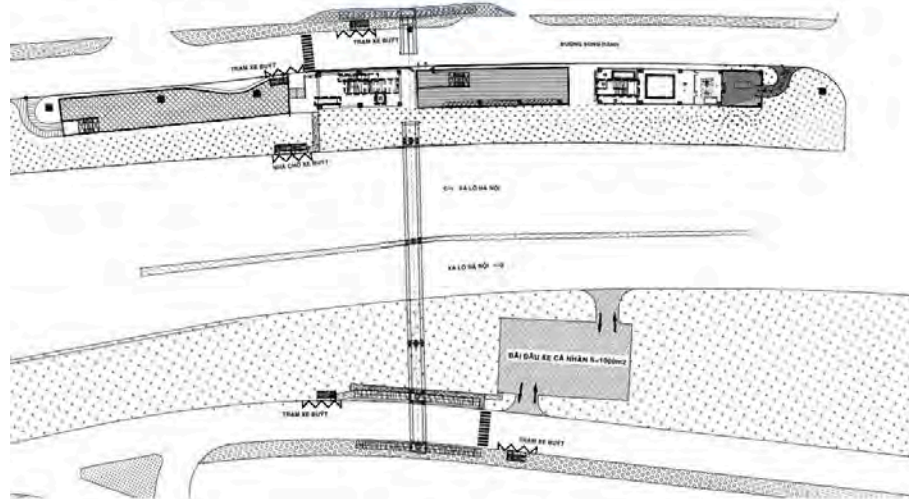
Source : Saitama City

Figure 4.20 Pedestrian network formation including pedestrian deck (Saitama New Urban Center)

(f) Phuoc Long Station

Development at the opening of Line 1

- MCPT is working on a plan based on the SAPI study, in which bus and motorcycle parking lots are planned in the station ROW .
- There are plans to develop a BRT / bus terminal on the south side of the station.
- Under the elevated station, it is necessary to organize the access flow in line with the Hanoi Highway development plan and bus boarding/alighting to ensure the connection between the station and the bus (to be discussed with DOT).

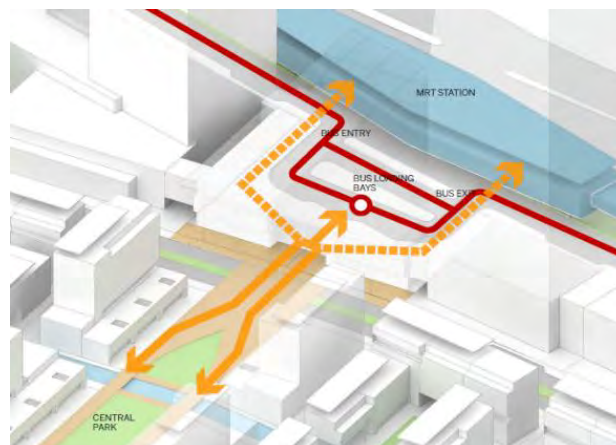


Source : MCPT

Figure 4.21 Proposed plan of transport hub facility at Phuoc Long Station

Short-term construction

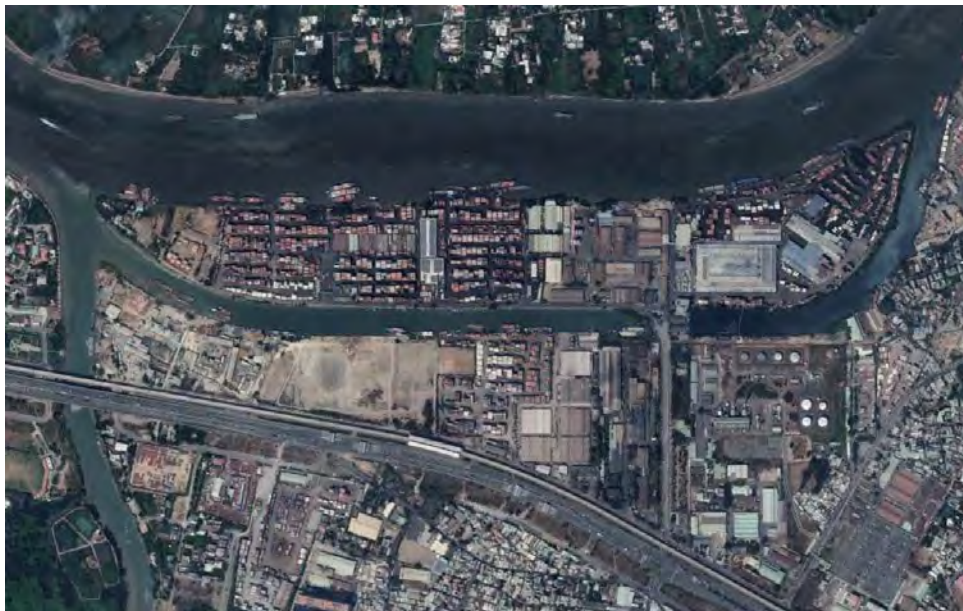
- At Phuoc Long station, the situation and system of land ownership, bidding, and use rights are complicated. There have been some vacant areas available in front of the station; Trung Tho Future Hub is scheduled to be promoted in the future under PPP. Since the station's north side is a prime location, it is potential for a complex development project integrated with the station square.
- MCPT's plan only ensures space for bus boarding/alighting in the station ROW, so a multi-modal transport hub is needed for large-scale development in the future.



Source: Local developer

Figure 4.22 Proposal for complex urban development with public transport facilities in front of Phuoc Long Station

- In the future, it is necessary to have a business scheme that can manage the PPP costs for infrastructure development such as roads, water supply, sewage system, drainage, electric power, bridges.



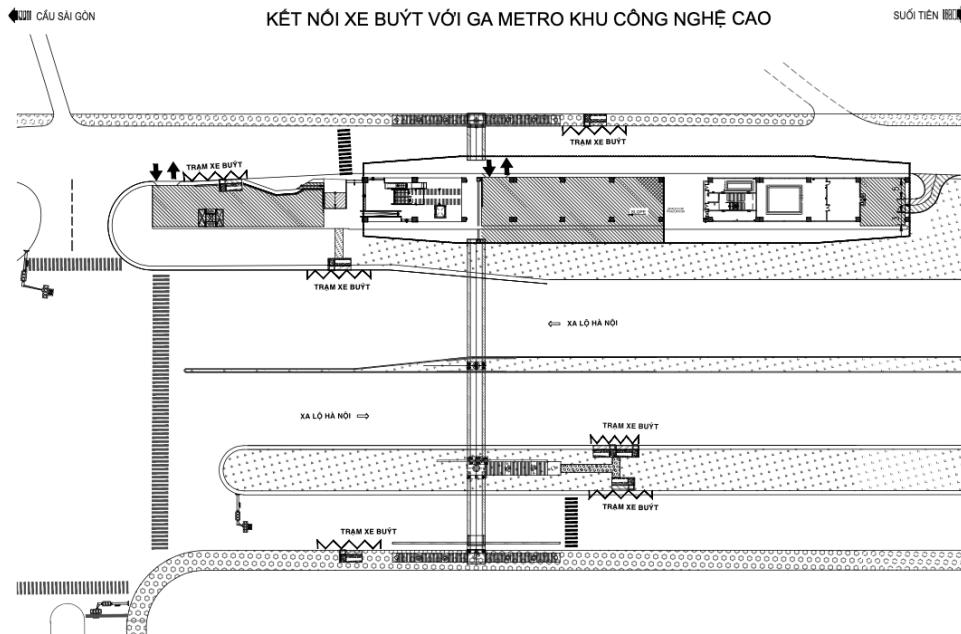
Source : Thu Duc City

Figure 4.23 Truong Tho Future Hub Development project area in front of Phuoc Long station

(g) High-tech Park Station

Development at the opening of Line 1

- The MCPT plan only proposes a bus stop and does not include the station square considered in the SAPI plan.
- Saigon Hi-Tech Park's development is in progress, and a bus network is necessary for the south side. Once more time, we propose the construction of the station square in front of the park.
- Saigon HTP Management Board manages the site, and it is necessary to change the administrator from these city agencies to DOT, the administrator of the station square.



Source : MCPT

Figure 4.24 Proposed plan of transport facilities at High-Tech Park station



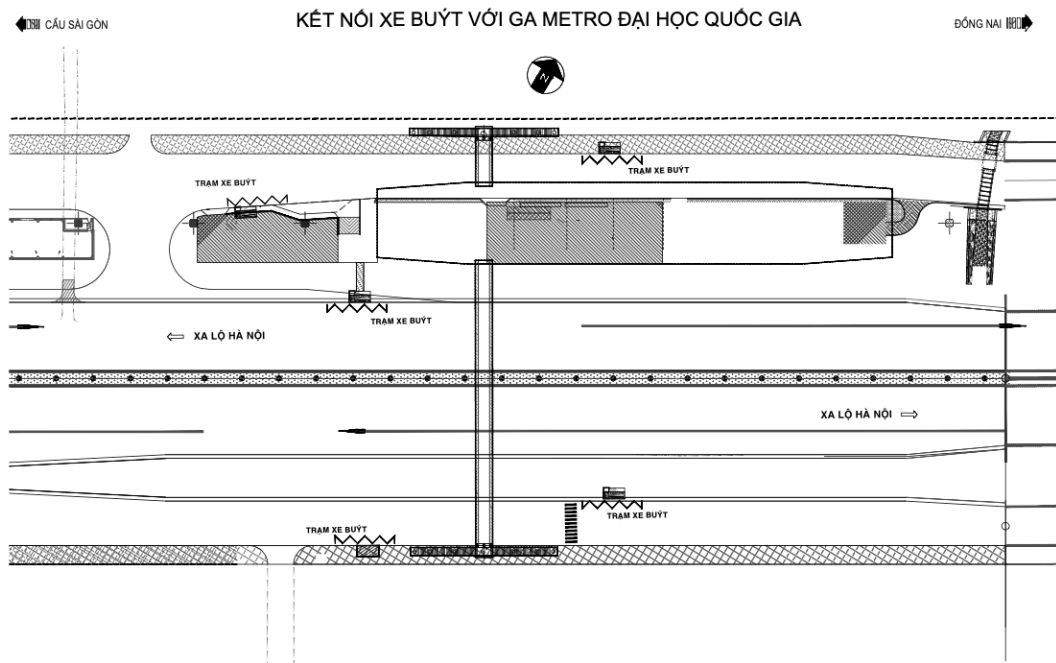
Source: The Study Team

Figure 4.25 Proposed plan of transport facilities at High-Tech Park station

(h) National University Station

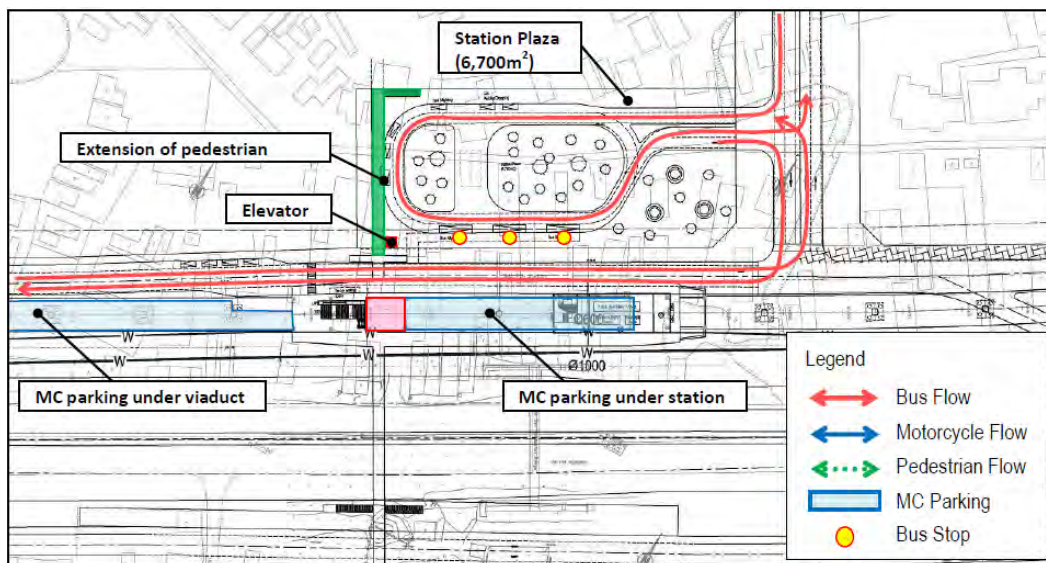
Development at the opening of Line 1

- The MCPT plan only proposes a bus stop and does not include the station square considered in the SAPI plan .
- Since the development of the National universities, the area is in progress on the north side of the station, and the need for public transportation by students is exceptionally high, we propose a land readjustment project (about 18ha) to improve the station square urban roads.



Source : MCPT

Figure 4.26 Proposed plan of transportation facilities at the National University Station



Source : SAPI

Figure 4.27 Proposed plan of transportation facilities at the National University Station

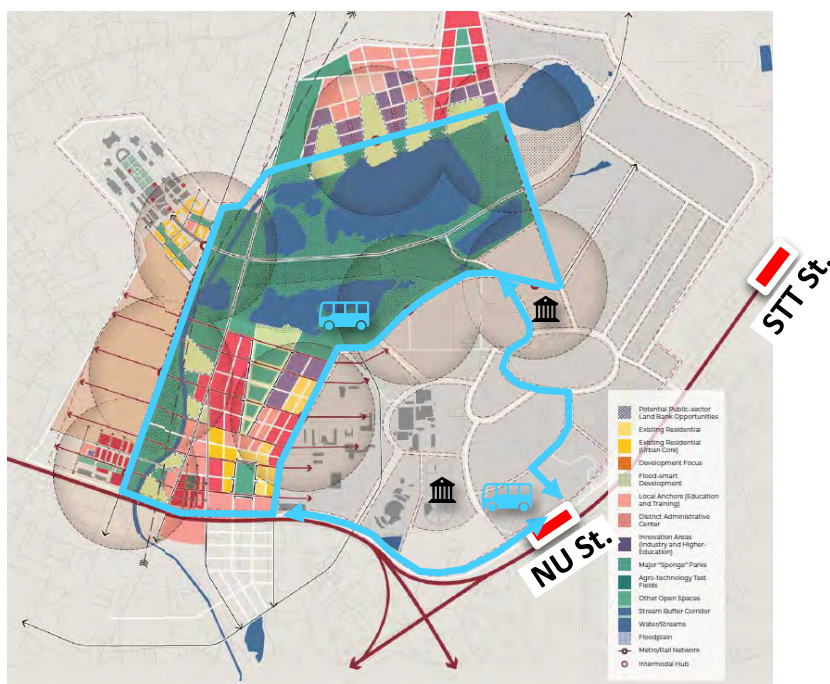
The medium and long-term construction: Integrated station square development with land readjustment and redevelopment projects

- Since the development of the National University area is in progress on the north side of the station, we propose a land readjustment project (about 18 ha) for the improvement of the station square and urban roads.



Source: The Study Team

Figure 4.28 Proposed map of land readjustment project at the National University Station



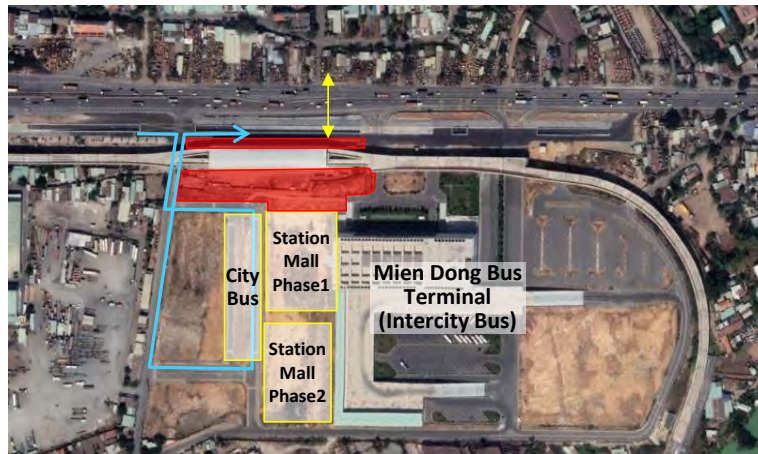
Source : Retouched from Thu Duc City Concept Plan

Figure 4.29 Proposed transportation network of the National University Station

(i) Suoi Tien Terminal Station

Development at the opening of Line 1

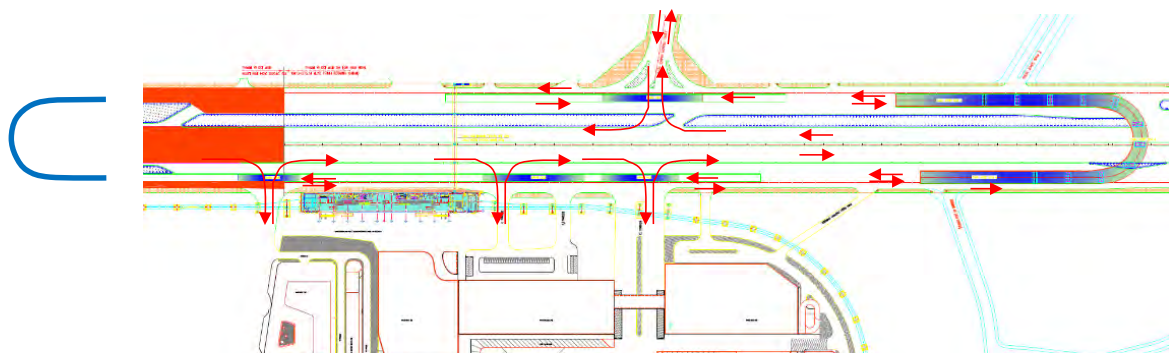
- Currently, SAMCO is developing and operating an intercity bus terminal, and SAMCO is planning to develop a city bus terminal and station mall in the future.
- There is a buffer zone between the station building and the facility, and it is necessary to improve the space in front of the station in collaboration with SAMCO and MAUR.
- A part of the space under the elevated station on the Hanoi Highway side is proposed for taxi boarding/alighting.



Source: The Study Team

Figure 4.30 SAMCO’s facility plan (yellow) and station ROW (red) at Suoi Tien Terminal Station

- It is necessary to develop U-turn bridges and pedestrian spaces on the Binh Duong Province side in order to improve access to the area on the North side of the station and ensure the efficiency of the bus network.
 - In 2018, the plan of the Hanoi Highway overpass ensured good access for both vehicles and pedestrians, but now it has been changed to a U-turn bridge, and construction is in progress.
 - One pedestrian bridge (3m wide) will be constructed at the opening of Line 1, but it is insufficient for the demand at the terminal station. In the future, we propose the development of multiple pedestrian bridges and pedestrian decks by urban roads and redevelopment projects in the North area.
 - The development of the U-turn bridge on the Binh Duong province side is delayed due to the difficulty in land acquisition. Still, it needs to be constructed when Line 1 starts the operation to secure buses and automobile networks.



Source : HCMC




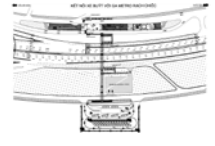


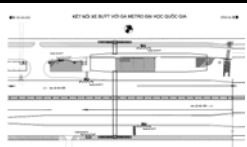

Figure 4.31 Hanoi Highway Expansion and U-Turn Bridge Project

(j) Summary of the public transport facility plan

At the section of the eight prioritized stations above, we propose that public transport facilities (station square, bus terminal, pedestrian bridge, bus stop) be developed **at the opening of Line 1** and **in the short term** should be included in the sector loan and should be started early after the opening of Line 1. Since the land is owned by a single owner (public or private), it is relatively easy to be developed.

The public transport facility plans to be developed in **the medium and long term** shall be developed together with urban development projects that involve the relocation of residents, such as land readjustment projects and redevelopment projects. We propose to establish an implementation method in Ho Chi Minh City through a pilot project under a technical cooperation project. Then, by expanding this method to other areas, a TOD implementation method will be established for the area around the station where many residents live.

Table 4.8 Public transport facility plan at the time of Line 1's opening and short-term development

Priority Stations	Bus Service	Intermodal Transfer Facility (ITF) Development	ITF Concept & Drawing (To be explained the detail in each station page)
Ben Thanh	City, BRT	Underground Bus Terminal Underground BRT Terminal *developed with Metro project	
Van Thanh Park	Feeder	Station plaza in station ROW North Station Plaza in private land	
Tan Cang	City	North station plaza in public land Improvement of Intersection South station plaza in public land (military) Pedestrian Bridge to the South Area	
Rach Chiec	City, Feeder, BRT	Bus stop in station ROW South station plaza in public land (Pedestrian bridge will be developed as METRO Line1 Project) Pedestrian Deck	
Phuoc Long	Feeder	Bus stop in station ROW (Pedestrian bridge will be developed as METRO Line1 Project) North station plaza in private land	
High Tech Park	Feeder	Bus stop in station ROW South station plaza in public land (Pedestrian bridge will be developed as METRO Line1 Project)	
National University	Feeder	Bus stop in station ROW (Pedestrian bridge will be developed as METRO Line1 Project)	
Suoi Tien Terminal	City, Feeder	Station plaza in station ROW and private land (City Bus terminal will be developed by SAMCO) Pedestrian bridge to the North Area (U-turn Road by HCM PC & Binh Duong PC)	

Source : JICA Study Team

2) Ben Thanh Station Area Comprehensive Development Project

(a) Objectives and background

Ben Thanh Station Area Comprehensive Development Project is a project considering the development of public infrastructure such as the station plaza that contributes to regional revitalization, along with commercial facilities that utilize private capital at Ben Thanh Station, the first station on Line 1, which will serve as a hub for regional cooperation in the central area of the city. By the comprehensive development, a higher quality urban space centered on the subway station will be created. With the high-quality space, it is expected that customers coming to Ben Thanh Station will increase, and thus, the number of urban railway users will increase. The increase in MRT ridership will contribute to easing the serious traffic congestion, creating a better investment environment for the city.

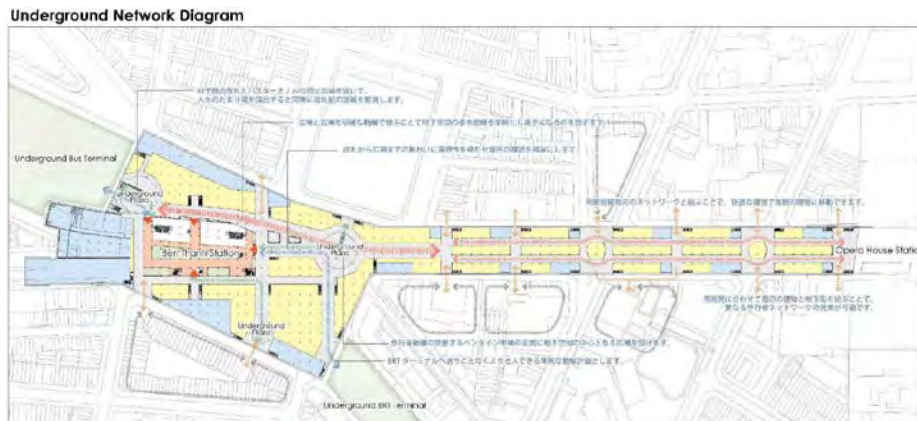
At the time of the 2012 JICA PPP survey, a project was planned with public-private partnerships for the development of an underground mall linked to the development of a subway station on Line 1, and ongoing discussions were held between Japan and Vietnam through public-private partnerships, but the project has not been realized. There are two main reasons for this.

- The scale of the project was too large because it covers a large-scale target area including the Ben Thanh General Station area and the Le Loi Street area (Ben Thanh-Opera House).
- A business agreement was not reached with appropriate public-private demarcation. If all the commercial floors on the first basement floor are separated as private businesses, it is difficult to secure profitability only in the underground commercial space against the high development costs of commercial space, and it is difficult to obtain the participation of private businesses.

As a result, backfilling work was carried out and the underground shopping mall was not developed along with Line 1.

【Ben Thanh Station Area Comprehensive Development Project Preparatory Survey (JICA2012: PPP Infrastructure Project)】

• **Objectives:** To confirm the validity, effectiveness, and efficiency of the project utilizing private capital under the PPP scheme. Specifically, the business is evaluated by investigating the current situation and issues of the district, organizing the needs for infrastructure development, and preparing a preliminary development plan based on the ideas of Vietnamese officials in Ho Chi Minh City. Furthermore, the project cost estimation is based on the development plan, and the project scheme such as the demarcation of public and private parts is examined. The efficiency and effectiveness of the project are evaluated comprehensively in terms of risks.



Source: JICA "Ben Thanh General Station PPP Infrastructure Project Preparation Survey" (2012)

Figure 4.32 Outline of "Ben Thanh General Station PPP Infrastructure Project Preparation Survey"

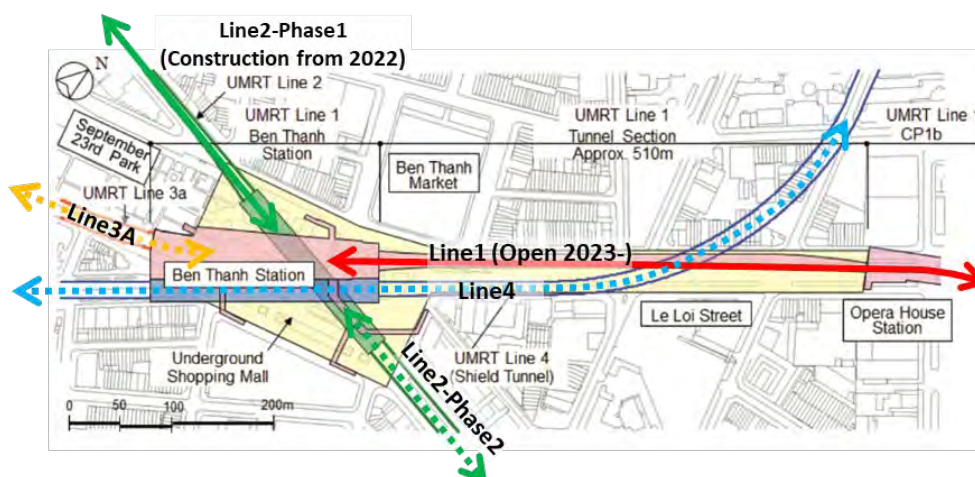
(b) Step-wise development proposal

As Line 1 has been mostly developed, we propose to improve the LVC and cost-effectiveness of the entire project by gradually developing the underground shopping mall from Ben Thanh underground shopping mall in combination with the future development of the new lines. This project will not be just an underground commercial development by the private sector, but it is necessary to be built as a complex urban development project to improve the value of the entire surrounding area as the core of Ho Chi Minh City CBD.

Here are the steps for underground shopping mall development relating to the progress of Line 2, Line 3A, and Line 4 in the future.

Table 4.9 Stepwise railway and underground shopping mall development

Year	Metro Dev.	Fund	Underground Dev.	Fund
Step1	Line 1	JICA	—	—
Step2	Line 2 -Phase1	ADB, EIB, KfW	Ben Thanh North Area Bus Terminal	PPP
	Line 3A	JICA		
Step3	Line 2 -Phase2	ADB,EIB,KfW?	Ben Thanh South Area BRT Terminal	PPP
Step4	Line 4	HCMC	Leroi Street Area	PPP



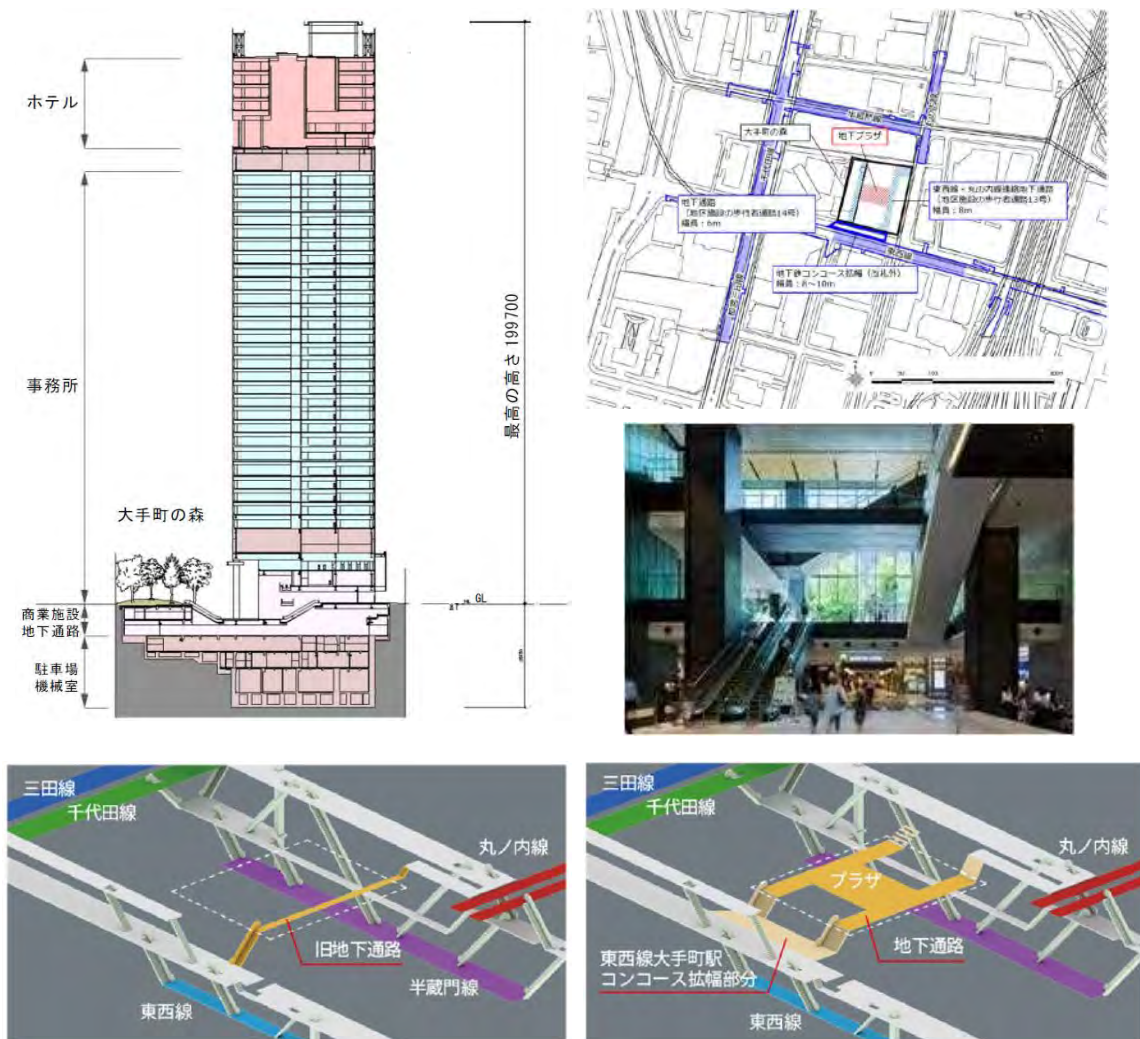
In the future, in order to develop the underground shopping mall at the same time as the new railway lines and reduce the total project cost, it is necessary to establish an appropriate public-private partnership scheme led by the government. Therefore, we propose a PPP project in which the underground shopping mall will be developed by public corporation and commercial floors will be leased to private companies.

As a reference, in many cases of underground shopping mall development around stations in Japan, the project has been implemented under public-led scheme or public-led public-private partnerships. In the Tenjin Underground Shopping Center, where three railway lines intersect in Fukuoka, after the city had issued the guideline for the usage of underground space, it collaborated with the urban developers under PPP scheme forming the Underground Mall Development Corporation to develop the underground shopping center and leased the commercial floor to private companies.

Around Ben Thanh Station, we believe that by establishing an underground shopping mall development public corporation in collaboration with the developers in surrounding area under the initiative of Ho Chi Minh City, we can promote underground shopping mall development in line with the railway construction schedule.

Underground shopping malls have many economic and social effects for the area around the station, such as securing pedestrian networks that are not affected by weather, improving surrounding land prices, increasing public transport users, and improving the image of the city. Therefore, we propose to support the formation of underground shopping mall development projects that utilize the resource of the private sector while being led by the government in parallel with the railway projects through future technical cooperation projects.

Specifically, for the Ben Thanh Station underground shopping malls shown in Table 4.9, the structure and main facilities of the transfer space with other lines and the underground shopping mall will be covered by the sector loan as ancillary facilities to the station. On the other hand, the business operator of the underground shopping mall will be responsible for the interior and piping work. The facilities connecting to the underground mall will cover the construction of the underground connection part to the private land. This will allow the public sector and railway operators to quickly develop related businesses and serve the users when the station opens. In addition, it also provides an environment enabling private companies to participate in the business by reducing the burden of infrastructure development costs.



Source: Otemachi Tower, Taisei Corporation, MLIT

Figure 4.35 Underground shopping mall development image (Otemachi Tower) through public-private partnership utilizing floor area ratio bonus



Source: Masami Kamata, "31st Taiwan-Japan Process Technology Study Group, Tokyo Station Marunouchi Station Building Preservation and Restoration"

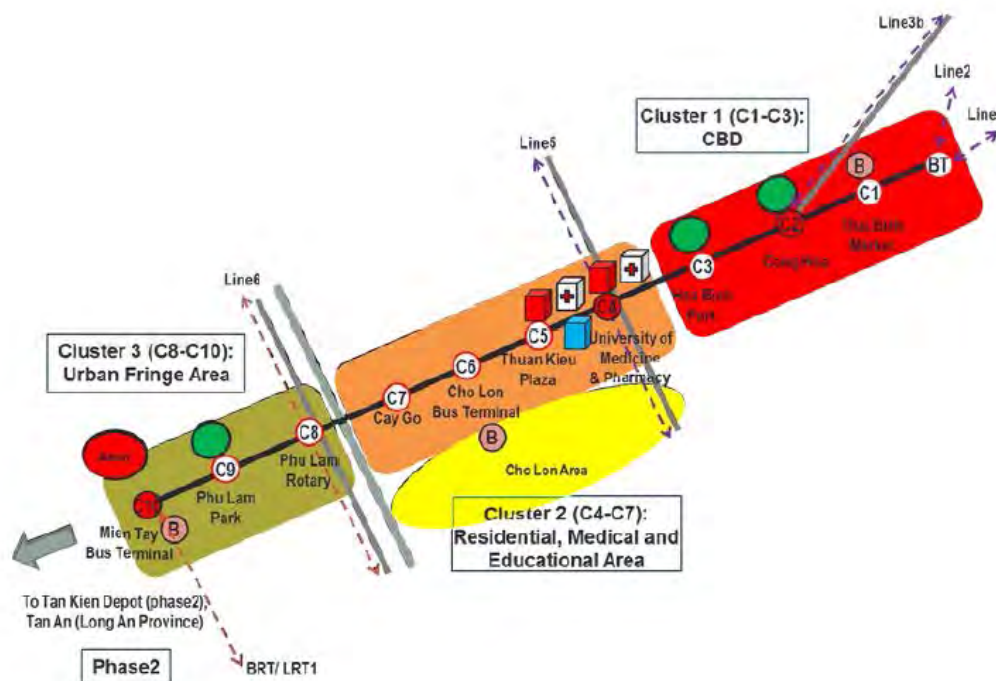
Figure 4.36 Before & after the restoration of Tokyo Station using the floor area ratio bonus

3) TOD Projects of Line 3A

Along MRT Line3A, there are many TOD issues similar to those along the line 1, such as the formation of an urban axis by extending the line 1 in the southwest direction, and the promotion of urban development projects and intermodal transfer facility development through public land utilization and private sector cooperation.

Based on the FS study of Line 3A completed in 2018, the Basic Design and the Detailed Design of Line 3A construction project will be commenced, which covers rail and station facilities, but not TOD related facilities.

For this, in addition to Line 3A construction project, it is proposed to implement the sector loan for TOD projects of Line 3A for development of intermodal transfer facilities (station plaza, pedestrian facilities, etc.) to improve access and the development of public infrastructure (access roads, underground parking, etc.).



Source: Final Report of MRT Line3A Feasibility Study

Figure 4.37 Stations along Line 3A

Table 4.10 Planning Issues and TOD Potentials along Line3A

Planning Issues	TOD Potentials
<ul style="list-style-type: none"> Formulate east and west backbone of city by integrated UMRT Line1 and Line3A Extension and connection to Tan An of Long An Province Integration with other UMRT Lines of Line 3B (at Cong Hoa), Line 5 (at Medical Univ.), Line 6 (at Phu Lam Rotary) and LRT1 (at Mien Tay Bus Terminal) Construction of underground stations Integration of various types of areas such as backpackers area, educational and medical area, Cho Lon Area Requirement/ demand of large-scale urban development including Phase2 section 	<ul style="list-style-type: none"> To accelerate urban development of south-western area of HCMC along UMRT Line3A To provide feeder bus service to neighboring provinces and districts for convenient transfer and promotion of UMRT utilization Improvement of smooth access and transfer between UMRT lines and other transports Utilization of underground space by developing a commercial mall, connecting to urban facilities, installing parking Promotion of integrated urban development to meet demands of station areas Promotion of large-scale development (cf. new town, social housing, commercial complex)

Source: Final Report of MRT Line3A Feasibility Study

Table 4.11 Proposed Intermodal Transfer Facilities along Line3A

Cluster	Station	Other Line	MC Parking	Drop off& pick up	Station Plaza	TOD Potential Area
CBD	C1 Thai Binh Market	Bus terminal	●	●	●	*23/9 bus parking *Thai Binh Market
	C2 Cong Hoa	Line3B	● ¹⁾	●		*Government Guest House *Underground space (C&C) ¹⁾
	C3 Hoa Binh Park			●		*An Dong Market and apartments
Medical/High area	C4 University of Medical and Pharmacy	Line5		●		*Rotary of Hung Vuong Plaza *Medical University
	C5 Thuan Kieu Plaza		● ¹⁾	●		*Thuan Kieu Plaza *Underground space (C&C) ¹⁾
	C6 Cho Lon Bus Terminal			●		*(Cho Lon bus terminal)
	C7 Cay Go					
Urban fringe	C8 Phu Lam Rotary	Line6		●		
	C9 Phu Lam Park			●		
	C10 Mien Tay Bus Terminal	Bus terminal	●		●	*Mien Tay Bus Terminal
Suburban	C11 High-Tech Medical			●		
	C12 Ho Ngoc Lam			●		
	C13 An Lac Three-way Junction	BRT		●		
	C14 Hung Nhon					
	C15 Bau Goc		●		●	*New development area around depot
	C16 Nguyen Guu Phu		●		●	
	C17 Tan Kien		●		●	

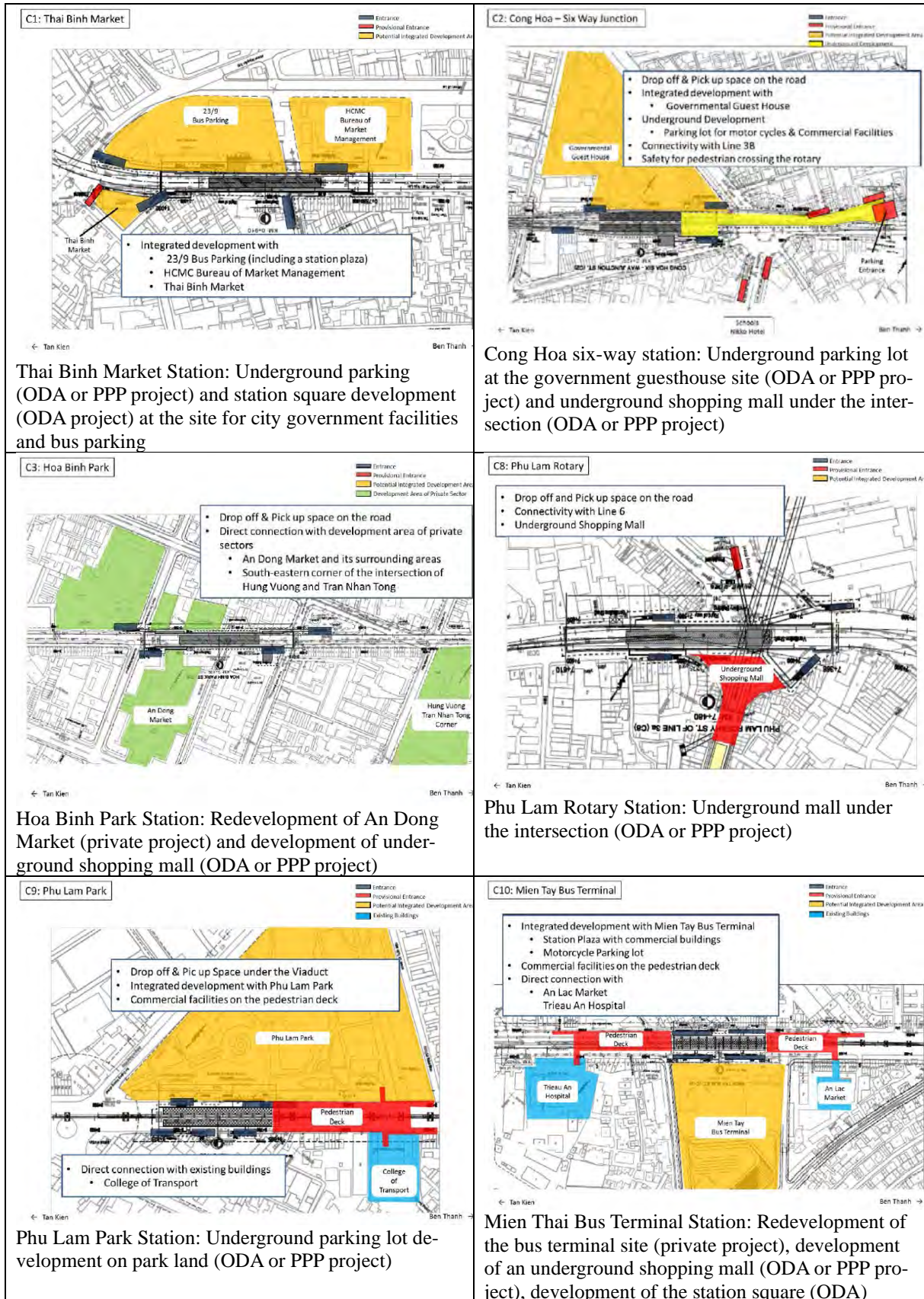
Source: Final Report of MRT Line3A Feasibility Study

In the Line 3A construction project, not only urban railroads and station facilities, but also transportation node facilities and pedestrian facilities will be developed by ODA as railway-related facilities. For this purpose, it is necessary to determine the Right of Way (ROW) as early as possible and to clarify the target facilities.

As in the case of the Line 1 station, once the coordination with relevant organizations on the utilization of public land and the legal system for integrated development and underground development is established, ODA funds can be used for the construction of underground infrastructure connected to the underground station and the development of above-ground transportation and pedestrian facilities, while ODA funds can be used for other revenue-generating facilities (commercial and business facilities).

If the legal system for integrated development and underground development is established, it will contribute to the promotion of integrated development by introducing ODA funds for the construction of underground infrastructure connected to underground stations and the development of above-

ground transportation and pedestrian facilities, and private funds for other revenue-generating facilities (commercial, business, residential, etc.).



Source: JICA Study Team based on Final Report of MRT Line3A Feasibility Study

Figure 4.38 Potential Areas of Integrated Urban Development along Line 3A

4.5 Proposal of Technical Cooperation Project

1) Planning Issues for Promoting TOD in HCMC

Considering the TOD action plan, the major issues and discussion with HCMC are summarized based on past activities with the counterpart organizations and the issues analysis of TOD.

Issue 1: Capacity building activities based on a common understanding of the urban development and public transport sectors. In order to promote TOD, urban development and public transport sectors need to cooperate in the planning and implementation. However, there is a lack of understanding and coordination in TOD between urban development and the public transport sectors at present. Therefore, having a consensus of the objectives and future vision of TOD and responsibilities of each and formulating plans and strengthening their capacity while ensuring consistency and cooperation among sector plans are a challenge for them.

Issue 2: Necessity of urban development plan formulation and institutional development based on the legislative city plans, etc. It is necessary to revise legislative city plans and zoning plans based on these plans and to promote land use regulations, private investment guidance, and related facility development for TOD promotion. Therefore, in formulating TOD plans, it is required to indicate in detail the urban structure, land use planning, and urban development policies of the areas along Ho Chi Minh City Line 1 according to scientific analysis of urbanization trends, etc. In addition, as measures to realize the various plans, institutional development (such as ordinances that can be implemented by HCMC) and strengthening of organizational structures are essential.

Issue 3: Response to public transport project management through collaboration between government and private sector. The Urban Rail Line 1 project of Ho Chi Minh City is under the management of MAUR and operations by HCRC1. The operators of existing buses running along the line are under DOT/MCPT license. In addition, there are other transportation providers of cabs and ride-hailing services, so collaboration between the government and the private sector is essential for public transportation projects after the opening of urban railroads. In order to achieve a strategic modal shift to public transport, cooperation between the government and the private sector, concrete plans for service improvement, and clarification of the roles and responsibilities of the government and the private sector is necessary.

Issue 4: Effective knowledge transfer for planning and implementation capacity of C/P agencies. Long-term and continuous activities (such as strategic planning), coordination and implementation of measures among related agencies based on the plan, and review of the plan according to the progress are required to promote TOD. Since the C/P agencies, Ho Chi Minh City Department of Planning and Building, and Department of Transportation, will play a focused role in these activities, it is important to improve their planning capacity and coordination system, as well as the coordination capacity of various stakeholders, such as other related agencies, private sector operators, and residents.

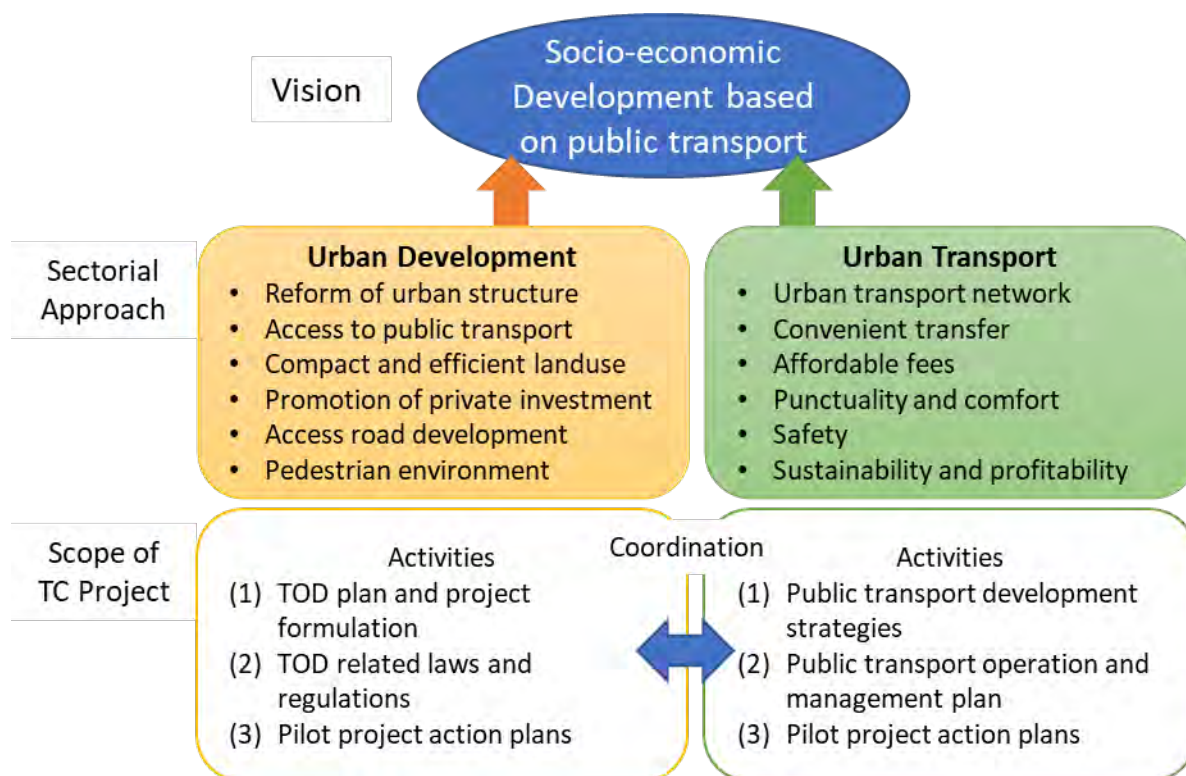
2) Basic Concept and Main Activities of the Technical Cooperation Project

The proposed basic concept of TOD promotion is shown in the figure below. In the technical cooperation project, the future vision of public transport-oriented cities is that public transport will be the center of socio-economic activities for many citizens, and the basic concept of TOD promotion, including urban development and sectoral approaches to public transport, will be discussed and shared

with C/P organizations. The activities will be carried out in consultation with them.

Based on the “TOD Promotion Program,” the JCC will prioritize policies with HCMC, build inter-organizational cooperation, and establish a framework for public-private partnership and citizen participation through its activities.

Furthermore, the main activity targets of this project, which are related to urban development and public transport, as listed from (1) to (6) in the figure below, will be formulated based on this sectoral approach to align with the targets. At the technical meetings for each plan formulation, training programs in third countries, and domestic training programs, opportunities will be provided to share the progress of both parties to ensure mutual coordination between urban development and public transport, and to ensure consistency of the plan contents.



Source: JICA Study Team

Figure 4.39 Activities of TOD Capacity Development Project based on Basic TOD Concept

Activity 1: Construction of TOD plans and projects

In HCMC, DOT mainly studies TOD, and the plan will be secured by the approved Tu Duc City Plan, HCMC Plan (scheduled to be updated), and the TOD plan along Line 1.

Based on these plans, the project will prioritize TOD projects and provide technical support for the establishment of a system to implement priority projects and for their commercialization.

Activity 2: Construction of related framework for TOD promotion

In order to maximize the effect of development along the rail line, TOD guidelines and various frameworks will be established for HCMC as:

- Preparation of TOD guidelines for HCMC (planning process, project implementation, realization measures for organizations and institutions, etc.)
- Guidance on development regulations in TOD districts (facilitation of the development permit

system, development of public utility facilities in mixed-use districts, setbacks to secure road space, burden on developers for development of public infrastructure facilities through floor-area ratio bonuses, etc.)

- Diversification of the railway business (utilization of railroad land (space under elevated tracks, etc.), commercial development, etc.)

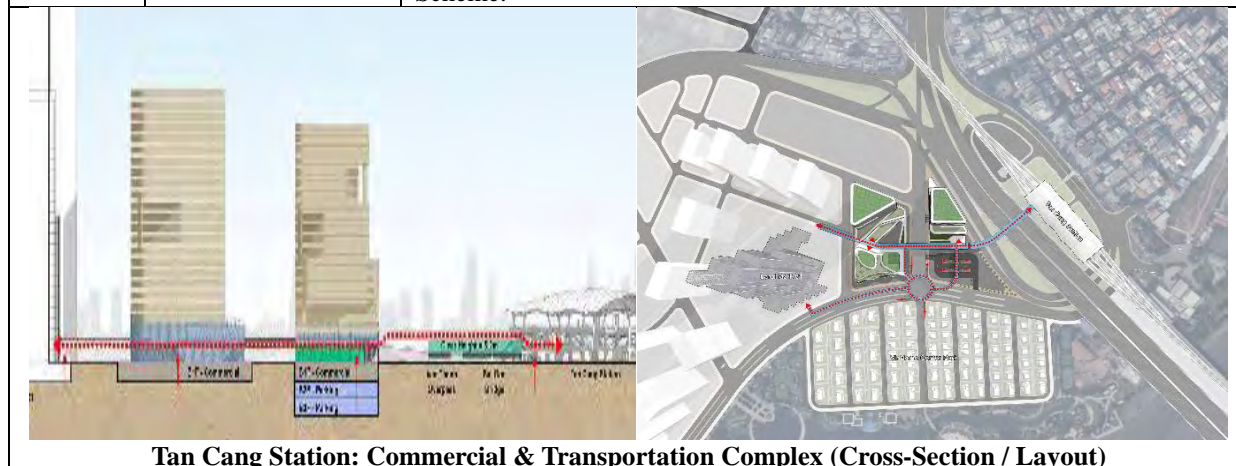
Activity 3: Formulation of a pilot project action plan for urban development

Considering typical challenges and needs of HCMC, it is recommended that Pilot Projects for Multi-modal Hubs, PPP Schemes for Intermodal Transportation Facilities and Redevelopment should be implemented. Through these pilot projects, implementation methodology of TOD in HCMC are expected to be established. The pilot projects are shown as follows:

- Tan Cang Station : Mixed used development in the Army Land and transportation terminal by PPP Schemes (Refer to Table 4.12)
- Phuoc Long Station: Confirmation and verification of various procedures related to updates of zoning plan of the container yard; Due diligence of smart technology for the smart city development (Refer to Table 4.13)
- Van Thanh Park Station: Phasing and overall development (Land Readjustment and Floor to Land Use Right Swap) in the existing urban area in front of the station (Refer to Table 4.14)
- National University Station: Phasing and overall development (Land Readjustment and Floor to Land Use Right Swap) in the existing urban area in front of the station (Refer to Table 4.14 ; Expansion to TOD around the university village. (Refer to Table 4.14)

Table 4.12 Proposed Pilot Projects in Tan Cang Station Area

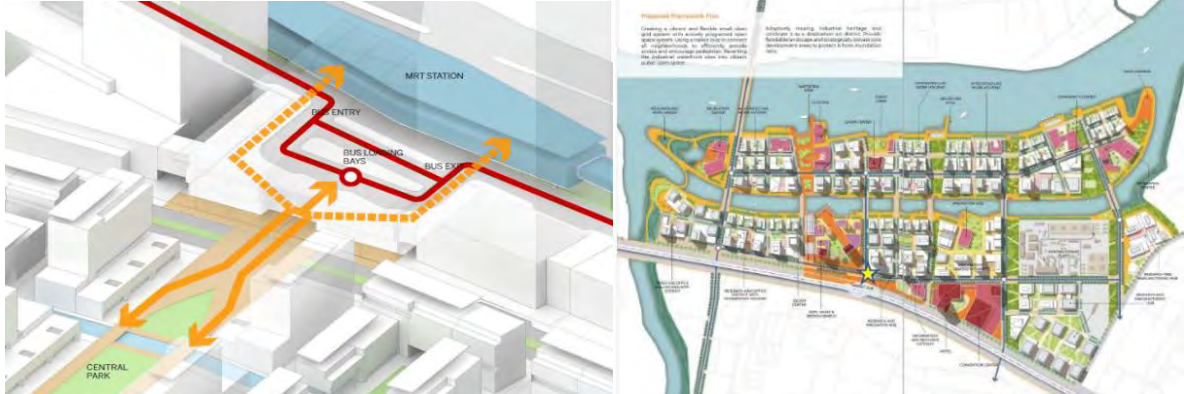
Station	Challenge	Pilot Project
Tan Cang Station	Transportation Hub for the Multi-modal Transportation	<p><u>Purpose: Transportation Hub / Implementation of the Feeder Transportation System</u></p> <ul style="list-style-type: none"> • Development of Station Building, Station Plaza, Passageway and Pedestrian Bridge, etc., considering Metro line 5, BRT, Feeder Bus and Pedestrian network. • Implementation of commercial & Transportation complex terminal by PPP Scheme.



Tan Cang Station: Commercial & Transportation Complex (Cross-Section / Layout)


Source : JICA Study Team

Table 4.13 Proposed Pilot Projects in Phuoc Long Station Area

Station	Challenge	Pilot Project
Phuoc Long Station	Realization of large-scale urban development planned by Thu Duc City and public transportation plaza	<p>Purpose: Improvement of PPP Scheme in the public land</p> <ul style="list-style-type: none"> • Commercial and Transportation Complex Terminal by PPP scheme • Infrastructure development in the large-scale development • Realization of feeder transportation system for the smart city (On-demand transportation, micro mobility, autonomous vehicle and MaaS, etc.)
		<p>Phuoc Long Station</p> <p>Station Plaza and Station Area Smart City Development Plan in the container yard</p>

Source: Local Developer (Left Figure), Thu Duc City (Right Figure)

Table 4.14 Proposed Pilot Projects in Van Thanh Park and National University Station Area

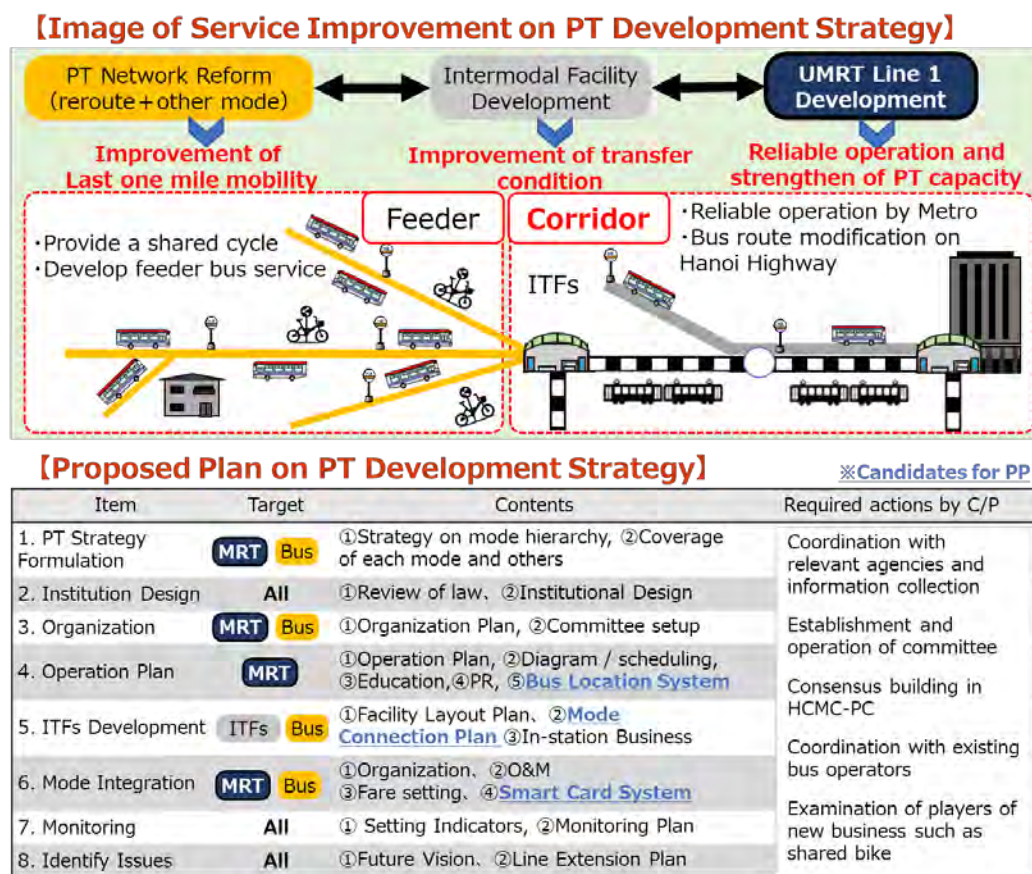
Station	Challenge	Pilot Project
Van Thanh Park Station	Realization of Station Plaza and city planning road in the residential area	<p>Purpose: Urban redevelopment scheme (Land Readjustment Scheme, Floor to Land Use Right Swap) in the mid & long-term</p> <ul style="list-style-type: none"> • Floor to land use right swap scheme near the CBD area • Land readjustment scheme in the suburban area
National University Station		
		<p>Proposal on Land Readjustment Scheme</p> <p>Van Thanh Station Area (Approx. 28ha) National University Station Area (Approx. 18ha)</p>

Source: JICA Study Team

Activity 4: Public Transportation Improvement Strategy

The proposal of transport service improvement in the Urban Rail Line 1 corridor for public transport strategy development and the planning items are shown in Figure 4.40.

Eight planning items are summarized in Table 4.15. Items 1 to 7 are assumed to be activities to be implemented in conjunction with the opening of the Urban Rail Line 1, and item 8 is for future studies, such as the extension plan of Line 1. The consultant team will lead the technical study while the C/P will collect the necessary information, coordinate with relevant organizations, and build a consensus within the city government.



Source: JICA Study Team

Figure 4.40 Image of Service Improvement on Public Transport Development Strategy

Activity 5: Public Transport Operation and Management Plan

Based on the results of the study in Activity 4, a public transportation operation and management plan for the area along Urban Railway Line 1, including the items listed in the table, will be prepared

Table 4.15 Planning Items and Contents of Public Transport Operation and Management Plan

Planning Items	Content
1. General provisions	Purpose of the Operation and Management Plan, cooperation between the city and the operators
	Public city-oriented city (philosophy, future vision, public transport for promoting urban development)
2. Outline of legal system	Laws related to public transport, road traffic and traffic safety
3. Organization	Clarification of the roles and responsibilities between the city and the operators
4. Operation plan	The operation plan will be developed using the existing bus boarding and alighting passenger data, user questionnaires, and the results of traffic demand forecasting models.

5. Service plan	Discussion of measures to improve service at workshops, etc., and consideration of schedules adjustment for users' convenience.
6. Vehicles and personnel allocation planning	A manual will be created to explain the necessary knowledge of crew members, such as labor management (policies for work schedules (shift schedules), working conditions (rest periods, continuous driving hours, rest environment)) and user services (cleaning, greetings, accommodating the disabled, gender, foreign languages).
7. Contract management	Consideration of operator incentives after summarizing the results of bus operation concessions between the city and bus operators, contracts between the city and fare collection administrators, etc.,
8. Monitoring	Examination of methods for the city and bus operators (managers and crew) to understand and monitor revenue (fare revenue, non-fare revenue), number of users (OD data), timeliness (GPS), and safety (number of accidents).
9. Financial plan	Preparation of annual and monthly financial statements (balance sheet, profit and loss statement, and financial plan) for the city and bus operators for both budget and settlement.
10. Fare setting	At the start of operation, income and expenditure will be formulated for appropriate fare setting. In addition, the transit discounts between buses (including microbuses) will be formulated to improve user convenience.
11. Public relation	Measures to encourage modal shift will be considered, including the implementation of campaigns to promote the use of the system, traffic safety classes for citizens, and education for elementary school students on bus usage.

Source: JICA Study Team

Action 6: Formulation of transport pilot project action plan

Regarding efforts in conjunction with the opening of urban railways, it is proposed a pilot project as a demonstration activity at priority stations based on the contents of the public transportation development strategy formulated in activity 4. The overall concept (draft) of the pilot project is proposed as follows.

- Objective : Aiming to provide attractive mobility services comparable to convenient motorcycles, aiming to create new values and lifestyles in areas along railway lines.
- Keywords : "Personalized", "Pursuit of continuity". We will also seek cooperation with various partners that go beyond the framework of mobility, and make efforts aimed at realizing "easiness of movement" for each person living along the urban railway line 1.

The draft of the pilot project envisioned at this stage is as follows, to create added value for railway use, centered on smart cards scheduled to be introduced on Urban Railway Line 1.

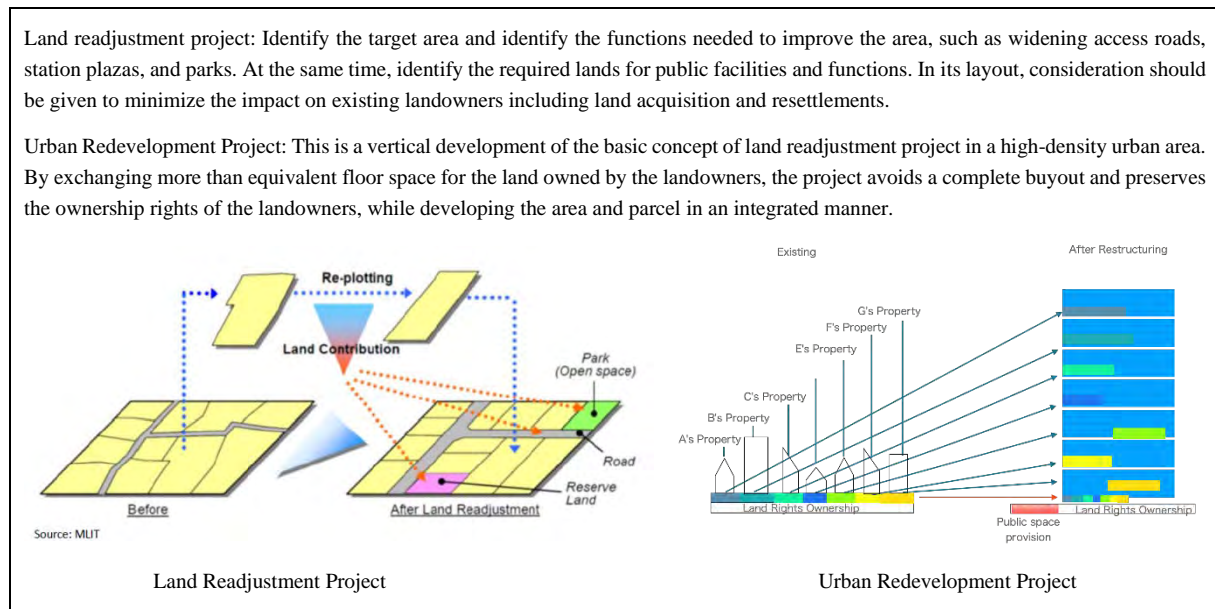
- Providing real-time public transportation information (Including bus location system).
 - Centralization and provision of information related to public transportation. Centralization of transportation service applications that differ for each operator, such as bus service applications (Bus Map) and vehicle dispatch applications (Grab). Provide easy-to-understand information on transportation from the station to the final destination.
 - Providing operation information (Urban railway line 1 and feeder bus, etc.) . Provides real-time information within a centralized transportation service app.
- Providing last one mile mobility (Mode connection) : In addition to feeder bus routes, it should be introduced P&R services, taxis / motorcycle taxis, personal mobility, demand buses, etc. that are attractive to users and can be selected. As for the transportation modes that will be able to provide, business model should be planned as a pilot. In that case, it will be required to coordinate with the function of reservation and payment.

- Integration of payment systems for the realization of MaaS (Payment system) :
 - Standardization of public transportation fares, introduction of an IC card system that can be used interchangeably between railways and buses, and consideration of future ABT (Account Based Ticketing) support
 - Coordination of reservation and settlement in Urban Railway Line 1 and Last One Mile Mobility. The cooperation of the payment system is not limited to the traffic mode, but also the cooperation with the in-station store and the provision of event / spot information in the area, aiming to achieve the goal shown in the overall concept of the pilot project.

4.6 Recommendations for JICA Cooperation

The main issues and recommendations for promoting TOD in HCMC, as discussed through individual consultations with each department and three Joint Meetings (ICR consultation in February 2021, ITR consultation in September 2021, and DFR consultation in January 2022), are as follows;

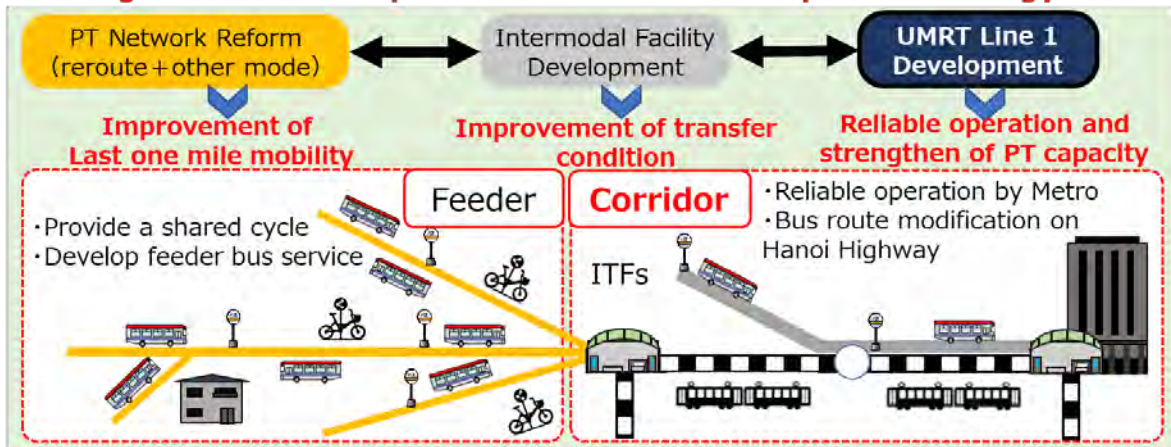
- (1) **Revitalization of built-up areas along Line 1:** Most of the areas along Line 1 are built-up areas, and unused lands in front of the station and lands available for development are limited except for a few stations (e.g. Phouc Long station). There is a need to reorganize land use from residential to mixed use, and to establish land readjustment projects and other development methods in built-up areas. An overview of land readjustment projects and urban redevelopment projects is shown in Figure 4.41 (for details, refer to the “Final Report Part 1 Institution” of the study).



Source: JICA Study Team based on MLIT information

Figure 4.41 Land Readjustment Project and Urban Redevelopment Project

- (2) **Modal shift that considering mobility characteristics of HCMC citizens:** Many citizens are motorcycle users, and many of them either access their destinations directly or stop by to pick up or drop off their children, etc. Therefore, sufficient demand for rail use cannot be expected from long-distance commuters by urban railway alone. Based on the lifestyle and mobility characteristics of citizens, it is necessary to implement a comprehensive modal shift by reorganizing the transportation network to include feeder services, motorcycles, and bicycles, and developing transportation nodes where buses, private cars, and motorcycles can be used.

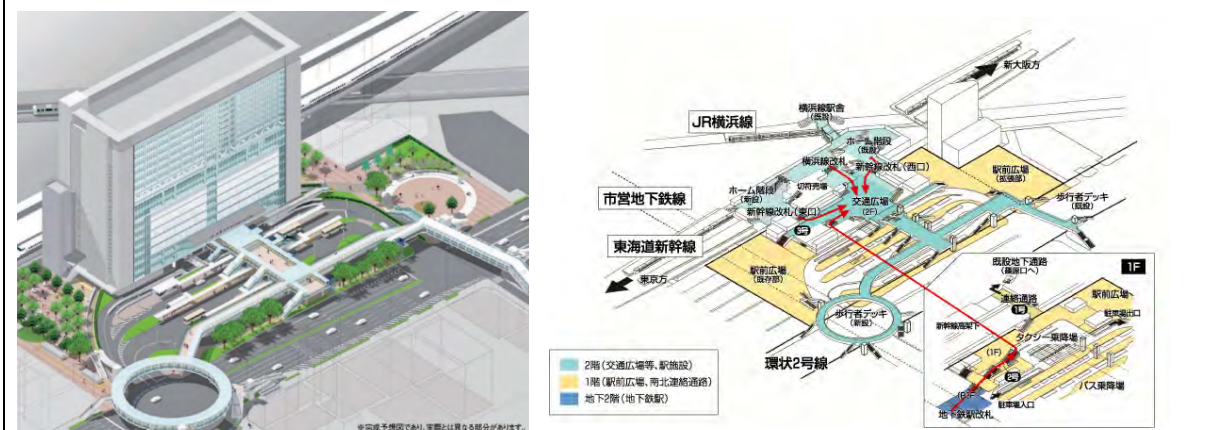


Source: JICA Study Team

Figure 4.42 Concept of Modal Shift along Line 1

- (3) **Complex terminal development:** The station plaza is the hub of railways and other transportation modes, and it is an important facility that smoothly handles the large volume of traffic that gathers in front of the station, as well as improving the convenience of transfer between transport modes. In particular, the lands in front of the station in the center of the city are valuable, so the development of a vertical commercial and transport complex terminal will be necessary in the future. However, in Vietnam, the handling of land rights, cost sharing and management sharing in private development projects involving public infrastructure are unclear. It is necessary to plan and promote such development projects under an appropriate role sharing mechanisms in cooperation among the public sectors in charge of urban, transport and railways and the private sector in charge of urban development (see Figure 4.43 for reference).

In Japan, guidelines and institutional systems are established to secure desirable transportation and urban functions in an integrated manner through cooperation between the public and private sectors by utilizing the space above station squares, such as station plazas, in conjunction with the upgrading of station plazas and the development of station buildings. At Shin-Yokohama Station, which is used by approximately 200,000 people per day, a multi-modal hub that includes Shinkansen, subway, bus, taxi, and other transport modes is developed, and a vertical transport node is developed based on the intersection of people and vehicles and the elimination of traffic congestion on the surrounding roads.

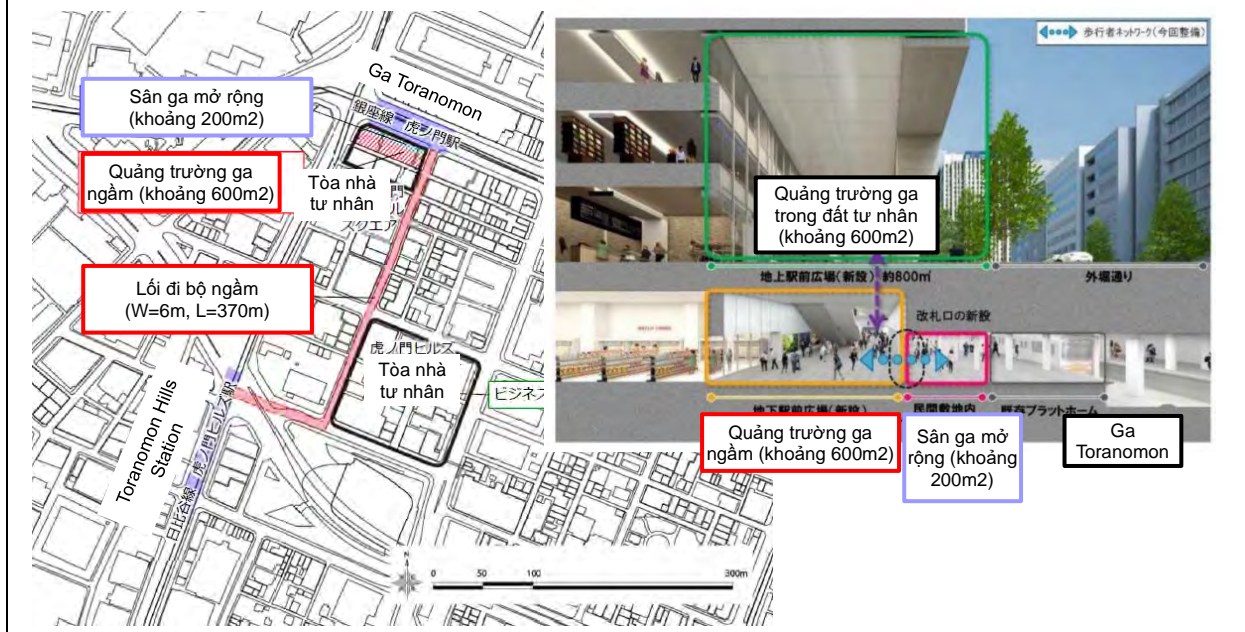


Source: MLIT (left figure), City of Yokohama (right figure), JICA Study Team

Figure 4.43 Complex Terminal Development by PPP Scheme (Shin Yokohama Station, Japan)

- (4) **Public-private partnership for underground development:** In the limited land available in the city center, the development of underground space, including not only public land such as railways and roads, but also private lands, will provide a comfortable walking space and create new commercial opportunities. For the development of the underground space at Ben Thanh Station, it is necessary to clarify the roles and responsibilities of the public and private sectors, including the cost burden and maintenance and management mechanisms, to ensure the convenience of transfers to and from other urban railways to be constructed, and to connect and integrate the development of commercial facilities around the station. Figure 4.44 shows an example of underground development in Japan that utilizes private land.

In some urban areas in Japan, station facilities and passageways are expanded and improved in adjacent private land in order to maximize the limited station space. In the case of Toranomom Station in Tokyo, the widening of the station platform, the underground station plaza, and the underground passageway connecting the subway are all constructed on private land. In the case of the Toranomom Station Area Development Project, which utilizes the Urban Renewal Special District System of MLIT, the private sector has been given an incentive to relax the FAR by providing land and covering part of the construction costs of public infrastructure.



Source: MLIT, Japan

Figure 4.44 Example of Underground Development using Private Lands (Toranomom Station, Japan)

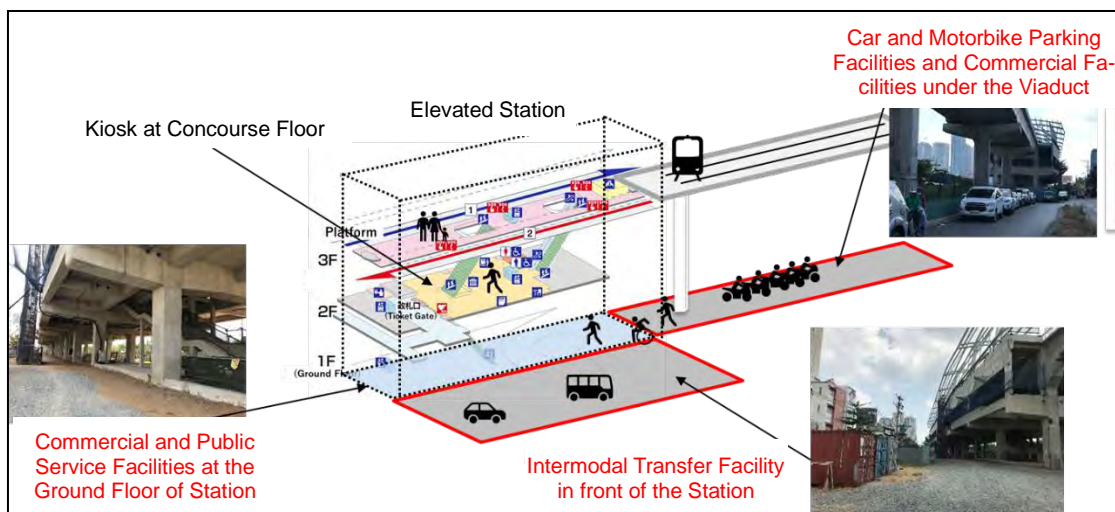
- (5) **Land Value Capture (LVC) mechanism through TOD promotion:** Recovering the cost of railway infrastructure development through TOD promotion is difficult under the current legal system in Vietnam, which does not have a well established property tax system. In order to link TOD promotion to securing public revenue, it is desirable to improve the tax system in the medium to long term, but institutional improvements such as providing incentives to private investment such as relaxation of FAR and utilization of railway land can be achieved through deregulation and development of guidelines by the HCMC People's Committee. For example, the use of space under the elevated railway viaduct is limited to railroads and public purposes (greenery, parking, etc.) according to the Railway Law in Vietnam. The utilization of the railway land will not only improve convenience for users, but also revitalize the local economy and increase profits (see Figure 4.45 and Figure 4.46 for reference).

In recent years, the space under the elevated railway viaduct has been used not only for parking but also for commercial facilities and other purposes in Japan, due to its location close to stations and lower land prices than the surrounding areas. There are three legal systems regarding utilization of space under the elevated railway viaducts: (a) railroad construction (Railway Related Laws), (b) construction under elevated viaducts (Building Code, Urban Planning Law, etc.), and (c) utilization of space under elevated viaducts (lease agreements for space under elevated viaducts, etc.). The Railway Law is a legal framework for railway tracks and facilities, and does not refer to the space under the elevated tracks. In addition, the Building Code and the Urban Planning Law contain restrictions on building permits, building restrictions, and the impact on the surrounding area, etc. The use of the space under the elevated railway viaducts is promoted in compliance with these legal systems.



Source: Tokyo Metro (figure), JICA Study Team

Figure 4.45 Legal Basis of Utilization of Space under the Elevated Railway Viaducts in Japan



Source: JICA Study Team

Figure 4.46 Proposal on Utilization of Railway Facilities and Lands of Line 1

- (6) **Formulation of TOD guidelines:** In order to promote TOD in the areas along the urban railways including Line 1, it is desirable to develop TOD guidelines that can be shared by the DPA, MAUR, DOT and other departments related to TOD. Based on the TOD guideline, planning, land management, management of urban development project, and consensus building among stakeholders based on TOD policies are expected to enhance the feasibility of TOD and promote capacity building and organizational strengthening of relevant departments. The main items of the TOD guideline are proposed as follows;
- Basic principle, vision and strategy of TOD
 - Procedure to select railway alignment and station location, station typology (CBD station, suburban station, transit node station, etc.)
 - Planning elements of TOD and major TOD projects

- Coordination with related plans (General Plan, Detailed Plan, Transport Master Plan, Urban Railway Construction Plan, etc.)
- Transport improvement measures (feeder services, traffic management, mobility management, etc.)
- Implementation plan for infrastructure development (station plaza, boarding and alighting facilities, access roads, pedestrian facilities, etc.)
- Urban development project measures
- Regulatory and guidance measures (FAR bonus, setbacks, burden of public facility development, tax incentives, etc.)
- Project methods (land acquisition for public infrastructure facilities, land readjustment projects, redevelopment projects, etc.)
- Implementation structure and financial sources
- Others (barrier-free/universal design, gender, environmental and social considerations, disaster prevention measures, etc.)

4.7 The Way Forward

With the opening of the Line 1 coming in a few years, the various departments of HCMC are working on the promotion of TOD, especially as follows;

- DPA: Revision of the HCMC General Construction plan, formulation of the Thu Duc City General Construction Plan, revision of the Zoning Plan for the area along Line 1, and coordination with related agencies to promote TOD.
- MAUR: Preparation for the construction, opening and operation of Line 1, planning and design of other urban rail lines and BRT
- DOT: Improvement of feeder services, study of transportation node facilities development

In this JICA study, the following three JICA cooperation projects are proposed to address the challenges of promoting TOD in HCMC.

- Program loan based on TOD policy (promotion of TOD policy and realization of small-scale infrastructure development)
- Sectoral loans for TOD-related infrastructure development (intermodal transfer facility development along Line 1, development of underground space at Ben Thanh Station, and development of TOD-related facilities on Line 3A)
- Technical cooperation projects for TOD capacity building and institutional development (formulation of strategies and plans for urban development and urban transport, verification through pilot projects, institutional improvement and capacity building)

At the joint DFR meeting held on January 26, 2022, the following comments were made on the above JICA cooperation proposal.

- Land Value Capture and financing mechanisms also need to be specifically understood and planned. Mechanisms that can apply LVC to railway infrastructure development are needed.
- Most of the areas along Line 1 are built-up areas, making new development difficult. Since there are many small-scale plots, new development methods such as land readjustment are required.
- The development of the Ben Thanh Station underground shopping mall should be funded by the private sector, not by loans, because the land has high added value. This was proposed in a past PPP-FS, but the development of an underground shopping mall with loans was not realized.
- Thu Duc City is currently in the process of preparing a general plan and needs technical assistance in planning, especially for improving accessibility along the Line 1.
- From the perspective of securing ridership on Line 1, planning and implementation of measures that take into account the lifestyle of residents along the line are required to realize modal shift.
- Applying for program loans and sector loans will be very difficult because it will be necessary to explain to the People's Committee why loans are needed instead of private funds and the benefits of project implementation.
- JICA's cooperation for capacity building, institutional improvements, and the development of TOD guidelines are expected.

Departments of HCMC have high expectations for technical assistance for capacity building and institutional improvement with revisioning of various plans related to TOD. In terms of public

infrastructure development, while expecting to utilize private investment, they were skeptical about the application of public budgets and loans.

For the private sector, infrastructure development is a highly public project, but at the same time, it is not profitable and requires coordination with public projects, resulting in an excessive burden of project costs and the risk of project delays. For public infrastructure projects such as station plazas and underground spaces, it is important to consider a variety of project menus and financing methods, such as ODA-funded development and private sector's investment (as a public contribution) through incentives such as FAR relaxation, as well as to establish a division of roles and project schemes between the public and private sectors, rather than simply choosing between the Vietnamese government budget and private sector contribution. In addition, it is necessary to establish the division of roles and project schemes between the public and private sectors.

Based on the results of this study and the proposals of these JICA cooperation projects, as well as the contents of the TOD promotion program and recommendations, it is expected that the DPA and other related organizations will consult and coordinate, and that the People's Committee will recommend TOD-related policies and promote various related projects.

**Data Collection Survey on Urban Planning and Transit
Oriented Development
In Ho Chi Minh City and Hanoi
Final Report**

Part III - Hanoi city

PART III

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Abbreviations

B	BOLT	Build – Operate – Lease – Transfer
	BOOT	Build – Own - Operate - Transfer
	BOT	Build – Operate – Transfer
	BT	Build – Transfer
	BRT	Bus Rapid Transit
C	CBD	Central Business District
	CPI	Consumer Price Index
D	DOT	Hanoi Department of Transportation
	DPI	Hanoi Department of Planning and Invest- ment
	DPA	Hanoi Department of Planning and Architec- ture
E	EIA	Environmental Impact Assessment
F	FAR	Floor Area Ratio
	FIRR	Financial Internal Return Rate
G	GDP	Gross Domestic Product
	GRDP	Gross Regional Domestic Product
H	HPC	Hanoi People’s Committee
	HUPI	Hanoi Urban Planning Institute
J	JICA	Japan International Cooperation Agency
	JST	JICA Study Team
L	LVC	Land Value Capture
M	MRB	Hanoi Metropolitan Railway Management Board
N	NH	National Highway
O	OD	Origin Destination
	ODA	Official Development Assistance
P	PPP	Public-Private Partnership
R	ROW	Right of Way
	RR	Ring Road
S	SPC	Special Purpose Company
	SDGs	Sustainable Development Goals
T	TOD	Transit Oriented Development
U	UMRT	Urban Mass Rapid Transit
	USD	United States Dollar

Part III Hanoi

Summary

Challenges in TOD of Hanoi

Given the rapid population growth of Hanoi, i.e., an 8.9% increase in the four years from 2015 to 2019, the traffic volume increases even more conspicuous. The number of road passengers increased from 290 million/year to 420 million/year in the same four years. As a result, the traffic congestion is getting worse. The biggest urban problem is the delay in the expansion of the public transportation system, especially the development of urban railways, which is regarded as a solution to the transportation problem.

In terms of TOD-related plans, the General Construction Plan, which is the primary urban plan in Hanoi, was formulated in 2011, and the Urban Transport Master Plan was formulated in 2015.

The General Construction Plan, 10 years after its formulation, has been placed in a revision process since 2021. According to the current schedule, the city government is to complete the scoping work within 2022 and then bid for consultants internationally in 2023, to be followed by the full-scale revision work.

As a result of analyzing accessibility based on the estimated population of residents and workers in the TOD area with a radius of 500 m from the station by urban railway line/phase, it was found that about 40% of the working population and about 20% of the resident population of Hanoi City can access the urban railway by the Lines 2A, 2-1 and 3-1. The results confirm the importance of these three routes.

In order to establish an urban railway as a primary public transportation network, it is necessary to consider the implementation sequence of the lines following the first three lines. The medium-term reexamination of the priorities of urban railway plans is one of the important issues to be addressed in the review of Hanoi's urban master plan that has just begun. On the other hand, the ring roads (Lines 8 and 7) are planned along the ring roads, and it is considered necessary to re-examine the purpose, effectiveness, and economic efficiency of the second priority lines. From the perspective of TOD, it is desirable to re-evaluate the priorities and alignments of the extension lines to the suburbs, which could have a large impact on economic and social effects and modal shifts.

As a result of analyzing accessibility based on the estimated population of residents and workers in the TOD area with a radius of 500 m from the station by urban railway line/phase, only urban railway lines 2A, 2-1, and 3-1 were available. It was found that about 40% of the working population and about 20% of the resident population of Hanoi City can access the urban railway. The results confirm the importance of these three routes.

The General Construction Plan, Hanoi's urban master plan, planned to significantly reduce the population of the eight central districts of Hanoi by 2020, but in reality, all other districts except Hoan Ki-em showed increasing trends. One of the reasons is the delay in the development of urban infrastructure, especially the development of the public transportation system, which is a primary means of commuting from the suburbs. While Hanoi's urban planning needs to improve the accuracy of population projections by incorporating all the related data such as private investment and market trends, the pace of public investment, and urban demographics. Population forecasting should set more scientific goals rather than the planner's desired goals. The urban master plan should aim to

create an integrated plan for urban structure and mobility, such as the placement of residential areas and work areas. In addition, in the current urban master plan, the central business district of Hanoi remains a stand-alone type, but it is necessary to consider an urban structure with multiple business cores. Extension of residential areas to the suburbs, development of urban railways, and planned housing development will improve urban productivity. The revision of the Urban Transport Master Plan, at least for the public transport sector from a TOD perspective, is essential.

Proposed TOD Projects

As for the ODA loan formation along the Urban Railway Line 2 Phase 1, which is one of main objectives of this study, the project formation was based on the criteria as follows:

- Feasibility of government-led land assembly
- Combined urban and transportation functions
- Possibility of high-density development
- Contribution to urban rail travel demand
- Real estate investment value

Identified with the above conditions were the two potential projects of C2 Park Station and Upgrading of Xuan Dinh Depot to Integrated Gateway projects, which aim to create new transport hubs. The projects were selected on the basis of possibility to implement independently even before the start of the Phase 1 of Urban Railway Line 2. including intercity buses, by modifying the base.

C2 Park Station

Station C2 is located on the west side of the Khu Ngoai Gia Doan Park. Currently, the Korean embassy is located on the north side of the park, but in the future, it is planned to be developed into an embassy district surrounding the park. During the weekday daytimes, park visitors will be limited since the activities of an open green space are limited. That means the maximization of land value is not realized. Therefore, JICA Study Team proposes to provide a commercial space that is contiguous to the station, and in addition, provide an office or residential space for an upscale clientele where people can enjoy the excellent scenery of the park.

The proposal is modelled after the Park-PFI Program in Japan. The system is basically the commission of park management to the private sector and allowing more flexible utilization of parks as assets. Private operation can reduce park management expenditures and improve user experiences. The operator is required to pay a certain percentage of the payment and business profits to the park management municipality in exchange for permitting private commercial use in the park under Park-PFI.

Upgrading of Xuan Dinh Depot to Integrated Gateway (Tri-MOD Center)

There are currently no plans for a station at the Xuan Dinh depot on Urban Railway Line 2. Of the 16ha of land for this depot, the facilities that require the most space is the track for stabling rolling-stocks. Most of these stabling spaces are future reserve spaces that will not be used for about 20 years even after the opening of Line 2.1, and are inefficient use of spaces economically. If the function and space of this depot can be compressed, the possibility of using it as a more economical urban space opens up. The distance from the western end of the depot to Ring Road No. 3 is less than 300 m.

There is a scope for improving the public transit connectivity, if a Line 2.1 station is added together with a bus terminal facility for intercity high-speed buses. The station will evolve to a western gateway of Hanoi City. The model is the case of Shinjuku Expressway Bus Terminal in Tokyo. A plan that incorporates future remodeling options will further reinforce the role of the urban railway line 2 as a core line.

The widening of Nguyen Hoang Ton Road will require the relocation of 500-600 houses, and the construction of the depot will require the relocation of about 150 houses. Such relocations generally require a long time to negotiate, but the land readjustment method introduced in Part I is better suited as a way to expedite the relocation process and relieve the hardship of residents. Road widening alone cannot generate enough space for plot adjustment. The involvement of part of the depot could offer some area for land readjustment.

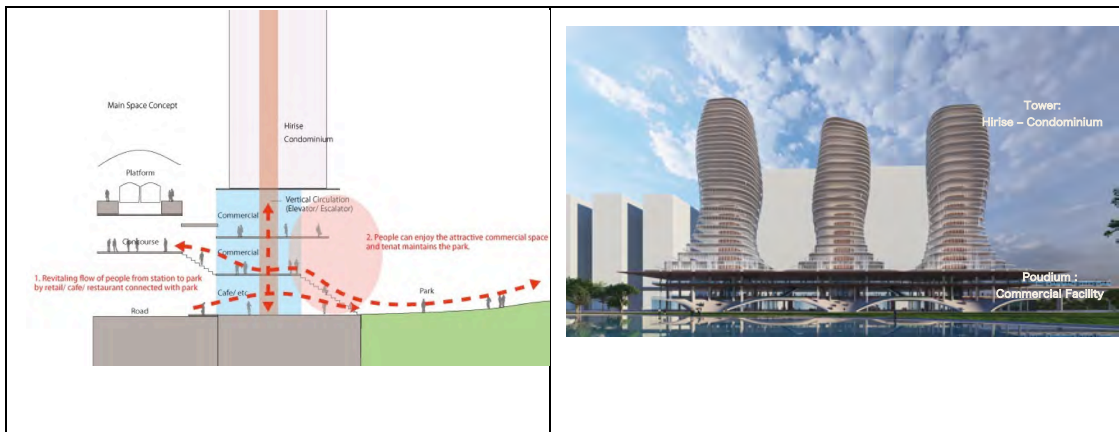


Figure 1 Conceptual Plan for C2 Park Station TOD Plan



Figure 2 Tri-MOD Center (Xuan Dinh Depot Upgrading) Concept

The Way Forward for JICA Cooperation

ODA Loan

The above-proposed TOD sector loan combines an ODA loan and private investments as described in the Xuan Dinh Depot Redesign and C2 Park Station projects. Following the development model prescribed in Part I, 4.5 of the development right auction of the public lands assembled by the city government, the estimated land value capture potential is USD 260 million. If the realization of ODA loans is not accepted, it is necessary to explore the possibility of combining the city government budget with private investments, including those by Japanese companies. Even in that case, Japan's technical cooperation support is desired in the area related to the land readjustment project.

The proposal to create a multimodal public transport hub by modifying the current design of the Xuan Dinh Depot, which is the core of the TOD sector loan, has gained wide approval of the concept itself but has raised two concerns. One is the influence on UMRT Line 2.1, and the other is the planning approval procedure.

Line 2.1 is currently in the process of the cost and plan review. After the approval, revising the investment cost again may further delay the implementation of the project. However, the proposed reduction of the depot area will reduce the overall cost. Furthermore, since each of the proposed Tri-MOD Center facilities can be installed independently in a modular manner according to the prevailing situations, the proposed project will not affect the construction schedule of the depot. The current achievement in the land recovery and inhabitant resettlement for the depot's area is approximately 80%. It is probable that the construction of the depot may experience a delay due to the lack of consent of the last few houses for a depot that requires an area of 16 ha. The proposed plan, which includes resettlement accommodations (Tri-MOD Mall) of attractive incentives for resettlement, has the potential to promote the smooth and prompt realization of the railway operation commissioning in the long run.

Regarding the planning approval, the inclusion of the proposed project into the General Construction Plan, which is now under the revision process with the added function of the regional gateway hub linked to the UMRT Line 2, will automatically facilitate the incorporation of the project into the related planning documents including the zoning plan. For this reason, proposed technical cooperation to support the revision of the General Construction Plan is essential.

At present, the interest of related departments in Hanoi City for a new ODA loan, including policy financing, is low. There are multiple reasons. The first reason is the ongoing government's policy to curb the external public debt. The second is the policy limiting the ODA loan to social infrastructures without recourse for financial recovery. Such social infrastructure includes public transportation. The third is that any public investment prospect for investment recovery, including TOD projects, should resort to PPP for the funding.

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Vietnam's private real estate investment is booming as global monetary easing continues. Given the lack of public funding due to the tightening of public debt, including ODA loans, this policy

orientation should continue. After the ban on Build-Transfer PPP format, an effective alternate method, however, is yet to be developed in Vietnam. As pointed out in Part I and III, land use control and building controls are not effectively binding with no effective land value capture mechanism in place in Vietnam; the developer has a free hand in monopolizing development profits. To overcome this situation, as shown in Part I, 4.5, it is essential to develop a proactive PPP method such as auctioning development rights under the premise of effective land use regulation and public-led land assembly in the TOD areas. To lead a PPP, it is essential that city governments undertake public investments to create new development opportunities. The JICA should continue to formulate ODA loans related to such proactive public investments.

Post-corona financial markets and urban development are likely to be impacted significantly. It is necessary to pay close attention to the changes in needs for both fiscal support and urban infrastructure investment support.

Technical Cooperation

Technical cooperation to support the revision of the General Construction Plan proposed in this survey will likely have significant impacts. First of all, it will provide an opportunity to redesign the urban structure of Hanoi from a broad TOD perspective, which is lacking in the current master plan. An urban structure linked tightly to public transport networks is essential to solving the current traffic and environmental problems. The recommendations also include a review of implementation priorities of urban railways, including the next line for implementation as part of the scope. Broad-based data collection and advanced analytical technology as part of cooperation should ensure the rational debates of the cooperation outputs.

The need for technical cooperation should be geared more toward specific TOD implementation capacity development instead of policy levels. Discussions with the relevant authorities of Hanoi have revealed the need to focus on specific projects to extract lessons for institutional design from the implementation experience. When implemented in tandem with specific projects identified by a TOD sector loan or PPP project, the TOD technical cooperation will have a synergistic impact.

1. Challenges in Transit Oriented Development in Hanoi

1.1. Overview of Hanoi city

1) Population

According to Hanoi statistics, the city's population increased from 7.5 million to 8.2 million in the four years from 2015 to 2019 (see Table 1-1). While the numbers of the population decreased slightly in the old urban areas consisting of Ba Dinh, Hoan Kiem, Hai Ba Trung, and Dong Da districts, the population in the peripheral urban areas such as Thanh Xuan, Cau Giay, Long Bien, Tay Ho, and Hoang Mai districts increased significantly by 13% during this period. Suburban and rural areas showed steady increases during this period. While the growth of the overall suburban areas conformed to the average growth, there are several hot spots within the suburban areas. Ha Dong, with a population of 316,000, showed the highest growth rate of 26% among all districts, followed by Thanh Tri district with 15.4% and Hoai Duc District with 12.9%. There was a general population growth tendency towards the south and west.

Table 1-1 Population of Hanoi By Areas

District	Population 2015	Population 2019	Growth bt 2015-19
Core areas	1,059,000	1,052,700	-0.6%
City peripheries	1,400,000	1,581,300	13.0%
Rural sub-urban	5,053,600	5,550,100	9.8%
City total	7,512,600	8,184,100	8.9%

Note: colors correspond to the districts shown in Figure 1-1
 Source: annual statistics of Hanoi

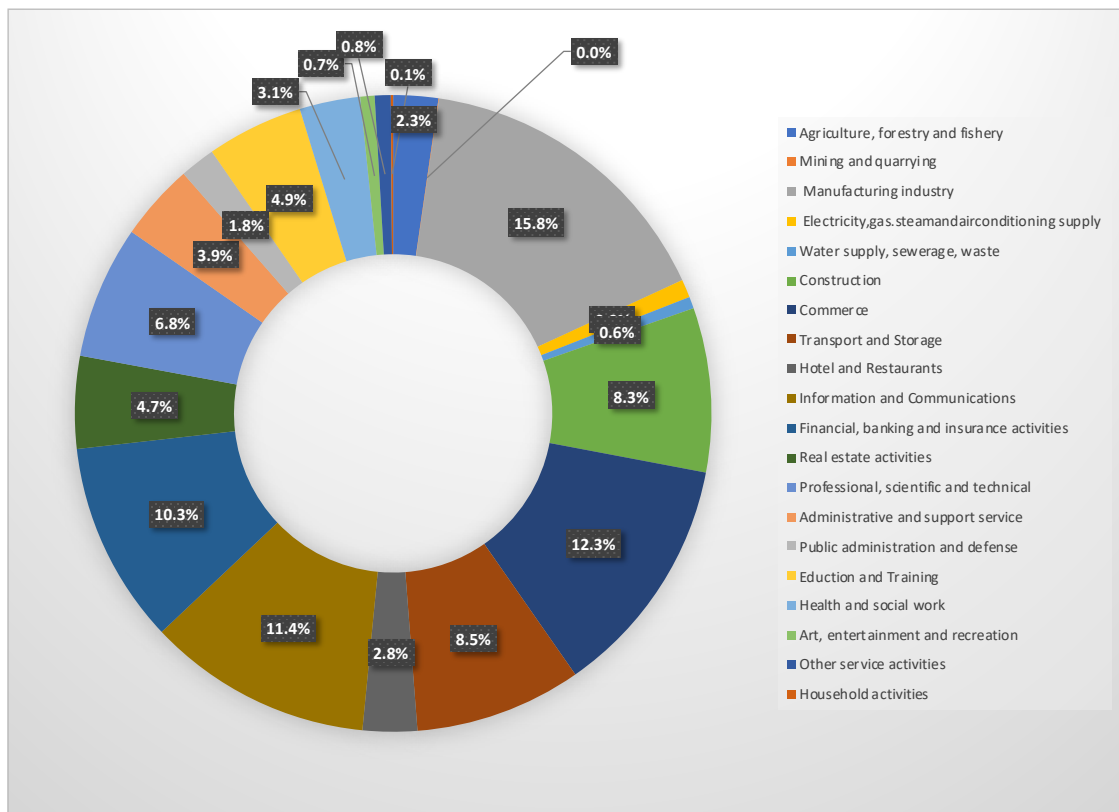


Source: based on METROS GIS data arranged by the JICA study team

Figure 1-1 categorization of districts of Hanoi

2) Economic Structure of Hanoi

Figure 1-2 shows the regional gross national product composition by sector for Hanoi in 2019. The primary and secondary industries, namely agriculture, forestry, fishery, and industry, account for less than 20% of the total outputs, while the tertiary sector accounts for about 80%. The service industry, excluding the construction industry, accounts for 70% of the total GDP, indicating the formation of a highly service-oriented urban economy. At the very least, it means that nearly 70% of the workforce could be commuting from their places of residence to workplaces of offices and stores with an inclination toward central urban locations.



Source: Hanoi annual statistical yearbook

Figure 1-2 Regional Gross Domestic Product of Hanoi By Sector (2019)

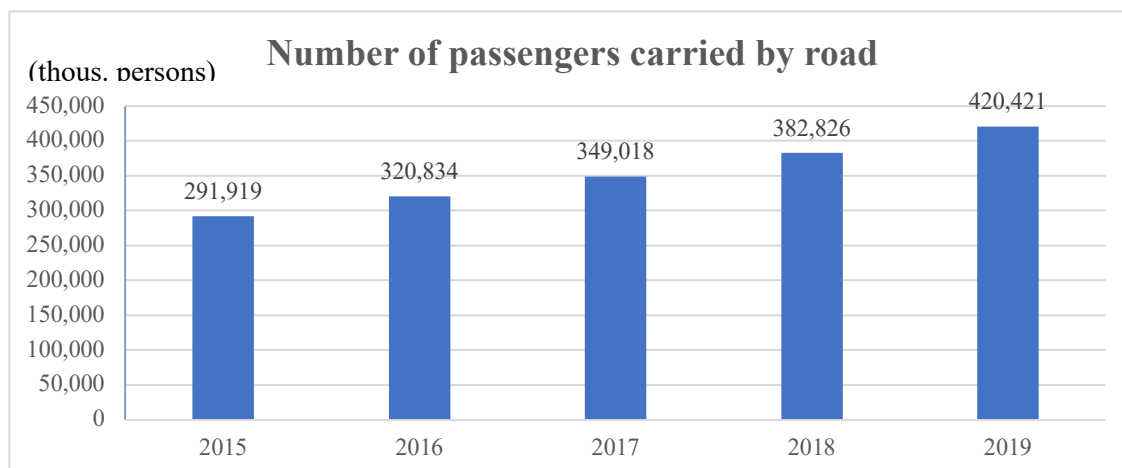
1.2. Current Situation and Issues In Public Transportation

Hanoi's transportation infrastructure is diversifying to include various classes of roads, road bridges, elevated roads, urban bypasses, Vietnamese national railways, urban railways, waterway transportation, airports, cargo yards, river ports, etc. The road network consists of major national roads and highways, narrow urban roads, and small rural roads. The road network also includes ring roads, radial roads, local roads, urban roads, and rural roads.

Hanoi city is an important transportation hub for passengers and cargo in the Red River Delta Region and the whole country. Among the means of transport, road transportation is the main transportation,

followed by waterway transportation. Rail transport constitutes a small proportion of freight transport and inter-provincial passenger transport.

The number of passengers carried by types of transport tends to increase annually. The major transport mode is road transport with more than 99% share. Overall, the number of passengers carried by all types of transport in 2019 reached 421,8 million passengers, an increase of 9.8% compared to 2018; roadway passenger transport reached 420.4 million passengers, a rise of 9.8%; waterway passengers attained 1.4 million passengers with a growth of 9.2%. Figure 1-3 presents the number of passengers carried by road from 2015 to 2019.



Source: Hanoi statistical yearbook

Figure 1-3 Number of Passengers Carried by Types of Transport

Table 1-2 Average Trip Rate shows the overall average trip rates of Hanoi city. The trip rate is the average number of trips per population per day. The trip rate in Hanoi city has been increasing, mainly due to the improvement of the urban infrastructures and an increase in the ownership of motorcycles. Increased economic activities also contribute to increasing trip rates.

Table 1-2 Average Trip Rate of Hanoi

		2005 (HAIDEP)	2013(METROS)
Former Hanoi area	Including walk	2.7	4.0
	Excluding walk	2.0	3.0

* trip rate is defined as the number of trips per day per person.

Source: the comprehensive urban development program in Hanoi capital city of the socialist republic of Vietnam (HAIDEP), JICA, 2005;

Data collection survey on railways in major cities in Vietnam (metros), JICA,2013

The main issues facing urban transportation in Hanoi are summarized as follows:

- i) Lack of road improvement
- ii) Worsening traffic congestion
- iii) Increase in private transportation
- iv) Lack of public transportation infrastructure

1) Worsening traffic congestion

According to the department of transport, there were 34 major traffic jam hot spots across the city in 2020. Many of them are located inside the Ring-Road. In other places, the congestion tends to be increasing.



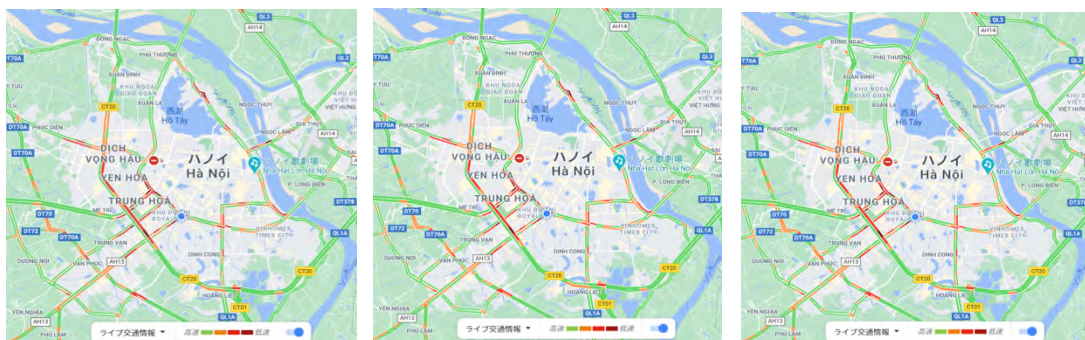
Source: <https://vtv.vn/trong-duc/ha-noi-con-33-diem-un-tac-giao-thong-20190311052530669.htm> (article of March 11, 2019)

Figure 1-4 Traffic Jam in Hanoi

In Hanoi, traffic jams are chronic during the morning and evening peak hours. The photo in Figure 1-4 above shows traffic conditions during the morning and evening hours on weekdays.

The map below shows traffic conditions by Google Map. It is obvious that the ring roads and the road extending southwest are congested during peak hours.

(1) Morning peak time

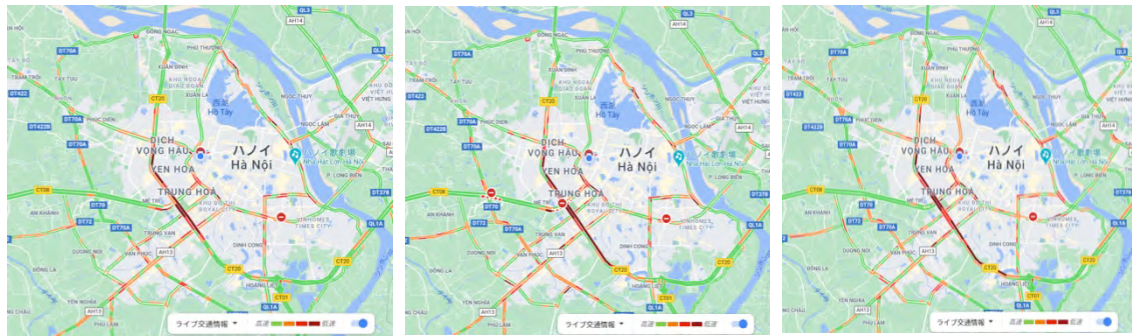


7:30 am

8:00 am

8:30 am

(2) Afternoon peak time



5:00 pm

5:30 pm

6:00 pm

Source: Google Map (Tuesday, January 26, 2021)

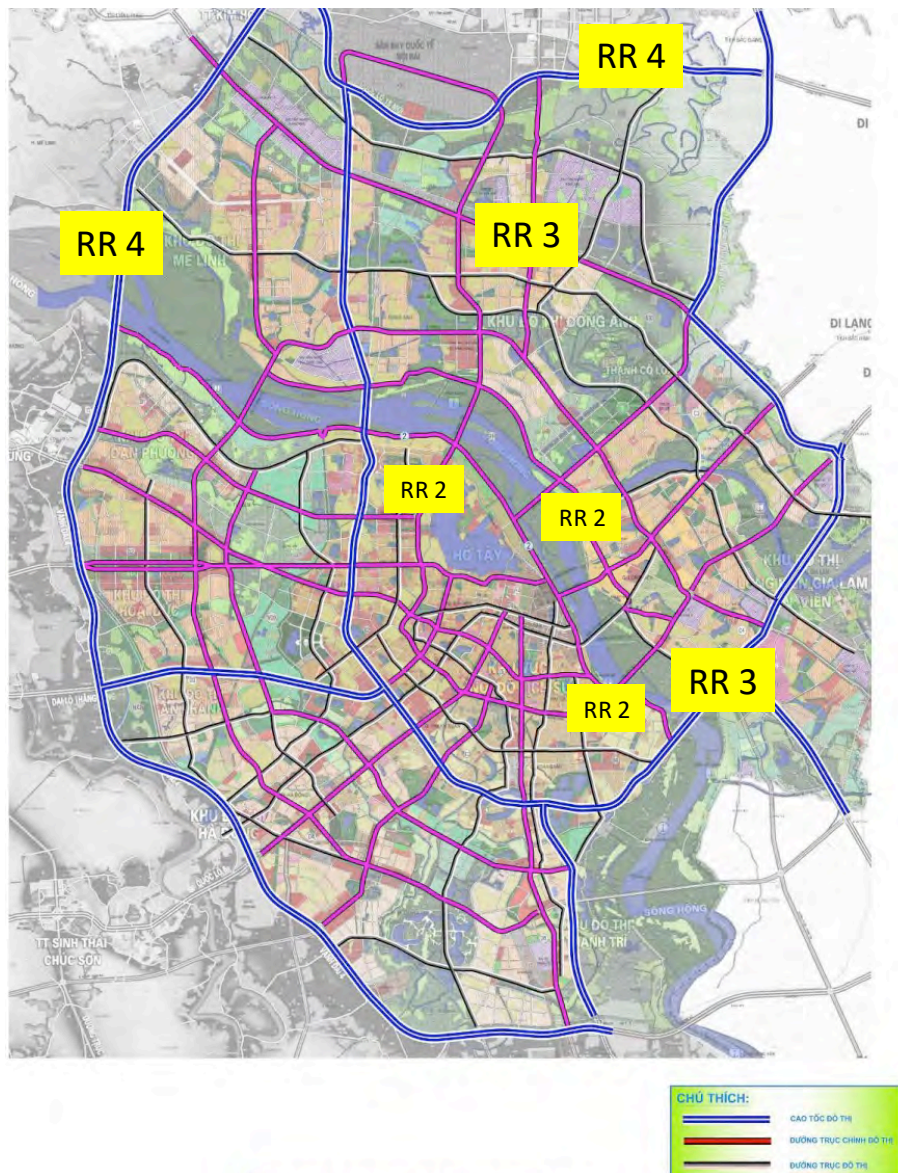
Figure 1-5 Traffic Congestion Spots

2) Lack of road improvement

As shown in Figure 1-6 below, Hanoi city's urban transportation network is formed by multiple radiant roads and four ring roads. Out of the four-ring roads, two of Ring Road No.2 and Ring Road No.3 are under construction. The commissioning of the entire alignments is expected to be much more delayed than planned. The road density in Hanoi is 1.09 km/km², which is lower than those of other major cities (generally 5-6 km/km²). The farther into the suburbs, the lower becomes the road density, and the less developed are the transportation network. A large volume of traffics, including through traffics, will pass through the city center, and traffic congestion is getting worse.

As for road widths, 70% of urban roads are less than 11m wide, and many local service roads are less than 5m wide. The majority of main roads and railways cross at grade at the intersections. Traffic congestion is an issue at these intersections, partly due to a lack of proper structural arrangements. However, investment plans for grade-separated intersections face difficulties due to the limitation from road width and difficulties in right-of-way acquisition; thus, those at the implementation stage are limited in number.

Many road improvements require prolonged time because of land acquisition and assembly and coordination with many stakeholders. Despite a large need for the development of road infrastructures, widening roads or new road constructions lapse in the schedule in Vietnam due to these difficulties.



Note: RR is a ring road
Source: Hanoi transport master plan 2016

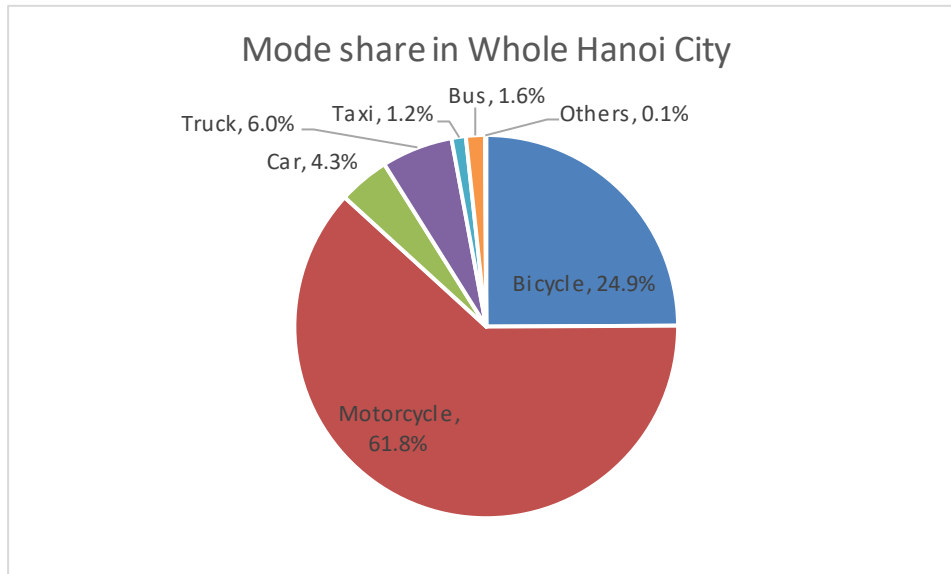
Figure 1-6 Hanoi City Road Network

3) An increase in private traffics

According to the METROS study and HAIDEP study of JICA, the characteristics of traffic demand in Hanoi city are summarized as follows (see Table 1-3 and Figure 1-7).

(1) Trends in the whole Hanoi city area:

- The motorcycle has the highest share in the overall trips at about 62%, followed by the bicycle. (see Figure 1-7)
- Vehicle ownership increased to 6.0% for trucks and 4.3% for passenger cars.
- Buses and taxis, which are public transport, have small modal shares of 1.6% and 1.2%, respectively.



Source: data collection survey on railways in major cities in Vietnam (metros), JICA, 2013

Figure 1-7 Mode Share in Whole Hanoi City Area

(2) Trends in the core Hanoi area:

- The number of daily trips increased from about 6.5 million trips per day in 2005 (excluding walking) to about 10.6 million trips per day in 2013.
- For motorcycles, from 2005 to 2013, the number of trips increased from 4 million trips per day to 6.7 million trips per day.
- The number of passenger car trips increased from 170,000 trips per day to 570,000 trips per day from 2005 to 2013.
- For buses, the number of trips increased from 380,000 trips per day to 860,000 trips/day from 2005 to 2013.

Table 1-3 Modal Shares In Former Hanoi City Area

Mode		Former Hanoi city area			
		2005(HAIDEP)		2005(HAIDEP)	
		'000	%	'000	%
Private	Bicycle	1,598	24.4	2,056	19.4
	Motorcycle	4,078	62.3	6,785	64.2
	Car	178	2.7	573	5.4
	Truck	21	0.3	117	1.1
Public	Taxi	57	0.9	167	1.6
	Bus	382	5.8	863	8.2
Others		231	3.5	10	0.1
Total		6,545	100	10,571	100

Source:

-the comprehensive urban development programme in Hanoi capital city of the socialist republic of Vietnam (HAIDEP), JICA, 2005

- data collection survey on railways in major cities in Vietnam (metros), JICA,2013

4) Lack of public transportation infrastructure

Public transportation systems in Hanoi include fixed route buses, taxis, rental cars (including ride-sharing app vehicles), inter-city buses, and others (motorcycle taxis, ride-sharing app bikes, electric vehicles, cyclo, inland water transportation, etc.). There are planned eight lines of urban railways, out of which two lines are under construction. Urban Mass Rapid Transit (UMRT) Line 2a Cat Linh – Ha Dong was completed and is currently now in operation since November 2021. UMRT Line 3 Nhon – Ga Ha Noi is 60% complete and expected to be operational in 2022.

(1) Current public transportation

Fixed route buses are the most popular public transportation in Hanoi. The number of vehicles and routes for fixed route buses are both on the rise, but the capacities of fixed route buses do not meet the demand of users.

According to Decision No.201/KH-UBND, In 2019, public transportation had 949 million passengers, constituting 17.03% of total mobility demand. The detailed capacities of public transport are as follows.

- Fixed route buses:1,952 units, 8.7% of travel demand
- Taxis:19,265 units, 1.97% of travel demand
- Rental cars:57,383 units, 3.35% of travel demand
- Inter-city buses:925 units, 1.13% of travel demand
- Others: 1.88% of mobile demand

(2) Operation of fixed route buses in Hanoi city

There are four organizations involved in the planning, management, and operation of public buses in Hanoi: (1) Hanoi people's committee (Hanoi people's committee: HPC), (2)Hanoi transport authority (department of transport: DOT), (3)Hanoi public transportation management and operations center (Hanoi public transport management and operation center: TRAMOC), (4) bus operators (of which TRANSERCO is the largest operator).

DOT oversees public transportation as a whole under the framework of the Hanoi transportation master plan approved by HPC. DOT also reviews and approves the bus services and business plans developed by TRAMOC. TRAMOC conducts bidding for bus operations and supervises bus operators who operate vehicles to service passengers. TRAMOC monitors route plans and service operations submitted by bus operators. A total of 17 bus service contracts are managed by TRAMOC, with 112 routes running regularly every day.

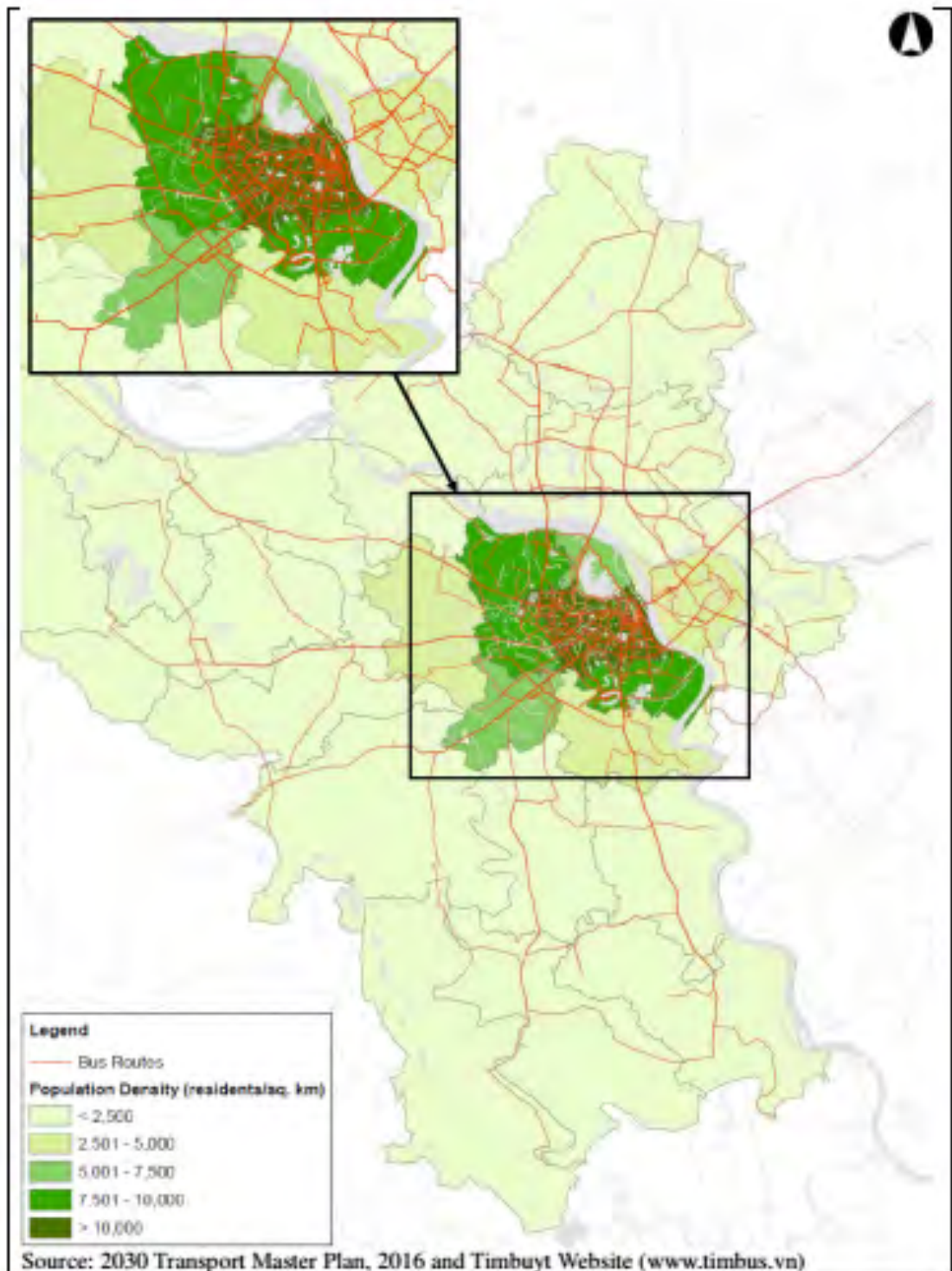
The bus fare system is composed of fares on supplementary and non-supplementary routes. Fares on supplementary routes are set out in Decision No.18/2014/QD-UBND dated as of April 2014, the details of which are shown in Table 1-4.

Table 1-4 Fare System for Auxiliary Bus Routes

Ticket type	Division	Fare
Single trip	Less than 25km	7,000 VND/ times
	25~30km	8,000 VND/ times
	Over 30km	9,000 VND/ times
Season ticket	Students and the elderly (over 60 years old)	55,000 VND/month (1 route)
		100,000 VND/month (multiple routes)
	Groups (more than 30 people)	70,000 VND/month (1 route) 140,000 VND/month (multiple routes)
General		100,000 VND/month (1 route)
		200,000 VND/month (multiple routes)

Source: Decision No.18/2014/QD-UBND As of April 21, 2014.

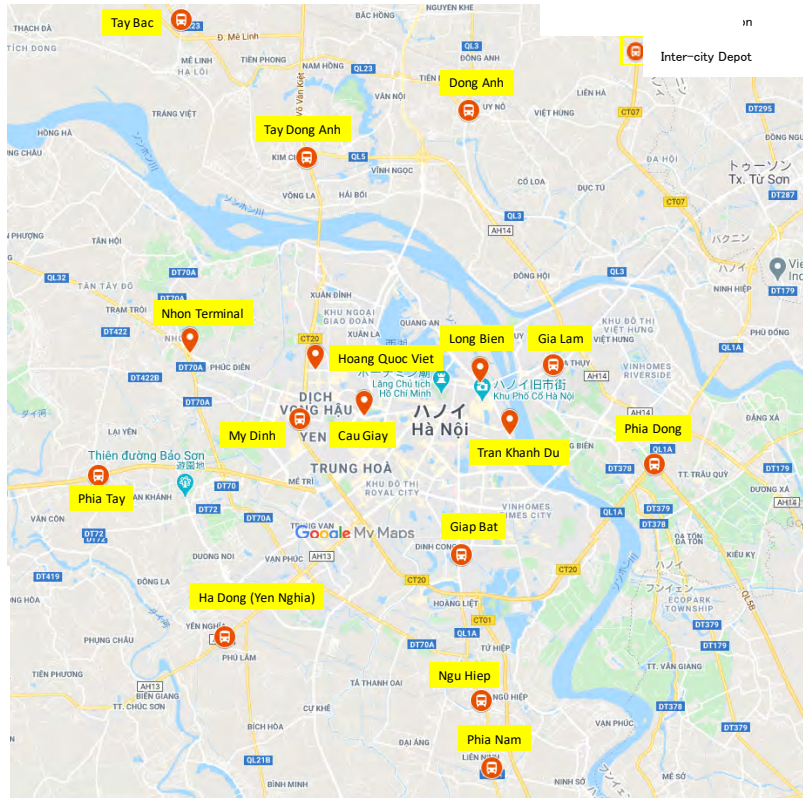
As shown in Figure 1-8 below, Hanoi city bus routes consist of radial, circular, intersecting, tangential, peripheral lines.



Source: public transport development study for sustainable urban mobility in Hanoi: network-level accessibility analysis and bus route optimization, world bank, 2019

Figure 1-8 Hanoi Bus Network - All Routes

There are two types of bus terminals in the city. The first is a city bus terminal that has been established for the main purpose of connecting between city bus routes or returning and waiting at the start and end of the operating route. The second is an inter-city bus terminal mainly for connecting city buses and inter-city long-distance buses. The locations are shown in Figure 1-9.



Source: Hanoi Transportation Master Plan

Figure 1-9 Bus Terminal Locations

2. Review of TOD-Related Plans

The highest ranking urban plan of Hanoi is the General Construction Plan, which was established in 2011 and approved by the prime minister in the same year to come into legally effect by the “Decision 1259 / QĐ-TTg 2011 approving the master plan on Hanoi capital construction up to 2030 with a vision to 2050.” The zoning plans of primary urban areas with a scale of 1 to 2000 in compliance to the General Construction Plan were approved in 2021.

The highest ranking urban transport plan of Hanoi is the Hanoi Urban Transport Master Plan, which was established in 2015 and approved by the prime minister in the same year to come into legally effect by the “Decision No. 519/QĐ-TTg dated 31/3/2016 by Prime Minister approving Hanoi Transport Master Plan up to 2030 and vision to 2050.”

The General Construction Plan, 10 years after its formulation, has been placed in a revision process since 2021. According to the current schedule, the city government is to complete the scoping work within 2022 and then bid for consultants internationally in 2023, to be followed by the full-scale revision work.

2.1. Hanoi Transport Master Plan

The Hanoi transport master plan¹ was formulated in 2016.

(1) Goals of plan

The plan's objectives are as follows:

- To build a completely sustainable transportation system with the latest technologies;
- To concretize the planning orientations for transportation of Hanoi capital as determined in the Hanoi General Construction Plan for 2030 with Vision to 2050;
- To establish an investment plan for the transportation system by phasing and prioritization;
- To propose the organization, traffic management system, and policy mechanisms for the implementation of the plan.
- To form a basis for implementing investment projects to build traffic infrastructure works in Hanoi city.

(2) Public transport

The following public transportation systems are examined in the study.

- Urban railways (designated as the backbone of public transport)
- Regular fixed route buses and bus rapid transit system (BRT)
- Monorail (along roads with a narrow cross-section that is unsuitable for urban railways)
- Electric vehicle system for sightseeing in the city

¹ Decision No. 519/QĐ-TTg dated 31/3/2016 by Prime Minister approving Hanoi Transport Master Plan up to 2030 and vision to 2050

(3) Modal share

The Hanoi urban transport master plan sets modal share targets for public transport, with the goal of achieving a total public transit mode ratio of 30-35% by 2020, with 10-15% for urban railways and 20% for buses (Table 2-1). The current status of public transport usage falls short of the target. Though it is not surprising, given lagging investments in urban railways, it is deemed appropriate that the target will be revised downward and that the strategy will be adjusted simultaneously in line with the revision of the urban master plan to set feasible targets and implementation methodologies.

Table 2-1 Targets for Public Transport Modal Shares

	Target year	Urban railway	Bus	Total
Core Hanoi	2020	10 - 15%	20%	30 - 35%
	2030	25 - 30%	25%	50 - 55%
	After 2030	35 - 40%	30%	65 - 70%
Peripheries	2020		15%	15%
	2030	15%	25%	40%
	After 2030	20%	30%	50%

Source : Decision No. 519/QĐ-TTG Dated 31/3/2016 by prime minister approving Hanoi transport master plan up to 2030 and Vision to 2050

(4) Public transport infrastructure investment plan

The following Table 2-2 shows the long-term transport infrastructure investment plan adopted in the transport master plan. In the short term, the investment plan for urban railways is 50 to 50 with roads, but in the very long term, it overwhelms that for roads, indicating that the development priority is focused on urban railways. In reality, however, the investments in urban railways fall way short of the investment target, partly due to delays in project implementation.

Table 2-2 Investment Plan for Transport

No.	Transport	Investment costs (VND billion)			
		Total	2016 - 2020	2020 - 2030	After 2030
1	Road	523,777	270,596	246,262	6,919
2	Urban railways	646,525	199,614	270,398	176,513
3	Inland water transport	19,750	4,100	6,285	9,365
4	Airport	45,329	2,259	31,764	11,305
	Total	1,235,380	476,569	554,709	204,101

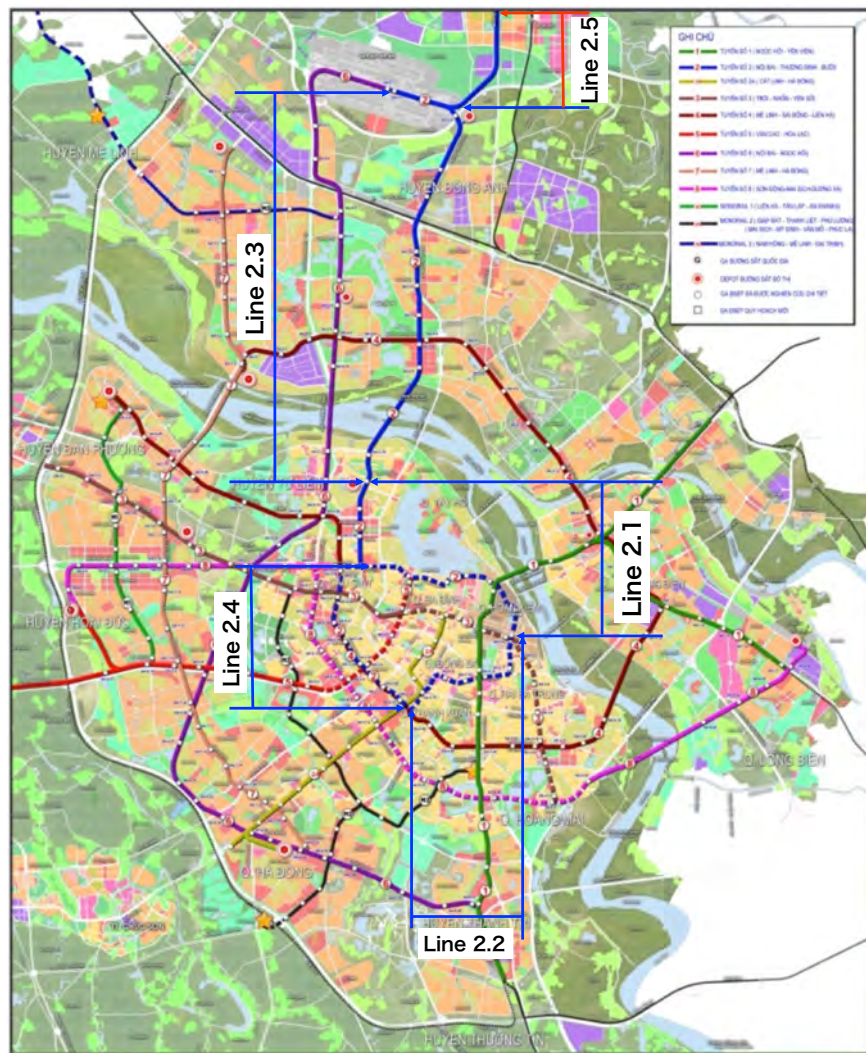
Source: Decision No. 519/QĐ-TTG Dated 31/3/2016 By Prime Minister Approving Hanoi Transport Master Plan Up To 2030 and Vision To 2050

2.2. Urban Railway Plans

Based on the results of the analysis of the traffic situation, the Hanoi urban transport master plan positioned urban railways (UMRT) as the optimal public transport system for Hanoi. The introduction of a high-speed and safe urban rail system with tracks secured by separated and independent tracks from other transports is expected to improve the capacity of mobility for the entire city. It also refers to the positive impacts on the structural development of the city and the incorporation of TOD through the improved connectivity to high-density urban areas by urban railways as the backbone of public transport. A total of eight urban railway lines are planned (Figure 2-1) with a total length of 400 km.

Apart from urban railways, Vietnam is also in the process of planning a north-south high-speed railway. For the high-speed railway, the state appraisal committee (SAC) has been established under the ministry of planning and investment (MPI), and is currently preparing a tender to hire international

consultants to assist in the project review. According to the current plan, the high-speed railway will terminate at Ngoc Hoi station and connect to Hanoi city via urban railway Line 1.



Source: Hanoi transport master plan (Decision 519/QĐ-TTĐ)

Figure 2-1 Urban Railway Plan and UMRT Line 2

2.3. Progress of Urban Railway Plans

Hanoi's urban railway system is currently being implemented through a variety of funding sources, including loans from Japan, China, ADB, France, and PPP. The Hanoi railway board (MRB) is the main body responsible for the implementation. As shown in Table 2-3, the progress of each line ranges from the pre-FS stage to the completion of construction. The Chinese-backed UMRT Line 2A completed construction in 2018 and operation tests in 2019. The subsequent safety certification process took a long time to complete but the operation started in November 2022. The French supported Line 3.1 has completed its elevated section up to Kim Ma. Although the commissioning was scheduled by 2022, the subsequent underground section has been suspended due to a deadlock in the negotiation with some residents along the alignment. Phase I of Line 2, supported by a yen loan, had progressed to the pre-bid preparation stage but now needs to extend its loan agreement due to the

expiration. Currently, HPC is in the process of finalizing the project cost approval due to the increase in project cost. After the finalization of the project cost, it will be submitted to the Prime Minister's office for approval before the negotiation on the extension of the yen loan with Japan. For Line 2, Phase III, a JICA-supported pre-FS was conducted² and is currently under review by the HPC. Line 1 was initially under the jurisdiction of the Ministry of Transport (MOT), but since urban railways in Vietnam are now under the direct jurisdiction of each city, the transfer of the Project to the HPC is in progress.

Table 2-3 Plan and Progress of Hanoi Urban Mass Rapid Transits (Urban Railways)

No.	Line	Phase	Section	Financial source	Current status
1	Line 1	I	Ngoc Hoi Complex	Japanese ODA loan	Technical design of Ngoc hoi complex has been completed.
		ii	Yen Vien – Ngoc Hoi	Japanese ODA loan	Phase ii is preparing the project adjustment.
		iii	Gia Lam – Duong Xa	PPP/BT	Planned
2	Line 2	I	Nam Thang Long – Tran Hung Dao	Japanese ODA loan	Pre-bid completed
		ii	Tran Hung Dao – Thuong Dinh	BT	Pre-FS under review
		iii	Nam Thang Long – Noi Bai	ODA / PPP / BT	Pre-FS under review
		iv	Thuong Dinh – Ring Road 2.5 - Bui	PPP/BT	Planned
		v	Noi Bai – Soc Son	PPP/BT	Planned
3	Line 2a	I	Cat Linh – Ha Dong	Chinese ODA loan	Completed
		ii	Ha Dong – Xuan Mai	PPP/BT	Planned
4	Line 3	I	Nhon – Hanoi Station	French ODA, ADB, EIB	Under construction
		ii	Hanoi Station – Hoang Mai	French ODA, ADB & KfW	Pre-FS under review
		iii	Nhon - Phung	PPP	Pre-FS under review
		iv	Phung – Son Tay	PPP	Pre-FS under review
5	Line 4		Me Linh – Sai Dong – Lien Ha	PPP	Pre-FS under review
6	Line 5		Van Cao – Hoa Lac	BT	Pre-FS under review
7	Line 6	I	Noi Bai – Phu Dien	PPP	Under investigation
		ii	Phu Dien – Ngoc Hoi	PPP	Under investigation
8	Line 7		Me Linh – Ha Dong	PPP/BT	Under investigation
9	Line 8		Son Dong – Mai Dich – Duong Xa	ODA / PPP	Pre-FS under review

Source: MRB

2.4. Review of Urban Railway Plan From TOD Perspectives

1) Network alignment

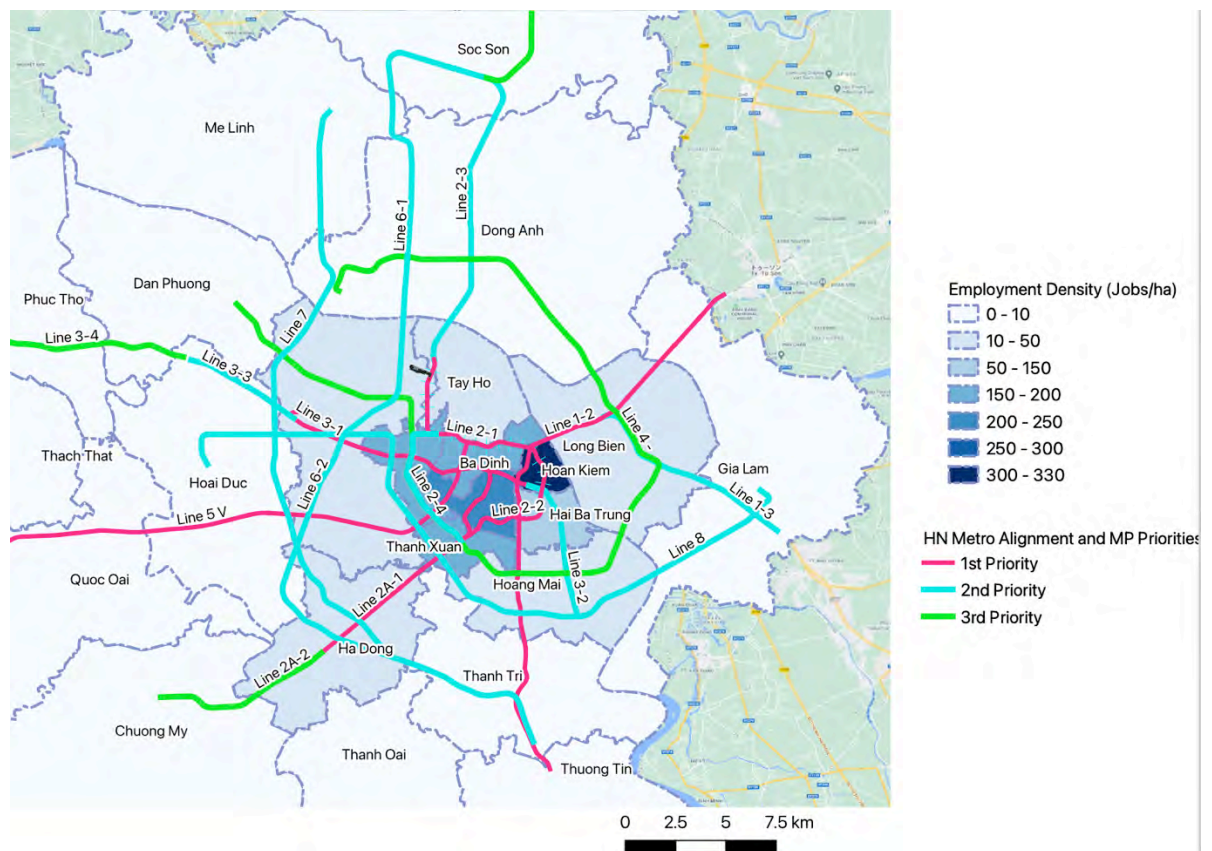
Figure 2-2 shows an overlay of planned UMRT lines, color-coded by priority (by designated implementation period), on a map of working population density by the district. Most of the priority lines

² JICA, "Data Collection Survey for Hanoi Metro Line 2 Extension North", 2020

(red) serve the central business district (CBD) of Hoan Kiem, Dong Da, Thanh Xuan, Cau Giay, Ba Dinh, and Hai Ba Trung Districts. The employment density in these districts, where offices have been concentrated for a long time, is over 200 people per hectare, and the surrounding districts of the CBD also have a density of over 130 people per hectare. The priority lines are designed to circumscribe the central districts and to extend radially in six suburban directions at almost equal intervals, creating an orthodox network design that connects the expansive residential areas with the concentrated employment areas.

The larger circular lines (Line 8 and Line 7), which are scheduled to be implemented later, are planned on the ring roads, and it is inferred that the priority may have been given to securing the right-of-way rather than effectiveness. In general, the lateral mobility brought by the ring road is expected to have less traffic demand (at least in the beginning) than the radial mobility directly connected to the center. Although specific simulation studies are beyond the scope of this study, it is necessary to re-evaluate the purpose, effectiveness, and economic efficiency of the second-priority circular lines.

On the other hand, from a global TOD perspective, the lines extending to the suburbs are expected to have significant economic and social impacts as well as a modal shift to public transport. These UMRT lines include Line 2 Phase 3 and Line 4, Line 3 Phase 3, and Line 5, which offer opportunities for large scale suburban residential developments. It is highly recommended to re-evaluate the impact of these urban railways, including a review of their alignment and their subsequent priorities.

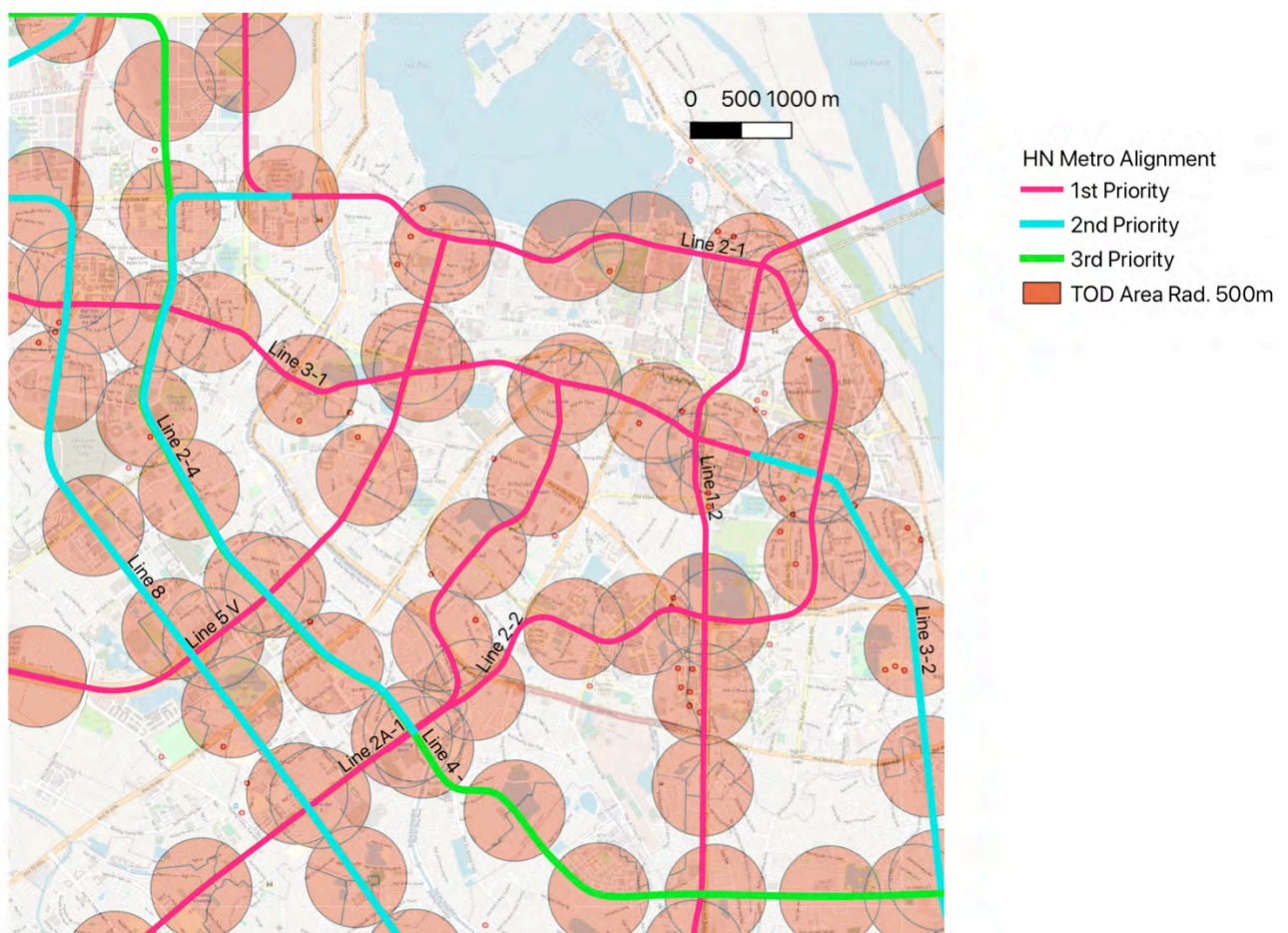


Note : priority 1= construction before 2020, priority 2= construction before 2030, priority 3= construction after 2030.
 Source: alignment data from Hanoi transport master plan and job data from annual statistics of Hanoi arranged spatially by the JICA study team

Figure 2-2 Priorities of UMRT Lines Assigned in Transport Master Plan and Job Densities

2) Geographic coverage of the urban rail network

Figure 2-3 is a map showing the 500-meter radius access areas from planned urban railway stations. Table 2-4 summarizes the area coverage measured from this map. In the central area of Hanoi, the coverage of walking distance from the urban railway station is about 50%. Cau Giay district and 60% in Thanh Xuan District located in the city peripheral areas have a high coverage ratio of 70% compared to the traditional central business districts of Hoan Kiem and Hai Ba Trung. The reason for this pronounced accessibility owes to the alignment designs of Line 2 Phase 4 and Line 8 crossing these districts at intervals of 1km. On the other hand, the coverages in Long Bien and Tay Ho districts is in the 10% range, making a big difference in terms of accessibility.



Source: data from Hanoi transport master plan arranged by JICA study team

Figure 2-3 Areas Within 500-Meter Distance From Stations Of UMRT in Hanoi Central Area

Table 2-4 UMRT geographical accessibility in CBD in Hanoi

District	Total area (ha)	500m TOD area (ha)	500m coverage
Ba Dinh	947	409	43%
Hoan Kiem	522	260	50%
Hai Ba Trung	974	419	43%
Cau Giay	1,241	870	70%
Dong Da	992	609	61%
Thanh Xuan	920	553	60%
Central Areas	5,596	3,120	56%
Tay Ho	2,365	251	11%
Long Bien	6,025	929	15%
Gia Lam	11,688	620	5%
Hoang Mai	3,982	1,253	31%
Tu Liem	7,709	1,784	23%
Hoai Duc	8,501	1,283	15%
Ha Dong	4,959	931	19%
Me Linh	14,158	368	3%
Dong Anh	18,588	1,839	10%
Soc Son	30,544	157	1%
Thanh Tri	6,319	342	5%
Quoc Oai	14,593	157	1%
Dan Phuong	7,770	204	3%
Thach That	18,579	314	2%
Non-Central Areas	155,780	10,432	7%

Source: JICA Study Team

3) Residence and job accessibility by UMRT

Table 2-5 analyzes the accessibility of urban railways in terms of residence and workplaces. In terms of residential population, the largest number of people live in the suburbs, followed by the periphery of the city center, and finally the city center. On the other hand, for the working population, the suburbs have the largest population, followed by the central area. In terms of residential population, suburban stations offer accessibility to 400,000 more residents than central area stations, while in terms of the working population, the suburban stations offer accesses to only 80,000 more workers than the central area stations do.

A district-wise comparison shows the high accessibilities for the residential population to be achieved in Cau Giay, Dong Da, Thanh Xuan and the high accessibility for workers similarly in Cau Giay, Dong Da, Thanh Xuan.

In terms of both population and employment accessibility density (people living or working within 500m radius per hectare), districts in core areas show high accessibilities both for residential and working populations, while in the city peripheries, only Cau Giay and Thanh Xuan show high density in accessibilities.

Table 2-5 Estimated Population and Workers Within 500m Radius from Stations By District

District	The total area within 500m rad. (ha)	Population	Population accessibility density (person/ha)	Employment	Employment accessibility density (person/ha)
Ba Dinh	947	98,644	104	62,614	66
Hoan Kiem	522	69,242	133	86,913	167
Hai Ba Trung	974	135,970	140	65,118	67
Dong Da	992	232,992	235	141,041	142
Core Areas	3435	536,848	156	355,688	104
Cau Giay	1,241	206,590	166	155,607	125
Thanh Xuan	920	176,573	192	109,128	119
Hoang Mai	3,982	160,065	40	44,240	11
Tay Ho	2,365	17,384	7	6,420	3
Long Bien	6,025	49,415	8	21,530	4
City Peripheries	14,533	610,027	42	336,926	23
Gia Lam	11,688	15,224	1	2,131	0
Tu Liem	7,709	139,428	18	30,165	4
Hoai Duc	8,501	40,819	5	3,300	0
Ha Dong	4,959	74,871	15	24,050	5
Me Linh	14,158	6,252	0	1,477	0
Dong Anh	18,588	39,856	2	13,082	1
Soc Son	30,544	1,773	0	247	0
Thanh Tri	6,319	15,107	2	2,976	0
Quoc Oai	14,593	2,099	0	144	0
Dan Phuong	7,770	4,598	1	363	0
Thach That	18,579	3,637	0	454	0
Rural and Suburban	143,408	343,664	2	78,389	1
Total	161,376	1,490,540	9	771,002	5

Source: JICA study team estimation based on population data from transport master plan 2016 and employment data from Hanoi statistical yearbook 2016

Table 2-6 shows the estimated employment and population by UMRT Line and phases sorted in the order of the number of jobs within 500 m TOD areas. Line 2a, Line 2-1, and Line 3-1 cover the highest number of jobs. The three lines alone provide access to approximately 40% of the jobs accessible by the UMRT in Hanoi as well as 20% of the residential population. Given the importance of the establishment of job accessibility in the primary Phase of public transit system development, this analysis underscores the importance of early implementation of the three lines.

Table 2-6 Estimated Population and Workers Within 500m Radius from Stations By UMRT Lines

Pri- ori- ties	Line	Area of 500m rad. (ha)	Esti- mated employ- ment	Employ- ment ac- cessibil- ity den- sity (per- son/ha)	Estimated population	Popula- tion ac- cessibil- ity den- sity (per- son/ha)
1	Line 2a-1 Cat Linh - Ha Dong	936	113,842	122	204,022	218
1	Line 2-1 Nam Thang Long - Tran Hung Dao	758	111,163	147	139,230	184
1	Line 3-1 Nhon - Ga Ha Noi	805	99,033	123	155,246	193
1	Line 1-2 Yen Vien - Ngoc Hoi	1,088	75,279	69	144,741	133
1	Line 2-2 Tran Hung Dao - Thuong Dinh	261	51,765	198	90,881	348
1	Line 5 Van Cao - Hoa Lac	1,149	43,617	38	90,061	78
2	Line 8 Son Dong - Mai Dich	1,522	72,767	48	159,745	105
2	Line 2-4 Thuong Dinh - Hoang Quoc Viet	275	50,588	184	71,501	260
2	Line 3-2 Ga Ha Noi - Hoang Mai	468	38,940	83	93,969	201
2	Line 7 Me Linh - Ha Dong	1,732	20,097	12	82,451	48
2	Line 1-3 Gia Lam - Duong Xa	628	9,101	14	25,492	41
2	Line 2-3 Nam Thang Long - Noi Bai	782	6,147	8	19,060	24
2	Line 6-1 Noi Bai - Phu Dien	312	3,731	12	15,486	50
2	Line 6-2 Phu Dien - Ngoc Hoi	131	2,697	21	9,538	73
2	Line 3-3 Nhon - Phung	350	920	3	10,787	31
3	Line 4 - Me Linh - Sai Dong - Yen Ha	2,404	71,328	30	178,316	74
	Total	13,602	771,015	57	1,490,526	110

Source: JICA study team estimation based on alignment station plans from transport master plan 2016 based on population data, 2019 and employment data, 2016 from statistical office of Hanoi

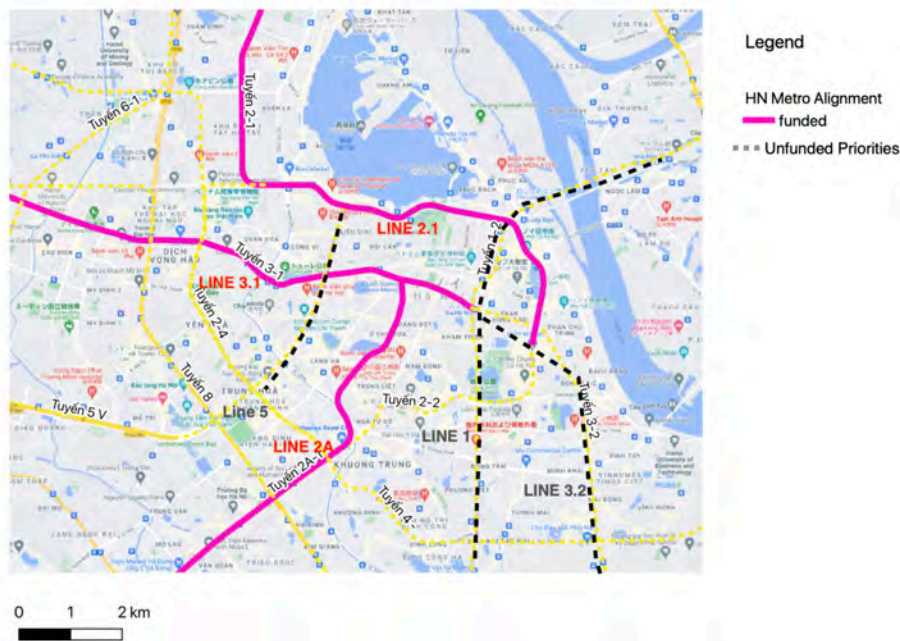
4) Network Connectivity of Initial Urban Railways

Figure 2-4 shows the three alignments of the UMRT lines with secured ODA funding. Line 2A funded by China is now complete and started its operation in November, 2021. Line 3 supported by France is now complete up to Kim Ma, and the partial commissioning is under study. Line 2.1 is expected to restart the construction after the completion of the cost and plan review and the resolution of the C9 Station.³ The other lines are either under study or planning stage and have no funding prospects or specific implementation schedules.

The main function of the urban railway is to provide transport for mass commuting. Therefore, the initial lines need to have universal accessibility to job centers of the city. As the map indicates, even

³ C9 Station is located in a cultural conservation area of Hoan Kiem Lake. The review of the redesign including the station location is now under the process.

after the commissioning of Line 2.1, the initial three lines must wait for the commissioning of additional line of Line 1 or Line 3.2 for complete inter-connectivity. Given the current fiscal conditions, as well as the time and investment costs expenses thus far, the choice of for the initial lines is justified and at the same time, it will underscore the importance of careful prioritization of the implementation sequence of the future urban railway lines. The mid-term re-prioritization of urban railways should be one of the focal points to be included in the revision of the General Construction Plan of Hanoi now underway.



Source: JICA Study Team

Figure 2-4 Network Connectivity of Initial Urban Railways

The Hanoi urban transport master plan envisages the realization of a comprehensive urban rail network of over 400 km, with an expected investment requirement of over US\$20 billion. The first priority UMRT lines are 85 km, the second priority UMRT lines are 158 km, and the third priority UMRT lines is 170 km. Given the large amount of total investment capital, it is highly likely that traffic congestion in the city will intensify further before the development of the complete urban rail network is completed. A strategic investment plan needs to be developed based on TOD approaches to make revised investment schedules after thoroughly assessing the impacts of public transit developments on urban development.

For the purpose of maximizing the number of passengers on urban railways in the short term, the first priority urban railway lines are probably the best target group of lines. On the other hand, this pattern may not be the best choice in the long run from the perspective of urban planning, which appears to aim to reduce excessive concentration in the traditional city center and create a more decentralized urban structure. There is a possibility of an alternative urban design in which sub-centered employment areas are guided through the development of the public transportation network. Another option is to prioritize the extension of urban railways to the suburbs in order to integrate new large-scale residential development with urban rail development. A re-examination by adopting the approach of considering multiple alternatives by simulating them simultaneously with the land use plan in the urban master plan is required.

2.5. Review of Hanoi Urban Master Plan

1) Overview

The urban master plan of Hanoi (Decision 1259/2011 / QD-TTG General Construction Plan), approved in 2011, sets the framework for the overall urban development of Hanoi for the following 40 years. The plan consists of 1) overall urban spatial development orientation, 2) land use planning, 3) economic infrastructure systems, 4) social infrastructure systems, 5) rural development, 6) technical infrastructure planning, 7) heritage conservation, 8) strategic environment assessment, 9) urban design guidelines, and 10) Phase one implementation plan. The plan covers all aspects of the physical planning of the city, for a planning area of 3,345 km² in Hanoi, including the five satellite cities of Soc Son, Son Tay, Hoa Lac, Xuan Mai, and Phu Xuyen. Although the law requires a review every five years, no review has been carried out for the past 10 years. However, in the current fiscal year, the DPA, under the direction of the HPC, has initiated the review process.

2) Population Projection and Distribution

The urban master plan calls for tighter control of the population in overcrowded central areas, especially in Dong Da District and the five central districts. Despite the population projection of the first General Construction Plan, the actual trends indicate that the central districts of the city are increasing their population sizes except for Hoan Kiem, as shown in Table 2-7. The discrepancy between the planned targets and realities arose from many factors, including rapid growth of urban population and delay in the development of public transport infrastructures.

Table 2-7 Gap between Population Forecast by General Construction Plan and Actual Population of 2019

Unit: thousand

	General Construction Plan Forecast				Actual Population 2019	Target Gap at 2020
	In 2008	In 2020	In 2030	In 2050		
Hoan Kiem	181.7	150.0	130.0	130.0	139	-7%
Hai Ba Trung	333.8	230.0	200.7	200.7	305.8	33%
Ba Dinh	243.5	200.0	170.0	170.0	228.5	14%
Dong Da	391.8	300.0	255.0	255.0	379.4	26%
Tay Ho	145.0	120.0	119.8	120.3	163.9	37%
Cau Giay	199.9	160	147.5	148	294.6	84%
Hoang Mai	273.4	240	254.5	308	508.6	112%
Thanh Xuan	218.7	180	135	135	293.6	63%
Other Areas	4362.3	6385.0	7723.0	9266.5	5870.7	-8%
Total	6,350.0	7,965.0	9,135.5	10,733.5	8,184	3%

Source: Hanoi General Construction Plan and Annual Statistics of Hanoi 2019

Fundamentally, urban property developments are driven by private investments, now largely led by the developers on the supply side to seek home buyers, and corporate office renters. The final location decisions depend on the future prospects of living and working in the area.

3) Housing Standard and Affordability

Hanoi General Construction Plan sets the housing standards as shown in Table 2-8. Though the standards are quite acceptable for ensuring humane and healthy living conditions, there is no discussion on how to make it happen under increasingly rising land and housing prices. Given the future increase over one million population increases expected in the next two decades, there should be a careful analysis of supply and demand in the housing market as well as land availability for feasible accessibility to the employment centers of the city.

Table 2-8 Housing Standards by General Construction Plan

Housing Standards by Area	2020	2030
Housing Area In Urban Area	25–30m ² floor/person	>30m ² floor/person
Housing Area In Rural Area	20–25m ² floor/person	>25m ² floor/person

Source: Hanoi General Construction Plan

4) Employment Projections and Distribution

The Hanoi General Construction Plan lacks a spatial analysis of the working population for the important national business core of Hanoi. The future development of business districts and even the axes of development are not clearly stated. It should be noted that the concentration of traffic during peak hours is mainly due to commuting to the central area and not the residential population of the central area itself. The concentration of population and business in the city center is proof that the benefits of mobility and accessibility to urban amenities and services are superior to the rent level of the space in the cost-benefit assessment. The possibility of eliminating traffic congestion by concentrating traffic in the center of the city when public transportation capacity is increased should be analyzed based on a larger vision of the future urban structure.

5) Population Projection Gap Problem

The biggest problem in the gaps in population distribution projections is that all major infrastructures need to be planned for the capacities to meet the needs arising in the next 20 years, be it road, water supply, electricity, or wastewater disposal. There will be shortages of capacities for the areas with underestimated populations, while there will be excesses of capacities for the areas of overestimated populations, causing direct sufferings, loss of productivity as well as inefficient public resource allocations. Given the actual social and economic impacts, the planners need to improve the accuracy in population projections by incorporating all the data, including the private investment and market trends, implementation pace of public investments, as well as demographic trends of the city. In sum, population projection should be more scientific targets rather than wishful targets of the planners.

6) Review of general construction plan from TOD perspective

A goal of the microscopic TOD strategy is the promotion of a modal shift to public transit, while the macro TOD strategy is to create the possibility of large-scale development of new residential areas enabled by new accessibility by public transportation.

The urban master plan needs to be reviewed with the latter strategy for the citywide TOD approach in mind. In the future, the city can be designed in such a way that all segments of the population can afford housing while maximizing the utilization of public transportation. This kind of macro-

optimization will help address global environmental issues as well as increase the competitiveness of cities in the future.

7) Recommended Scope for Revision of General Construction Plan

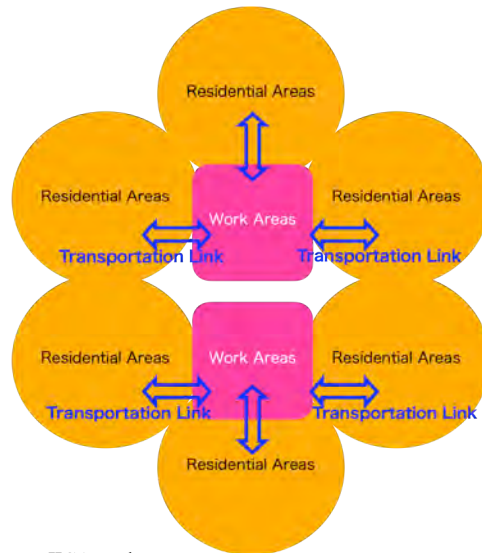
The first recommendation for Hanoi's urban master plan is that in a fast-growing city like Hanoi, the urban master plan should be revised periodically, at least every 10 years.

From the perspective of the above reviews, including TOD perspectives, the next master plan should include a more detailed analysis and plans based on the analysis in the following points.

- i. Spatial planning of central business district based on geographic employment data;
- ii. Accessibility planning between residence and workplace;
- iii. Housing affordability;
- iv. Synchronous development of UMRT suburban lines and large-scale residential areas;
- v. Reprioritization of UMRT priorities from TOD perspectives; and Consideration of global climate change with the aim of minimizing carbon emissions.

(1) Integration of Residence, Employment and Mobility

As the capital city and the economic center of the region, Hanoi is home to a variety of head office functions in the private sector as well as the government and services are provided by tens of thousands of professionals. The percentage of such professionals and managers is expected to increase in the future, just like in other traditional service industries. Commuting from residence to workplace is the most important mode of daily travel. The impact is most pronounced during the morning and evening peak hours, causing one of the city's biggest problems: traffic congestion. From the residents' point of view, commuting time distance is a major constraint on their choice of jobs. Residents' access to a diverse and large number of workplaces means that they have a high degree of choice in higher-income occupations. For employers, it allows them to source labor from a broader labor market to increase the productivity of their firms. On a macro level, improved accessibility to employment in a city has a direct and significant impact on increasing the economic productivity of the city itself.

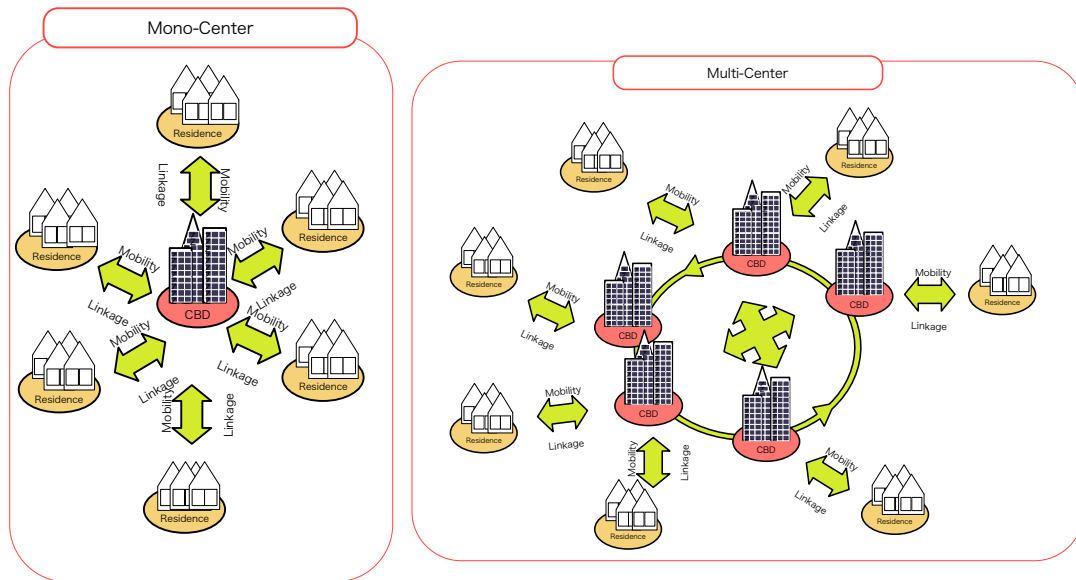


Source: JICA study team

Figure 2-5 work-residence integrated planning with transport linkage

(2) Urban Structure: Single vs. Multi-Core Business Centers

The current General Construction Plan envisages a single business core extending out from the area of Hoan Kiem District. If all the businesses are focused on one center, trips for commuting, meetings, and entertainment will continue to funnel into one center in ever-increasing numbers. Such converged concentrated flows are likely to degenerate the total productivity of the urban economy of Hanoi as a whole. One solution is to set up multiple centers as portrayed in Figure 2-6.



Source: JICA Study Team

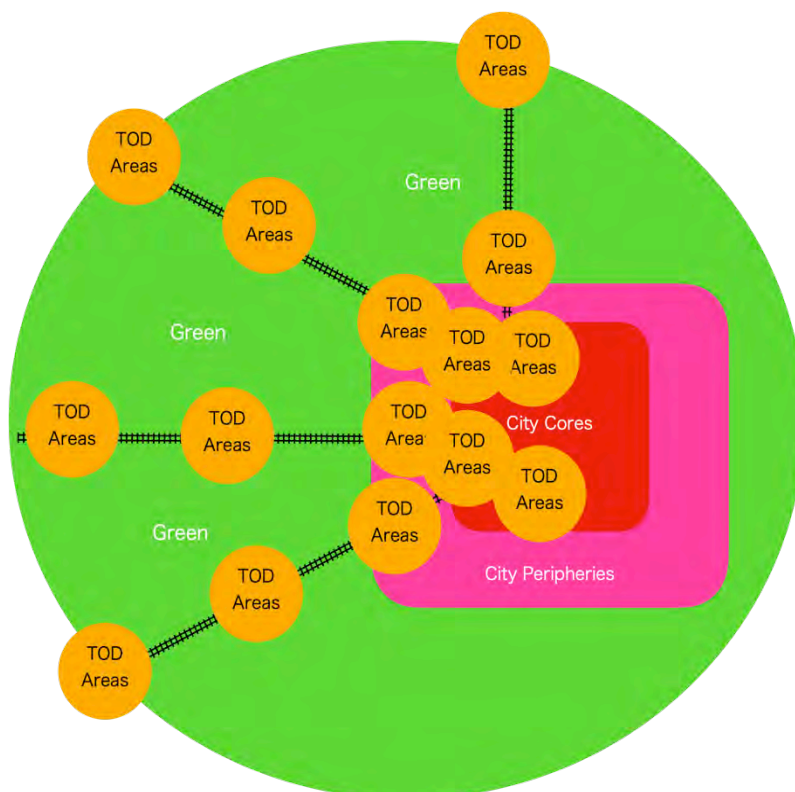
Figure 2-6 Schematic Urban Structures: Single vs. Multi-Core Business Centers

(3) Integrated planning to connect work and residence by transportation

Another way to improve urban mobility while preserving green spaces in Hanoi is to promote urbanization around railway stations to fully utilize the mobility improvements around the stations, rather than one uninterrupted green belt as defined in the urban master plan, as shown in

Figure 2-7 by limiting the TOD areas. This necklace-shaped continuous development also has the advantage of allowing urban dwellers within the TOD area to live closer to greenery. The pre-feasibility study of UMRT 2.3 adopts a similar urbanization pattern following the principles of TOD. Unlike urban centers, suburban stations are usually located at intervals of 2-3 km. When a train reaches its maximum speed of 120 km/h, it only takes a minute to travel 2 km. The farther the distance between stations, the more investment costs are involved, but the farther the distance, the lower the land price. If TOD, which integrates urban development and suburban line development, can be adopted, overall financial balance can be achieved. It is also an effective strategy for realizing railway linkages with Hanoi's satellite cities such as Soc Son.

Unending rises in land prices in the existing urban centers are leading to so-called urban sprawls even without waiting for the construction of urban railways, as new housing demanders seek cheaper land at the sacrifice of commuting costs. It is the experience of many large cities around the world that leads to more traffic congestion in the city center, longer commuting distances and hours, and worsening urban energy efficiency. There is no doubt that synchronous residential development coupled with urban railway developments will contribute to the improvement of urban energy efficiency and thus to the mitigation of global warming.



Source: JICA study team

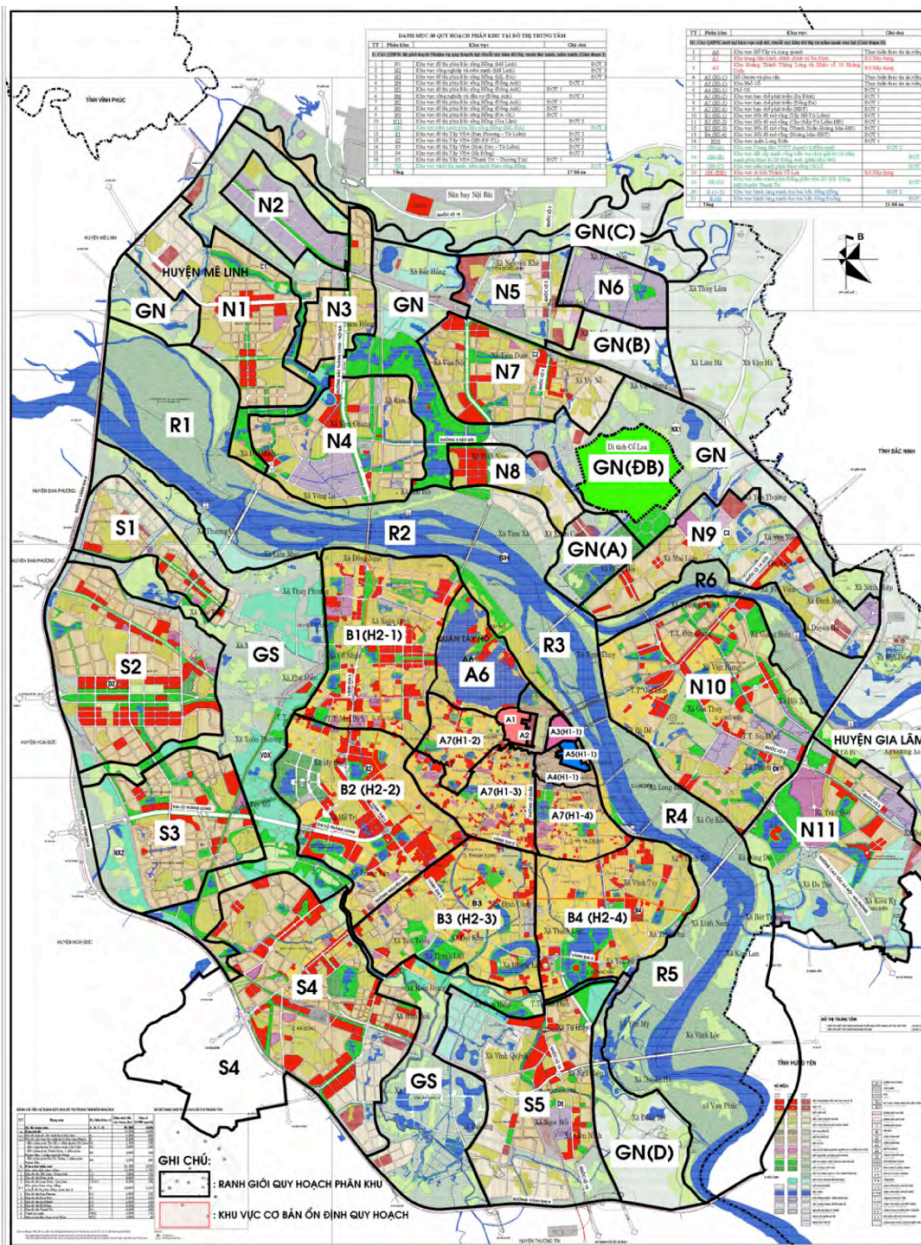
Figure 2-7 Urban expansion model for achieving recommended TOD and greening

Hanoi is currently preparing to revise its general construction plan. This opportunity should be used to revise it to incorporate the TOD approaches recommended above. For this reason, it is highly important that the Hanoi urban transport master plan be revised at the same time, at least for the public transport sector since TOD cannot be realized with its foundation on public transit.

2.6. Implementation Status of Zoning Plan

1) Overview

As shown in Figure 2-8, Hanoi city has been divided into 46 districts for the formation of zoning plans. The zoning plan includes land use planning, transportation facility planning, and building regulations. In compliance with the standards set forth, investors are required to develop a detailed district plan.

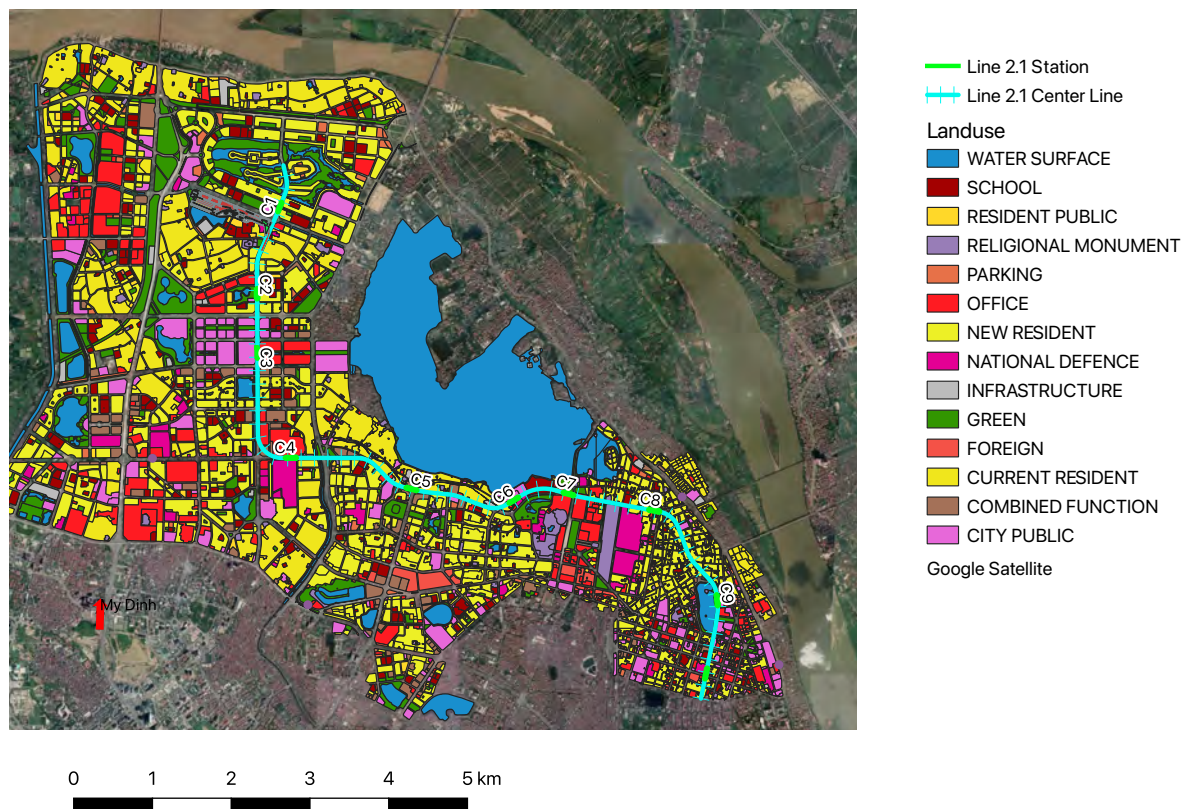


Source: Hanoi city portal: <https://vanban.Hanoi.gov.vn/quy-hoach-xay-dung-do-thi>

Figure 2-8 zoning plan classification of Hanoi city

Figure 2-9 shows the zoning plan's land use plan along the UMRT Line 2 Phase I. The land use plan along the line starts with C1 and C2, i.e., newly developed large-scale residential areas with large scale greenery, C3, i.e., a new government center, C4 where existing private commercial facilities are concentrated, C5 and C6, where existing residential areas continue, C7 and C8, i.e., the so-called

"old town," C9, i.e., the cultural and administrative center, and C10, the business center. In Figure 2-9 these zoning plans correspond to the b1, a6, a7, a1, and a2 zones. Due to the detailed design requirements of the zoning plans, the coordination of stakeholders demand a heavy workload. In 2021, ten years after the formulation of the urban master plan, the zoning plans in the central area were finally approved. The zoning plans of Hanoi consists of two main subplans, i.e., land use plan and transport facility plan. Apart from the designation of uses of land, the land use plan divides the zone into five to ten subzones with the specific four planning parameters of 1) population, 2) population density, 3) building area to land ratio, and 4) allowable number of building floors.



Source: DPA data arranged by the JICA study team.

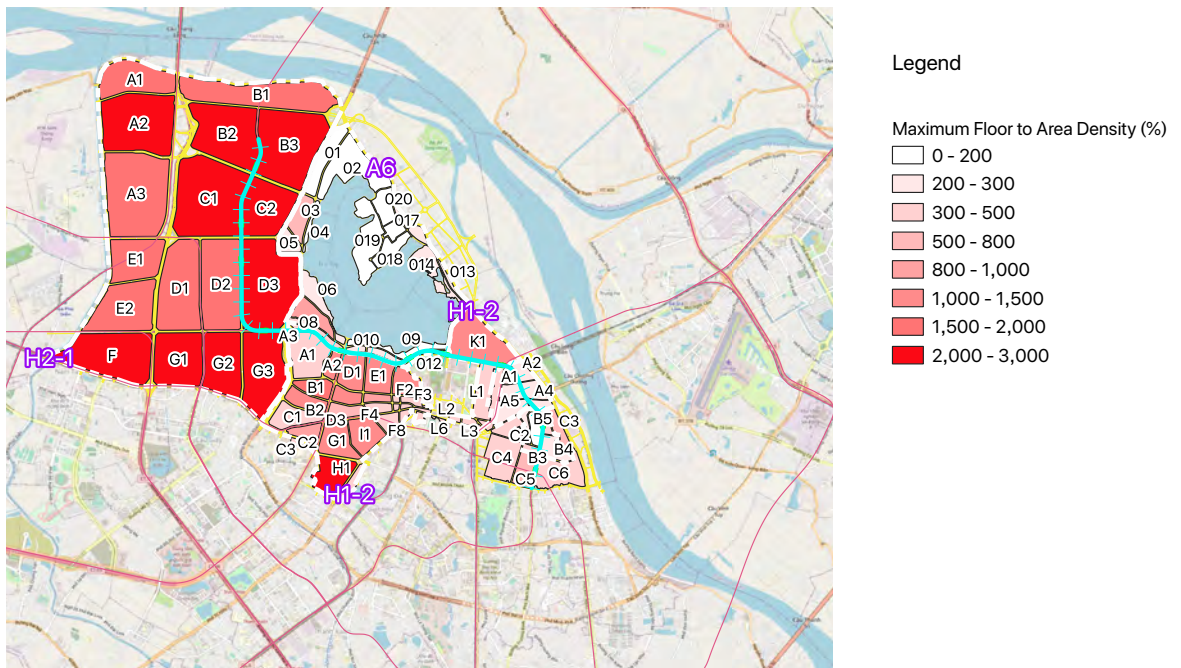
Figure 2-9 Land Use Plan Along Urban Railway Line 2

2) Construction Control by Zoning Plan

One of the most important land use controls is the regulations of building densities. It is an essential TOD policy to assign higher building densities in TOD areas to induce concentrations of residential and working populations while imposing low density to other areas without public transit accesses. As mentioned above, Hanoi's zoning plans designate building-to-area ratios and maximum number of floors to each sub-zone. The maximum density, FAR, is derived by multiplying these two planning parameters. Figure 2-10 illustrates the maximum FAR by the subzone along the UMRT Line 2.1. Obviously, the areas west of the Westlake have extremely high densities, exceeding the FAR of 2000%. Such high densities are observed only in Manhattan, NY of the US or in Singapore but not seen in the cities of Japan.

Urban developments may rush into such zones by taking an advantage of lax building density controls and may result in excess loads on urban infrastructures. A new influx of population may generate more traffics than the existing road system can handle.

As described in Part I, any land value capture tools cannot effectively function since the developer has a freedom in maximizing the profits from the development by developing the floor areas up to the limit of the market demands without constraints from land use controls. On the other hand, the regulation on the building densities does not apply to every plot uniformly and but used as the proxy targets for each subzone. The permit may be given until the district is too density built up. If so, the situation will fuel the current construction boom as the developers try to get ahead of the competitors.

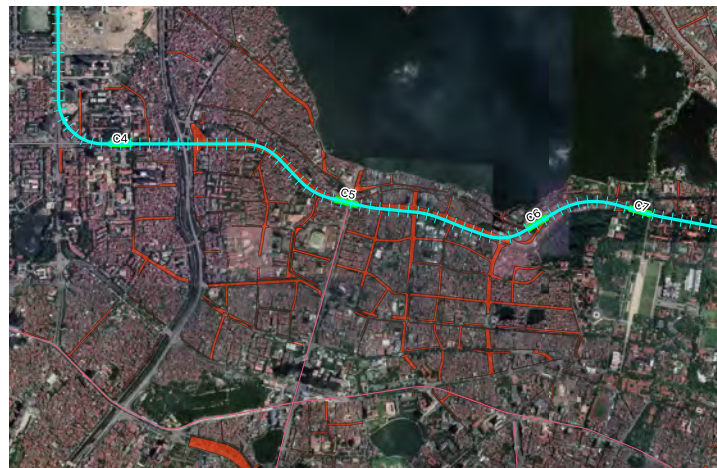


Source: DPA of Hanoi

Figure 2-10 Building Density Regulations in Subzones by Zoning Plans Along UMRT Line 2.1

3) Road Expansion Plan and Land Recovery Requirements

Traditional urban grid of old urban areas of Hanoi are interlaced with allies with widths of one to four meters with no automobile access. The zoning plans of Hanoi exhibit pro-development plans of road expansions. As indicated in Figure 2-11, the zoning plans allocate wide streets in old built areas at every two to three hundred meter intervals. A road expansion work that requires uninterrupted continuous land recovery to obtain the design width will mandate a land recovery negotiation with the land use title holder at every five to ten meters. Even if the land occupants agree to concede to a higher goal of city-wide social welfare, creating a better city, it will take a long time to negotiate and a large sum of compensations for resettlement.



0 250 500m

Note: The red-colored areas represent the land recovery areas required for road construction or expansion.
Source: DPA of Hanoi

Figure 2-11 Road Expansion Plans Along UMRT Line 2.1

Table 2-9 summarizes the land recovery requirements for road expansion necessitated by zoning plans of A6(surrounding the Westlake), H1-2 (along Stations C4-C7 south of the Westlake), H2-1 (around Stations of C1-C3) along UMRT Line 2.1. The road areas to be added in H1-2 Zone exceeds the area of the existing roads. Though the other areas have lower percentage in the total areas, the volume of land area to be recovered within the densely populated areas is a difficult target to achieve. From the road distances, each zone is likely to resettle more than five thousand households.⁴ If the lax restrictions for building densities as pointed at 2) above is based on the future capacities entailed by the planned road grids, the current road networks will be bound to suffer from excess traffics.

⁴ A rough assumption for estimation is that there are two households (on both sides of a street) to be affected at every 10 meters.

Table 2-9 Land Recovery Requirements for Road Expansion Necessitated by Zoning Plans Along UMRT Line 2.1

Zone	Area (ha)	Land Recovery for Road Expansion		
		Area (ha)	%	Distance (km)
A6	1,000	43	4%	27
H1-2	563	42	7%	30
H2-1	2,463	74	3%	47

Source: Analysis by JICA Study Team based on the data from DPA

2.7. Current Status and Issues of Urban Development

1) Urbanization trend

Figure 2-12 shows the urbanization trend in Hanoi. The central business district (CBD) of Hoan Kiem and the surrounding districts of Dong Da, Ba Dinh, Hai Ba Trung, Thanh Xuan, and Tay Ho form the urban center. In addition, there are several other districts.

Until the 1990s, the built-up areas of Hanoi were generally located inside the current third ring road where these urban centers are located. Later, in the 2000s, the city's urban area expanded outside of the third ring road due to the ever-increasing population, progress in motorization, and the opening of arterial roads and large bridges.

In particular, urbanization in the western part of the city has been remarkable, and Cau Giay and Tu Liem Districts in the north and south are now lined with high-rise buildings, including luxury condominiums with offices and shopping centers. In addition, urbanization is underway in parts of Hoai Duc District along the UMRT Line 3 under construction towards Nhon and The Thăng Long Road towards Hoa Lac.

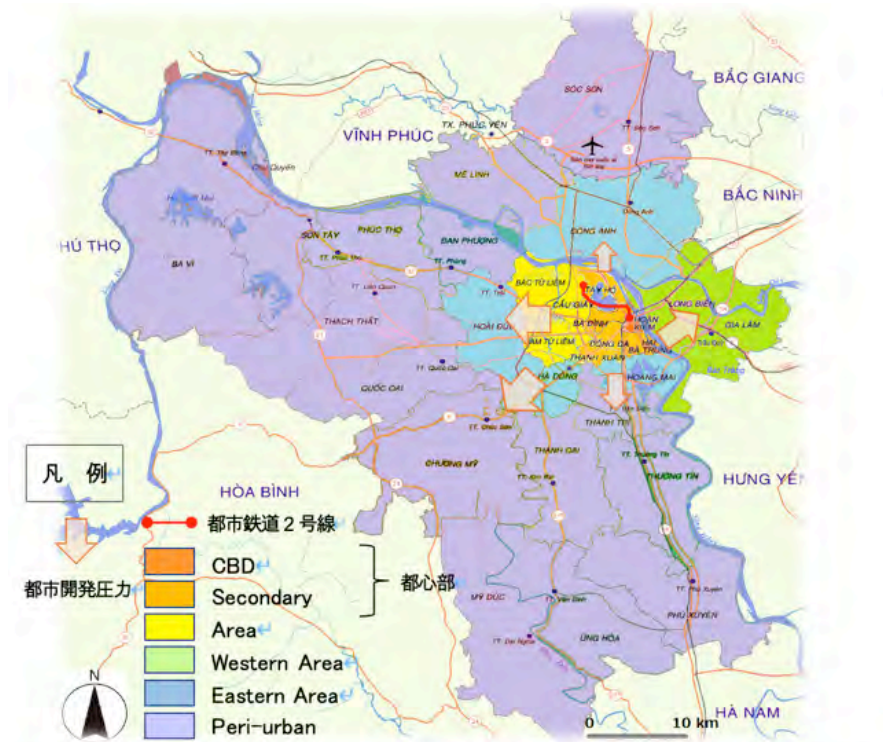
In the southwestern part of the city, urbanization is progressing along the UMRT Line no. 2a, which extends to Ha Dong District, the former capital of Ha Tay Province, and high-rise condominiums and shopping centers are increasing.

In the eastern part of the city, a large-scale housing development is underway in Long Bien district, across the Thanh Trì Bridge on the third ring road, and a Japanese shopping mall has also moved in.

In the south, the number of high-rise condominiums is increasing in Hoang Mai District along the third ring road. In the south, high-rise condominiums are increasing in Hoang Mai district and other areas along the third ring road, while the area along national highway 1, which runs south at a right angle from the third ring road, is partially urbanized, but the number of high-rise condominiums are not large at present.

In the north, especially after the opening of the Nhật Tân Bridge in 2015, high-rise condominiums and other buildings have begun to be built in parts of Dong Anh District on the other side of the red river.

Overall, urbanization has been remarkable in recent years in the west, southwest, and east districts. In the southern and northern districts, urban areas are also expanding in some areas.



Area	Districts Included
CBD	Hoan Kiem District
Secondary Area	Dong Da, Ba Dinh, Hai Ba Trung, Thanh Xuan and Tay Ho Districts
Western Area	Cau Giay and Tu Liem Districts
Eastern Area	Long Bien and Gia Lam Districts
Peri-Urban Area	Ha Dong, Hoang Mai, Dong Anh and Hoai Duc Districts
Suburb Area	Other Districts

Source: Savills Vietnam, subcontracting report (2018-20), modified by JICA study team

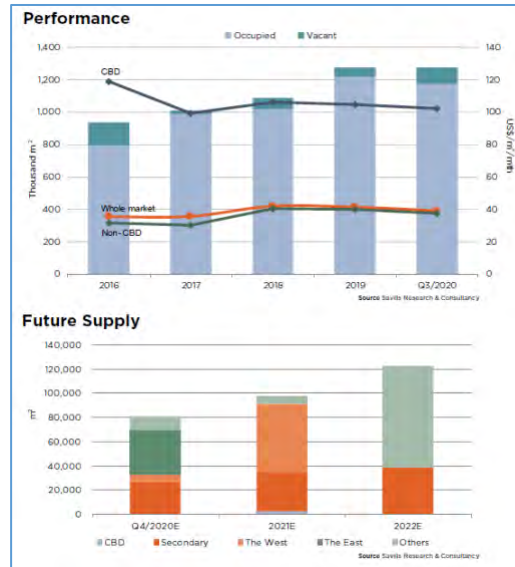
Figure 2-12 urbanization trends in Hanoi

2) Real estate market

The real estate market in Hanoi is as follows.

(1) Business

Figure 2-13 shows the trend of commercial floor space: from 2016 to 2019, commercial floor space grew steadily, but after 2019 until the third quarter of 2020, it levelled off. In 2021, most of the new supply will be in the central and western parts of the city, but in 2022, the majority of the supply will be in the peri-urban area.

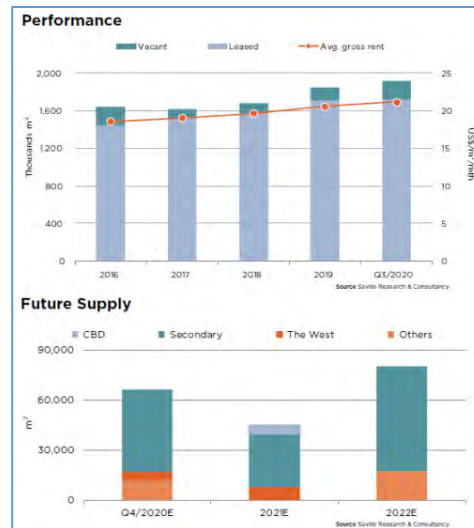


Source: Savills Vietnam, "media release q.3 2020."

Figure 2-13 real estate market in Hanoi (commercial)

(2) Office

Figure 2-14 shows the trend of office floor space: from 2016 to Q3 2020, office floor space has generally been rising steadily. The new supply is expected to be approximately 45,000 square meters in 2021 and approximately 80,000 square meters in 2022. Most of the new supply is expected to come from developments in the secondary zone, but some office supply is expected to come from the western part of the city in 2021 and from other areas in 2022.



Source: Savills Vietnam, "media release q.3 2020."

Figure 2-14 real estate market in Hanoi (office)

(3) Housing complex

Figure 2-15 shows the trend in the number of multi-family housing units sold; from 2016 until 2019, the number of multi-family housing units sold has been growing steadily. However, from 2019 until the third quarter of 2020, both the number of units sold and the absorption rate have shown a decline. The majority of apartment buildings sold are Grade B, followed by Grade C. The percentage of grade a is very small, especially after 2019. Although there has been a temporary decline, the population

is expected to continue to grow, and the urban area is expected to continue to expand. Several large-scale residential development projects are underway. The new supply is expected to be slightly more than 50,000 units in 2021 and less than 70,000 units in 2022.

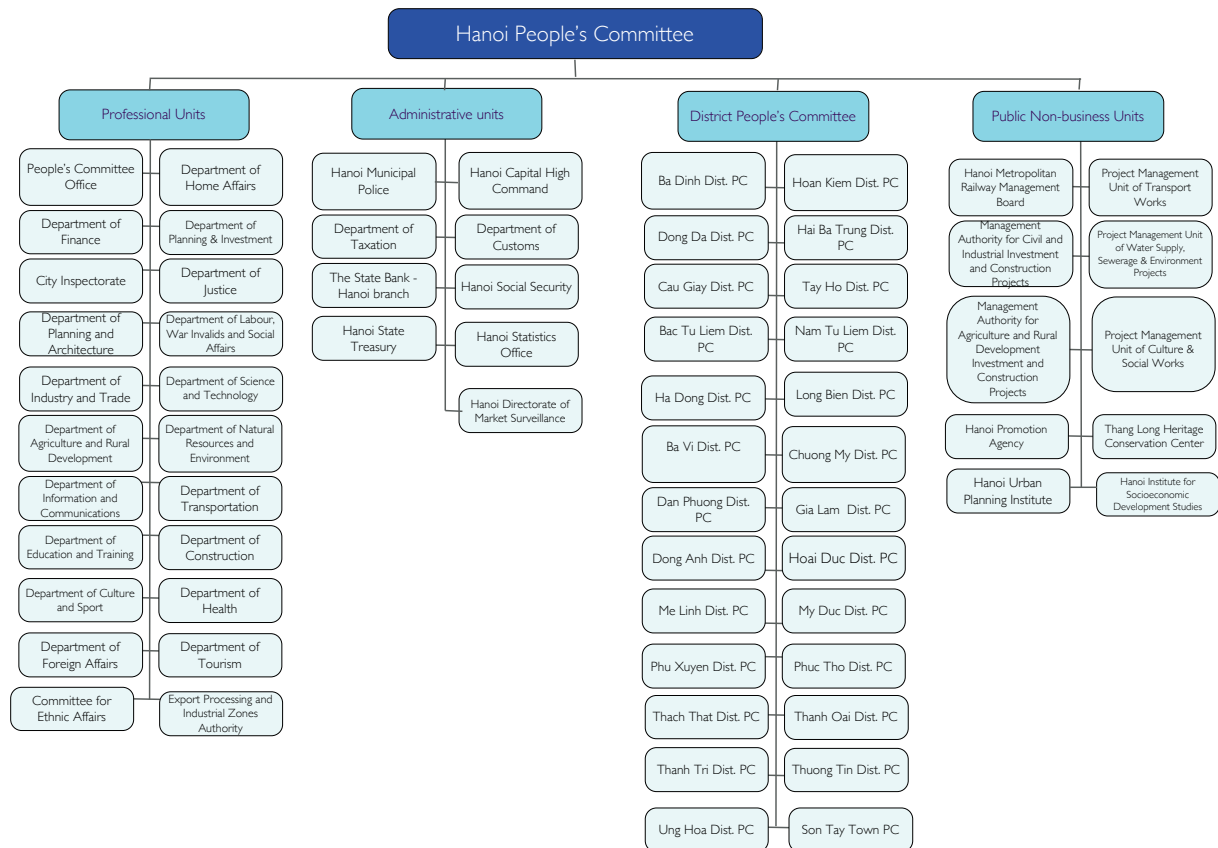


Source: Savills Vietnam, "media release q.3 2020."

Figure 2-15 real estate market in Hanoi (multi-family housing)

2.8. Organizations Involved In Public Transportation and Railway Line Development

The Hanoi people's committee (HPC) is the executive body of the municipal government of Hanoi. As shown in Figure 2-16, HPC is composed of four departments: the specialized department, the administrative department, the district department, and the department of special agencies.



Source: Hanoi HPC

Figure 2-16 organization chart of Hanoi people's committee

1) Department of Planning and Investment (DPI):

The Department of Planning and Investment is responsible for the following investment planning administrative areas

- Integration of plans for socio-economic development, drafting of master plans
- Coordinate the implementation of the approved plan among departments and districts
- List of domestic and foreign investment projects for each planning period
- official development assistance (ODA), grants management
- Coordination with Department of Finance in budget preparation

2) Department of Planning and Architecture (DPA):

The department of planning and building in Hanoi is a specialized agency directly under the municipal people's committee, with the following tasks

- Regional master plan
- City planning
- Rural construction plan
- Construction plans for specific functional areas

- Urban design
- Master plan and building regulations and standards
- Develop, evaluate, and approve master plans and urban planning projects

3) Hanoi Metropolitan Railway Management Board (MRB):

The MRB is a specialized organization established in 2001 based on the decision of the HPC as the implementing agency for urban rail projects and is responsible for planning, pre-FS, bidding, and construction supervision of railways.

4) Department of Transportation (DOT):

The department of transport in Hanoi is a specialized agency directly under the municipal people's committee, with the following duties

- Preparation of an urban transport master plan for Hanoi, including bus network and bus operation strategy
- Preparation and submission of long-term plans, five-year plans, and annual plans for important projects in the transport sector and public transport services for approval by the Hanoi people's committee
- Manage approved public transportation infrastructure and bus facility construction and maintenance projects
- Decisions on the following matters related to bus operations proposed by TRAMOC: (i) launch of new services; (ii) number of units per route; (iii) coordination of routes; (iv) investment in equipment related to buses; (v) route bidding plan; (vi) budget allocation for bus services; (vii) proposal of bus fares and structures for specific routes; and (viii) regulations on budgetary control of subsidies for bus services.

2.9. Status of Donor Involvements

1) World Bank

(1) Vietnam - Dynamic Cities Integrated Development Project (⁵Project ID PL68290, Total Cost US\$276.17 million, June 11, 2019- June 30, 2025)

The objective of the Dynamic Cities Integrated Development Project for Vietnam is to increase access to urban infrastructure and to improve integrated urban planning in the Project Cities. There are two components to the Project, the first component being structural investments - rehabilitation and construction of resilient urban infrastructure. This component includes four subcomponents: urban drainage, urban environmental sanitation, urban transport, and urban amenities and public spaces. Finally, the second component is the non-structural investments - technical assistance and implementation support. A comprehensive package of TA and project implementation support will be

⁵ <https://projects.worldbank.org/en/projects-operations/project-detail/P168290>

provided to the PPCs of the subproject cities to strengthen their capacities for integrated economic and spatial planning. Given the vulnerability of the subproject cities to disaster risks and climate change, a key emphasis will be to integrate climate change and disaster risk informed planning in each of the city's strategic development plans and to strengthen the capacities of technical staff at the city and provincial levels to mainstream disaster and climate risk-mitigation in physical development and socio-economic planning.

(2) Vietnam: Project For Improved Land Governance and Databases (VILG) ⁶(Project ID PL54387, total cost US\$180.00 million, July 5,2016- December 31,2021)

The development objective of the Improved Land Governance and Database (VILG) Project for Vietnam is to improve the efficiency and transparency of land administration services in the Project provinces, through the development and implementation of the national Multipurpose Land Information System (MPLIS). The Project comprises three components.

The first component, strengthening the quality of land service delivery, will support (a) modernization and strengthening of local land administration by simplifying standard operating procedures and guidelines and improving business processes to enable the Land Registration offices (LROs) to provide better quality and more accessible land services, though most of these activities will be financed by the Government using its own budget; (b) training and support for public awareness-raising and communication among stakeholders, including implementation of ethnic minority development plans; and (c) establishing and operating a monitoring and evaluation (M&E) system for land use management. The investments under this component will support the quality enhancement of land service delivery by streamlining service procedures and standards, renovating facilities, and enhancing the capacity of personnel working in LROs in project provinces.

The second component, establishment and development of the multi-purpose land information system (MPLIS) and the land database will provide technical assistance for the development of MPLIS and land database, finance digitization of existing maps and records on land use rights; updating and integration of cadastre data (both cadastre map users and land use information), land price data, land use plan data, and land statistics and inventory to improve the completeness and reliability.

The third component is supposed to support overall project management and overall project administration, monitoring and evaluation (M&E) of activities, and reporting.

2) Asian Development Bank

ADB is planning to co-finance Hanoi Line 3 with France and KfW, as well as the following projects in the urban development and transport sector.

Strengthening Sustainable Urban Transport for Ha Noi Metro Line 3 Project (Loan Amount: USD 58.95 million with USD 48.95 million from Clean Technology Fund⁷)

The Project was designed to provide infrastructure for improving accessibility to UMRT Line 3 stations, implement feeder bus links, a public transport management system, and associated consulting

⁶ https://projects.worldbank.org/en/projects-operations/project-detail/P154387_1

⁷ A special fund administered by the World Bank to promote clean technologies to mitigate climatic changes.

services to support the development of sustainable low carbon urban transport measures and programs in Ha Noi.

The Project outputs will be:

Component 1: Improved Accessibility Features in and around Metro Stations:

- Construction of interchanges at Station No. 8- Cau Giay and Station No. 9-Ngoc Khanh;
- Construction of two footbridges at Station No. 8;
- Construction of technical infrastructures to facilitate access to the stations of UMRT Line No.3.

Component 2: Public Transport Measures:

- Procurement of 52 electric buses to service bus feeder lines and along UMRT Line 3,
- A synchronous investment of charging station and maintenance, repairing system;
- An associated information system linked to the main bus control center in Ha Noi to provide real-time bus arrival information: the equipment for the information system at the Metro Line 3 stations, including equipment required on buses and bus stops for the system;

Component 3: Public Transport Policy Development:

The Project will provide consulting services to develop (i) station access enforcement measures to ensure clear pedestrian access and proper use of public space by vendors around the stations; (ii) a station parking policy to provide for the efficient flow of vehicles to and from the Metro Line 3 stations; (iii) support for Transit Orientated Development (TOD); and (iv) bus route network restructuring to facilitate the access by bus to the Metro line stations.

The Project will include capacity development and training to enable the Ha Noi transport agencies to implement and enforce the new policies and regulations.

The Project, initially signed in February 2015, closed in June 2020 without disbursement, but was mutually agreed in 2020 to be extended to June 2023.

3) France

France is providing studies and loans for the Urban Railway Line 3 Phase 1 project, which is currently under construction (co-financing with ADB and EIB). The extension of this line, the Urban Railway Line 3 Phase 2 Project, is currently under study, and financing is planned to be co-financed with ADB and KfW. France has recently agreed with the HPC to develop TOD technical assistance program and station accessibility improvement projects for UMRT Line 3 to supplement the above ADB assistance to Line 3.

4) Korea

KOICA is currently conducting a pre-F/S for Urban Railway Line 8; however, KOICA has yet to make any commitment to this line construction project.

3. Possibility of TOD Projects (UMRT Line 2.1)

3.1. Review of Existing Plans of Hanoi Urban Railway Line 2

In the "project to support the implementation of the urban development planning study integrated with the construction of the UMRT in Hanoi, Vietnam (HAIMUD2)" conducted by JICA in 2015, the pedestrian space, parking lots, bus terminals, taxi berths were proposed in the development plan along Phase 1 of Hanoi Urban Railway Line 2. In contrast, the only thing that has been included in the loan agreement was the minimum requirements of station access paths from the street to the train gates.

The facilities proposed in HAIMUD2 can be summarized in Table 3-1: the proposal focuses on the development of a parking lot. On the other hand, the project cost does not include the cost of land renovation, and the construction of above-ground structures will likely require about 10 times the cost of recovery and compensation, as estimated in Part I. If the ratio is applied, the station plaza, for example, may require more than 40 billion yen.

Table 3-1 Summary of Haimud2 Proposed Facilities for UMRT Line 2.1

Item	Area(m ²)	Cost	
		(VDN million)	(Yen million)
Station plaza development incl. Parking	45,100	1,025,800	4,616
Parking facilities development	4,200	Six thousand five hundred.	29
Underground parking	46,900	2,991,000	13,460
Elevated walkway development	8,030	396,000	1,782
Road development	154,890	229,000	1,031
Underground walkway	2,900	396,000	1,782
Road widening	156,700	262,000	1,179
Intersection improvement		7,600	34
Road improvement	271,600	535,000	2,408
Intermodal facilities improvement	0	28,300	127
Provision of intermodal facilities	0	4,000	18
Bus facilities provision	7,900.	70,200	316
Bus & bike facilities provision	100	2,000	9
Traffic improvement	3,360.	24,500	110
Walkability improvement	95,315	525,800	2,366
Total	796,595	6,503,700	29,267

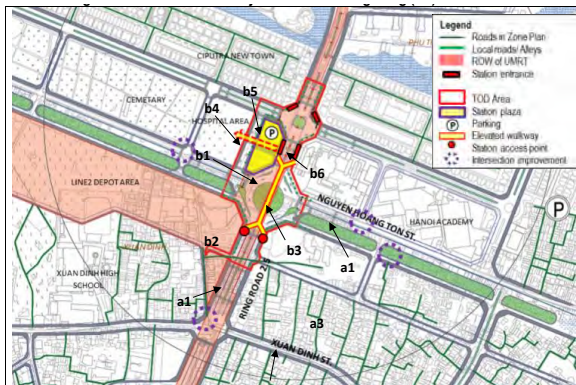
Source: HAIMUD2

The HPC has announced that in 2019 it will publish resolution 07/2019 / NQ-HDND on giving priority to the development of a system of mass transit; to encourage investments in the construction and operation of car terminals, car parking lots, applying high technology in management and operation of the transportation system. This report is currently being compiled mainly by DOT.

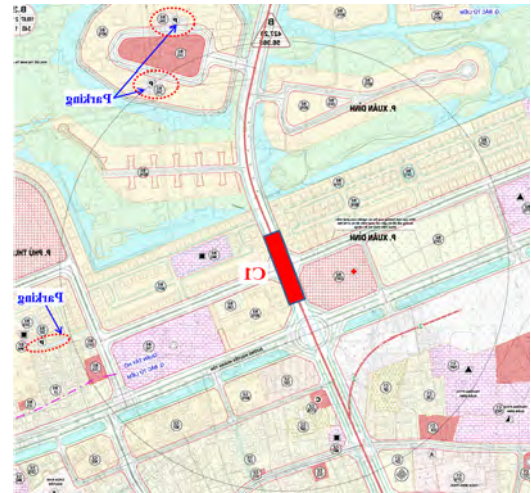
For each station, the plans proposed by HAIMUD2 and the current zoning plans are outlined below.

1) C1 station

C1 station is the first station of Phase I of Line 2 and the last station of Phase III of Line 2, which starts from Noi Bai Airport. The main facilities proposed by HAIMUD2 are an artificial ground for pedestrians (2,230m²) extending to the south of the station and a plaza and parking lot (7,400m²) (Figure 3-1). Currently, the station square area has been developed in Ciputra as a low-rise residential area. On the other hand, the parcel to the southwest is still vacant and undeveloped. This is where the hospital symbol is designated in the zoning plan in Figure 3-2.



Source: HAIMUD2



Source: DPA

Figure 3-1 Proposed C1 Station Access Facility by HAIMUD2

Figure 3-2 Zoning Plan of C1 Station Area

Table 3-2 Breakdowns of Proposed C1 Station Facilities by HAIMUD2

Category	ID	Project Name	Quantity	Estimated Cost (VND mil)	Implementation Category
Area within 500m Radius	a1	1. Improvement of Nguyen Hoang Ton St.	12,000m ² (12m x 1,000m)	21,000	Short (Minimum)
		2. Widening of Nguyen Hoang Ton St.	51,200 m ² (64m x 800m)	91,000	Others ¹⁾
		3. Development of RR2.5 (Nam Thang Long Street)	50,000 m ² (50m x 1,000m)	64,000	Others ¹⁾
	a2	1. Improvement	10,000 m ² (12.5m x 800m)	18,000	Short (Minimum)
		2. Widening	17,000 m ² (21.25m x 800m)	14,000	Others ¹⁾
	a3	Improvement of access alleys in Xuan Dinh Ward	20,800 m ² (4m x 5,200m)	45,000	Short (Minimum)
	a4	Improvement of intersections	4 locations	800	Short (Minimum)
	Sub Total (excluding others)				84,800
TOD Area	b1	Priority development of main roads in TOD area (RR2.5 and Nguyen Hoang Ton Street) ²⁾	14,000m ²	21,000	Short
	b2	Development of shortcut road in UMRT Line 2 depot area	90 m ² (9m x 63m)	1,000	Short (Minimum)
	b3	Development of elevated walkway under the UMRT viaduct	1,810 m ² (w=6m, L=200m)	89,000	Short (Minimum)
	b4	Development of elevated walkway to provide direct connection between the UMRT station and the hospital area	420 m ² (w=6m, L=70m)	21,000	Basic
	b5	Development of common station plaza (parking, loading& unloading space, walkway, lighting, green, sign, etc.)	7,400 m ²	19,000	Basic
	b6	Provision of bus bays and intermodal facilities along PR2.5 and Nguyen Hoang Ton Street	2 locations	2,000	Short (Minimum)
	b7	Improvement of traffic management in the TOD area (pedestrian crossing, signals, marking, etc.)	4 signals 460m ² for marking	2,000	Short (Minimum)
Sub Total				155,000	
TOTAL				239,800	

1) Road development project in the area within 500m radius is excluded from TOD project.

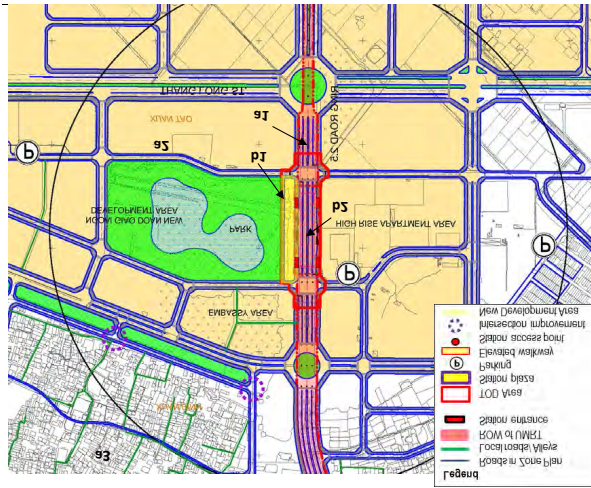
2) Quantity and coverage of road projects within 500m radius and projects in TOD area are not overlapped.

Source: HAIMUD2

2) C2 station

Station C2 is located on the west side of the Khu Ngoai Gia Doan Park. This park is a regional park with a gourd-shaped pond as its center, covering an area of about 7.4 hectares. Currently, the Korean embassy is located on the north side of the park, but in the future, it is planned to be developed into an embassy district surrounding the park. Two high-rise residential buildings have already been

completed in the east of the station. The main facilities proposed by HAIMUD2 are road construction (26,000m²) and parking in front of the station (2,800m²) (Figure 3-3). The zoning plan shown in Figure 3-4 does not incorporate these proposals. JICA study team proposes an alternate use of the land for the station parking lot identified by HAIMUD2. The proposal is to include public and commercial spaces and residential tower buildings that bring a high affinity to the park (refer to 3.4 for a more detailed concept).



Source: HAIMUD2



Source: DPA

Figure 3-3 Proposed C2 Station Access Facility by HAIMUD2

Figure 3-4 Zoning Plan of C2 Station Area

Table 3-3 Breakdowns of Proposed C2 Station Facilities by HAIMUD2

Category	ID	Project Name	Quantity	Estimated Cost (VND mil)	Implementation Category
Area within 500m Radius	a1	Development of RR2.5	20,000m ² (50m x 400m)	26,000	Others ²⁾
	a2	Development of secondary roads in new urban development area ¹⁾	(excluded)	(excluded)	Others ²⁾
	a3	Improvement of access alleys in Xuan Dinh ward	11,200m ² (5m x 2,200m)	24,000	Short (Minimum)
	a4	Improvement of intersections in the area within 500m radius of the station	2 locations	400	Short (Minimum)
	Sub Total				24,400
TOD Area	b1	Development of station plaza on the park side of the station	2,600m ²	2,800	Short (Minimum)
	b2	Provision of bus bays and intermodal facilities along PR2.5 and Nguyen Hoang Ton Street	2 locations	1,200	Short (Minimum)
	b3	Improvement of traffic management in the TOD area (pedestrian crossing, signals, marking, etc.)	8 signals 600m ² for marking	4,100	Short (Minimum)
Sub Total				8,100	
Total				32,500	

1) Estimated cost includes only the road section which HPC will construct. Other road sections inside of Ngoai Giao Doan development area have been developed by the private developer (ongoing).

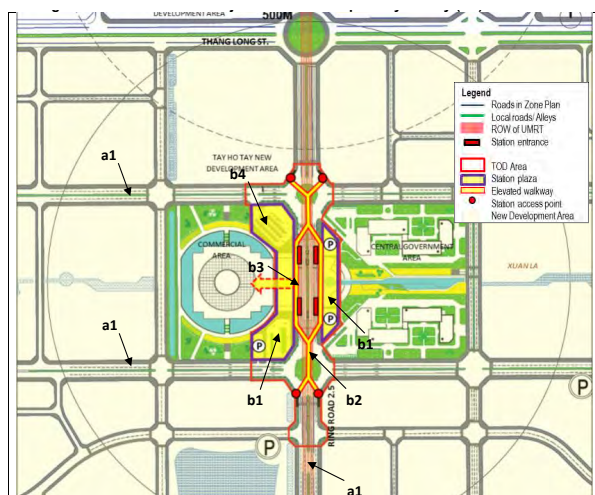
2) Road development project in the area within 500m radius is excluded from TOD project.

Source: HAIMUD2

3) C3 station

Station C3 is located in an undeveloped area. According to the zoning plan, the entire east side of the station is designated as a governmental district, while the west side has already been licensed for investment by a Korean developer (Figure 3-6). The main facilities proposed by HAIMUD2 are an artificial ground for pedestrians (5,800m²), a parking lot in front of the station (18,000m²), and a bus

terminal (7,500m²). Many of the sites identified by HAIMUD2 are still undeveloped (Figure 3-5). Many of the sites identified in HAIMUD2 are still undeveloped and have the potential to be used as station buildings.



Source: HAIMUD2



Source: DPA

Figure 3-5 Proposed C3 Station Access Facility by HAIMUD2

Figure 3-6 Zoning Plan of C3 Station Area

Table 3-4 Breakdowns of Proposed C3 Station Facilities by HAIMUD2

Category	ID	Project Name	Quantity	Estimated Cost (VND mil)	Implementation Category	
Area within 500m Radius	a1	Development of RR2.5 and east- west roads at the station ¹⁾	---	---	Others	
	a2	Development of distribution roads in new urban development area ¹⁾	---	---	Short	
	a3	Improvement of walkability in the area	---	---	Short	
Sub Total				0		
TOD Area	b1	Development of comprehensive station plaza on the both sides of the station	East station plaza	9,000m ²	20,000	Basic
			West station plaza	9,000m ²	29,000	Basic
	b2	Development of elevated walkways under the UMRT viaduct along RR 2.5	5,800m ² (w=6m, L=130m& 150m)	286,000	Short (Minimum)	
	b3	Provision of bus facilities at the station along RR2.5	Lump sum	1,000	Short (Minimum)	
	b4	Development of integrated UMRT extension bus terminal	7,500m ²	31,000	Basic	
	b5	Improvement of traffic management	Lump sum	4,000	Short (Minimum)	
Sub Total				371,000		
Total				371,000		

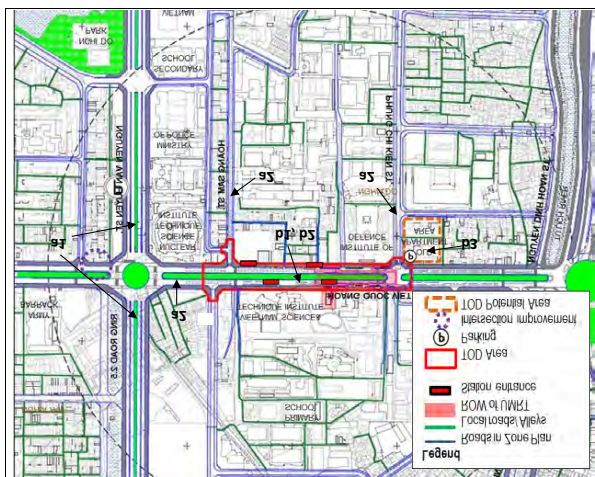
1) Estimated cost includes only the road section which HPC will construct. Other road sections inside of Ngoai Giao Doan development area have been developed by the private developer (ongoing).

2) Road development project in the area within 500m radius is excluded from TOD project.

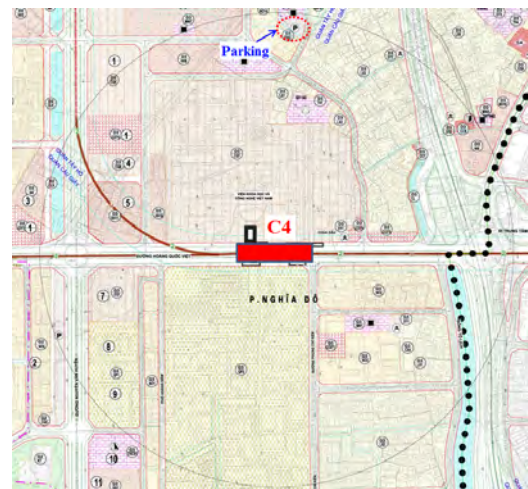
Source: HAIMUD2

4) C4 station

From the C4 station onwards, the stations will be located underground. The Vietnam Science and Technology Institute is located on the north side of the station, the academy of defence, a military educational institution, is located on the south side, and small store houses and offices fill the space between the two. Above the station is Hoang Quoc Viet Street, a 40-meter-wide road with two lanes on each side and a median with trees planted in the middle, which is very busy. The main facilities proposed by HAIMUD2 are road construction and improvement (88,500m²), underground passage-way (180m²), and underground parking (4,800m²). However, the underground parking and the upper part of the corridor are assumed to be redeveloped by the private sector. The zoning plan (Figure 3-8) does not assign any designation related to the transfer facilities, but the improvement of the access road is planned in conjunction with overarching district redevelopment, almost following the street and street improvements designated by HAIMUD2.



Source: HAIMUD2



Source: DPA

Figure 3-7 Proposed C4 Station Access Facility by HAIMUD2

Figure 3-8 Zoning Plan of C4 Station Area

Table 3-5 Breakdowns of Proposed C4 Station Facilities by HAIMUD2

Category	ID	Project Name		Quantity	Estimated Cost (VND mil)	Implementation Category
Area within 500m Radius	a1	Development of RR2.5	1. Development of RR2.5 (W=50m)	25,000m ² (50m x 500m)	32,000	Others ¹⁾
			2. Widening of Nguyen Van Huyen St. (W=50m)	7,500m ² (25m x 300m)	13,000	Others ¹⁾
	a2	Improvement of sidewalk and walking condition of Hoang Quoc Viet St., Hoang Sam St., Phung Chi Kien St. and Nguyen Dinh Hoan St.		26,100 m ² (W=3-8m, L=4,500m)	70,000	Short (Minimum)
	a3	Improvement of access alleys in Nghia Do, Nghia Tan wards		30,000m ² (W=3m, L=10,000m)	64,000	Short (Minimum)
	a4	Improvement of intersections		4 locations	800	Short (Minimum)
Sub Total (excluding others)					134,800	
TOD area	b1	Improvement of sidewalk and walking environment in the TOD area ²⁾		4,900m ²	13,000	Short (Minimum)
	b2	Provision of bus bays and intermodal facilities along Hoang Quoc Viet Street		Lump sum	3,000	Short (Minimum)
	b3	Development of underground walkway and parking in consideration of redevelopment of old apartment area (TOD potential area)	1. Underground walkway	180m ² (6m x 30m)	24,000	Basic
			2. Underground parking	4,800m ² (60m x 80m)	391,000	Basic
B4	Improvement of traffic management (sign, marking, etc.)		10 sets of signs 360m ² for marking	500	Short (Minimum)	
Sub Total					431,500	
Total					566,300	

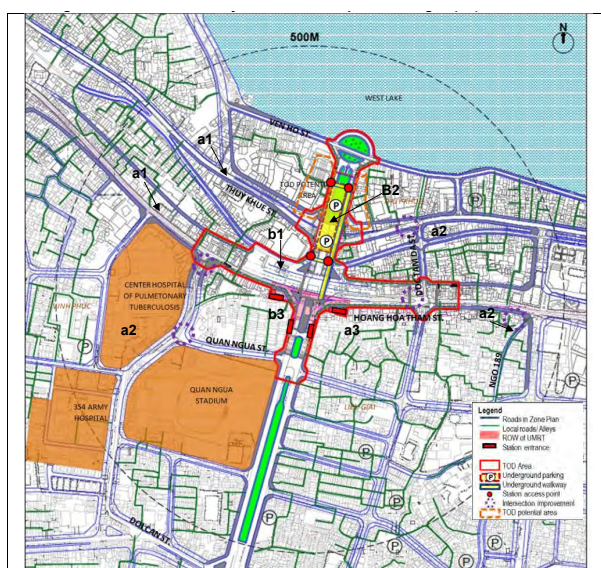
1) Road development project in the area within 500m radius is excluded from TOD project.

2) Quantity and coverage of road projects within 500m radius and projects in TOD area are not overlapped.

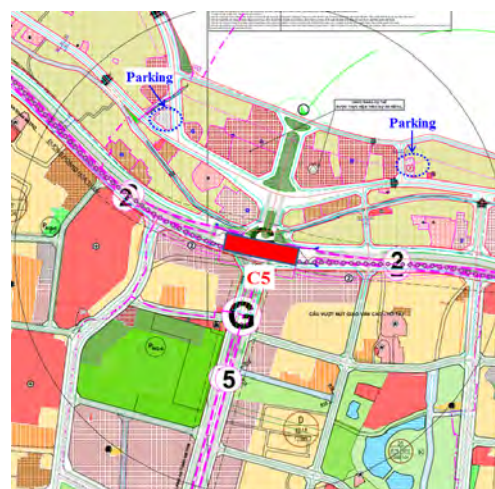
Source: HAIMUD2

5) C5 station

The C5 station is also an underground station, and from this station, the UMRT Lines 2 runs in close proximity to the south of west lake, heading towards the city center. Although the hinterland area to the north is limited, it has the potential for development such as waterfront recreation. The Quan Ngua Sports Stadium is located 100m south of the city. It also has the potential to become a major transportation hub in the future as a terminal of the UMRT Line 5 will adjoining to this station. The main facilities proposed by HAIMUD2 are road construction and widening (75,000m²), underground passageway on Van Cao Street (1,000m²) and underground parking (8,000m²). (1,000m²), and an underground parking lot (8,000m²). The zoning plan does not assign any designation related to the transfer facilities (Figure 3-10), but the improvement of the access road is planned in conjunction with over-arching district redevelopment, almost following the street and street improvements designated by HAIMUD2 (Figure 3-9).



Source: HAIMUD2



Source: DPA

Figure 3-9 Proposed C5 Station Access Facility by HAIMUD2

Figure 3-10 Zoning Plan of C5 Station Area

Table 3-6 Breakdowns of Proposed C5 Station Facilities by HAIMUD2

Category	ID	Project Name	Quantity	Estimated Cost (mil. VND)	Implementation Category	
Area within 500m Radius	a1	Widening of Hoang Hoa Tham St. and Thuy Khue Streets	1. Improvement	13,000m ²	25,000	Short (Minimum)
			2. Widening	28,000 m ²	50,000	Others ¹⁾
	a2	Improvement of Doc Ngu, Ngo 189, Doc Tam Da Streets	1. Improvement	7,600 m ²	14,000	Short (Minimum)
			2. Widening	11,000m ²	19,000	Others ¹⁾
	a3	Improvement of Access Alleys in Thuy Khue, Ngoc Ha and Vinh Phuc Wards	36,000 m ² (W=3m, L=12,000m)	77,000	Short (Minimum)	
a4	Improvement of Intersections	6 locations	1,000	Short (Minimum)		
Sub Total (excluding others)				117,000		
TOD Area	b1	Priority Development of Roads in TOD Area ²⁾	19,000m ²	34,000	Short	
	b2	Development of Integrated Underground Walkway and Parking	1. Underground Walkways	1,000m ²	133,000	Basic
			2. Underground Parking	8,000m ³	652,000	Basic
	b3	Provision of bus bays and intermodal facilities along Hoang Hoa Tham St. and Van Cao St	Lump sum	800	Short (Minimum)	
b4	Improvement of traffic management	Lump sum	3,800	Short (Minimum)		
Sub Total				823,600		
Total				940,600		

1) Road development project in the area within 500m radius is excluded from TOD project.

2) Quantity and coverage of road projects within 500m radius and projects in TOD area are not overlapped.

Source: HAIMUD2

6) C6 station

The C6 station has a government office area and the Mexican embassy on the north side, and a green belt surrounding the Hanoi botanical garden is located on the south side, across from army barracks and a long, narrow shopping street. The Project consists of road construction and improvement (74,100m²), underground passage (400m²), and underground parking (10,000m²). However, the underground parking and the upper part of the corridor are assumed to be redeveloped by the private sector. The zoning plan does not assign any designation related to the transfer facilities (Figure 3-12), the improvement of the access road is planned in conjunction with over-arching district redevelopment, almost following the street and street improvements designated by HAIMUD2.



Source: HAIMUD2

Figure 3-11 Proposed C6 Station Access Facility by HAIMUD2



Source: DPA

Figure 3-12 Zoning Plan of C6 Station Area

Table 3-7 Breakdowns of Proposed C6 Station Facilities by HAIMUD2

Category	ID	Project Name		Quantity	Estimated Cost (mil. VND)	Implementation Category
Area within 500m Radius	a1	Widening of Hoang Hoa Tam Street and Thuy Khue Street including development of connecting road between the two	1. Improvement	23,400m ²	42,000	Short (Minimum)
			2. Widening and development	38,500m ²	69,000	Others ¹⁾
	a2	Improvement of alleys in Ngoc Ha and Thuy Khue Wards	15,000m ² (W=3m, L=5,000m)	32,000	Short (Minimum)	
	a3	Study for development of new access road to connect between station and the West Lake	---	-	Short (Minimum)	
	a4	Improvement of intersections	8 locations	1,900	Short (Minimum)	
Sub Total					75,900	
TOD area	b1	Priority development of roads in TOD area ²⁾		20,600m ²	41,000	Short
	b2	Development of underground walkway connecting the station with Bach Thao Park		400m ² (W=4m, L=100m)	54,000	Basic
	b3	Development of underground parking in conjunction with redevelopment of TOD potential area		10,000m ²	815,000	Basic
	b4	Provision of bus bays and intermodal facilities along Hoang Hoa Tam St. and Thuy Khue St		2 locations	1,200	Short (Minimum)
	b5	Improvement of traffic management (signals, signs, marking, etc.)		7 signals 1,130m ² for marking	1,100	Short (Minimum)
Sub Total					912,300	
Total					988,200	

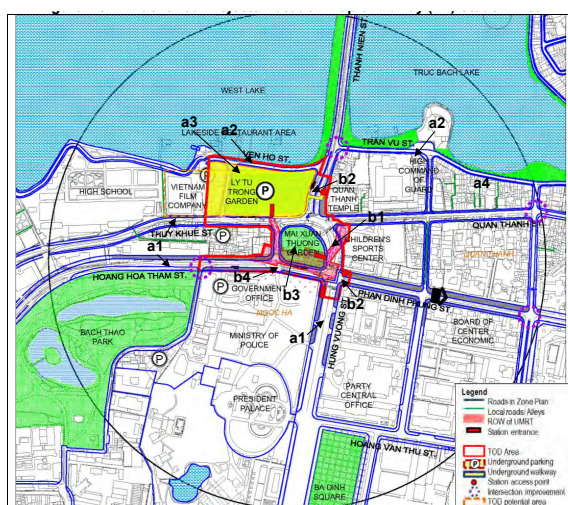
1) Road development project in the area within 500m radius is excluded from TOD project.

2) Quantity and coverage of road projects within 500m radius and projects in TOD area are not overlapped.

Source: HAIMUD2

7) C7 station

The C7 station is also an underground station, with Mai Xuan Truong Park above the station, Ly Tu Trong Park Across Thu Khue Street, and Thanh Nien Street, an artificial road built on the west lake, to the north of the station, making it a major transportation hub as well as a recreational space for Hanoi citizens. The main facilities proposed by HAIMUD2 are road improvements (69,800m²), underpasses (720m²) and underground parking for the entirety of Ly Tu Trong Park (9,500m²). The zoning plan (Figure 3-14) does not assign any designation related to the transfer facilities, but the improvement of the access road is planned in conjunction with over-arching district redevelopment, almost following the street and street improvements designated by HAIMUD2.



Source: HAIMUD2



Source: DPA

Figure 3-13 Proposed C7 Station Access Facility by HAIMUD2

Figure 3-14 Zoning Plan of C7 Station Area

Table 3-8 Breakdowns of Proposed C7 Station Facilities by HAIMUD2

		Project Name	Quantity	Estimated Cost (mil. VND)	Implementation Category	
Area within 500m Radius	a1	Improvement of Hoang Hoa Tham St., Thuy Khue St., Thanh Nien St., Hung Vuong St., Quan Thanh St., Phan Dinh Phung St.	1. Improvement	55,000m ²	97,000	Short (Minimum)
			2. Widening	3,500m ²	6,000	Others ¹⁾
	a2	Improvement of Ven Ho St., Tran Vu St.		9,800	17,000	Short (Minimum)
	a3	Development of access road connecting to the West Lake between Vietnam Film Company and Ly Tu Trong Garden		1,800 (15m x 120m)	2,000	Short
	a4	Improvement of access alleys in Thuy Khue Ward and Quan Thanh Ward		5,000m ² (W=5m, L=1,000m)	11,000	Short (Minimum)
	a5	Improvement of intersections		4 locations	800	Short (Minimum)
		Sub Total (excluding others)		127,800		
TOD area	b1	Priority development of main roads in the TOD area (Hoang Hoa Tham Str., Thuy Khue Str., Hung Vuong Str., Quan Thanh Str.) ²⁾		4,400m ²	8,000	Short
	b2	Development of two underground walkways		720m ² (W=4m, L=180m)	97,000	Basic
	b3	Development of underground parking under Mai Xuan Thung Garden and Ly Tu Trong Flower Garden		9,500m ²	774,000	Basic
	b4	Provision of bus bays and facilities along Hoang Hoa Tham St. and Thuy Khue St		Lump sum	30,000	Short (Minimum)
	b5	Improvement of traffic management		Lump sum	3,000	Short (Minimum)
		Sub Total		912,000		
		Total		1,039,800		

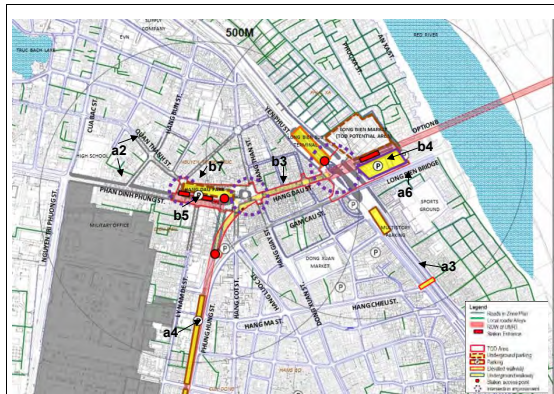
1) Road development project in the area within 500m radius is excluded from TOD project.

2) Quantity and coverage of road projects within 500m radius and projects in TOD area are not overlapped.

Source: HAIMUD2

8) C8 station

The C8 station will be located at the northern gateway to the old city, the mecca of Hanoi tourism. The station will be built on the northern half of Hang Dau Park (about 0.8 ha) and the southern half under Hang Dau street. The main facilities proposed by HAIMUD2 are road improvements (58,000m²), artificial ground for pedestrians (7,100m²) and underground parking for Hang Dau Park (2,000m²). 2). The zoning plan (Figure 3-16) does not assign any designation related to the transfer facilities, the improvement of the access road is planned in conjunction with over-arching redevelopment, almost following the street and street improvements designated by HAIMUD2 (Figure 3-15).



Source: HAIMUD2



Source: DPA

Figure 3-15 Proposed C8 Station Access Facility by HAIMUD2

Figure 3-16 Zoning Plan of C8 Station Area

Table 3-9 Breakdowns of Proposed C8 Station Facilities by HAIMUD2

	Project Name	Quantity	Estimated Cost (mil. VND)	Implementation Category	
Area within 500m Radius	a1	Strengthening of traffic management to regulate traffic flow and improvement of walkability in the areas in general and the area of 500m radius of the station in particular	---	---	Minimum
	a2	Improvement of sidewalk of primary roads (Phan Dinh Phung St., Quan Thanh St., Hang Dau St., Gam Cau St., Yen Phu St.)	18,000m ²	49,000	Minimum
	a3	Provision of pedestrian bridge crossing Tran Nhat Duat St. to connect to Hang Chieu St.	135m ² (3m x 45m)	6,700	Minimum
	a4	Development of parking facilities along dyke roads (Yen Phu St. and Tran Nhat Duat St.) and Phung Hung St.	3,000m ² (W=4m, L=750m)	4,500	Minimum
	a5	Improvement of access alleys in Nguyen Trung Truc Ward, Hang Dau Ward, Hang Giay Ward, Hang Cot Ward and Phuc Xa Ward	40,000m ² (W=4m, L=10,000m)	84,000	Minimum
	a6	Development of new bus service and NMT space using to-be-abandoned VNR section including Long Bien Bridge section	---	---	Strategic ¹⁾
	a7	Provision of local circulation minibus and community bike service	---	---	Short
	a8	Improvement of intersections	9 locations	1,900	Minimum
Sub Total			146,100		
TOD area	b1	Provision of intermodal facilities along Pham Dinh Phung Street and Quan Thanh Street	Lump sum	28,300	Minimum
	b3'	Development of elevated walkway under the viaduct of UMRT Line 1 to connect C8 and V6 stations and Long Bien Bus Terminal	6,000m ² (10m x 600m)	295,800	Minimum
	b4'	Development of station plaza of Line 1 on Long Bien Market land	7,100m ²	140,000	Basic
	b5	Development of underground parking and commercial facility development under Hang Dau Park	2,000m ²	163,000	Basic
	b6	Improvement of traffic management	Lump sum	1,500	Minimum
Sub Total (excluding strategic project)			628,600		
Total			774,700		

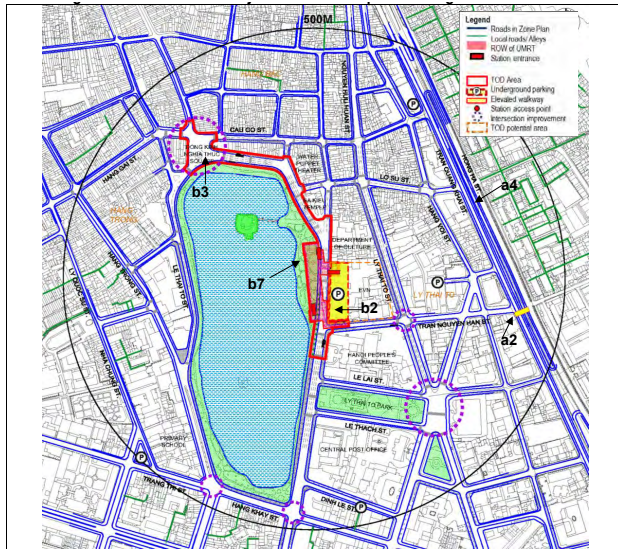
1)The cost of strategic project out of TOD Area is excluded from the total cost.

Source: HAIMUD2

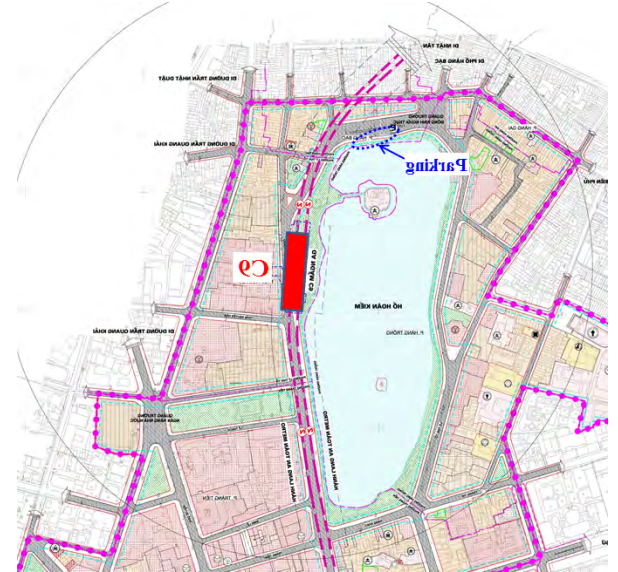
9) C9 station

The C9 station is an underground station located just east of Hoan Kiem Lake. Because of the proximity of the stations, it has taken a long time to get the Project approved due to protests from the ministry of culture, which is concerned about the environmental and cultural impact of the Project.

The main facilities proposed by HAIMUD2 are road improvements (14,800m²) and underground parking (10,000m²). However, the upper part of the underground parking lot is assumed to be redeveloped by the private sector. The zoning plan for this area (Figure 3-18) indicates very limited modifications from the current land uses due to the nature of the historically established district.



Source: HAIMUD2



Source: DPA

Figure 3-17 Proposed C9 Station Access Facility by HAIMUD2

Figure 3-18 Zoning Plan of C9 Station Area

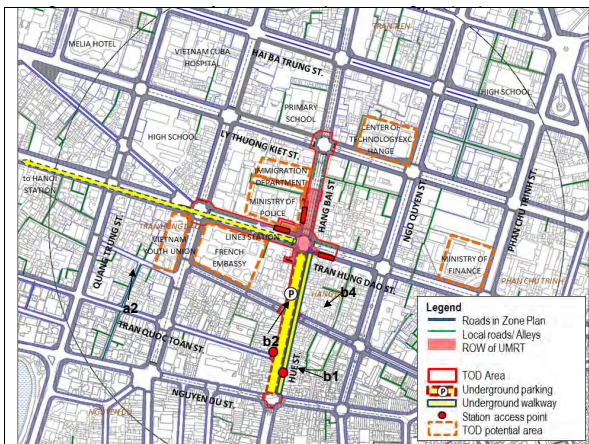
Table 3-10 Breakdowns of Proposed C9 Station Facilities by HAIMUD2

Category	ID	Project Name	Quantity	Estimated Cost (mil. VND)	Implementation Category
Area within 500m Radius	a1	Improvement of walkability in the areas	---	---	Short (Minimum)
	a2	Improvement of pedestrian crossing across dyke road (Tran Quang Khai St.)	180m ² (3m x 45m)	7,000	Short (Minimum)
	a3	Improvement of access alleys within 500 m radius of the station	14,800m ² (W=4m, L=3,700m)	31,000	Short (Minimum)
	a4	Development of parking facilities along dyke road (Tran Quang Khai St.)	1,200m ² (W=6m, L=200m)	2,000	Short (Minimum)
	a5	Provision of local circulation minibus and community bike services	---	---	Short
	a6	Strengthening of traffic management around the Ancient Quarter and Hoan Kiem Lake	15 locations	3,000	Short
	Sub Total				43,000
TOD area	b1	Improvement of the space at the entrance/exit of the station	3 locations	300	Short (Minimum)
	b2	Development of underground parking in conjunction with redevelopment of EVN area (TOD potential area)	10,000m ²	815,000	Basic
	b3	Development of EV bus and community cycle station at the north of Hoan Kiem Lake	100m ²	2,000	Basic
	b4	Improvement of traffic management (sign, signals, markings, etc.)	360m ² for marking	1,000	Short (Minimum)
Sub Total				818,300	
Total				861,300	

Source: HAIMUD2

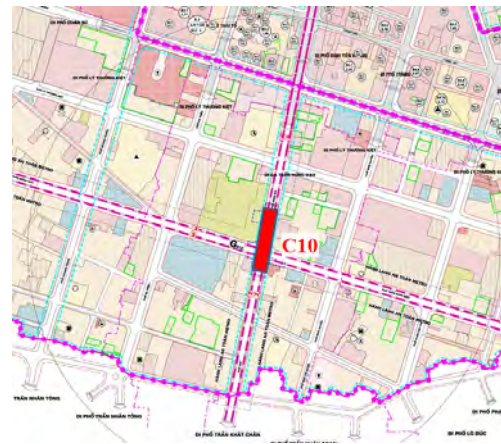
10) C10 station

Station C10 is located in the political and commercial center of Hanoi, south of Hoan Kiem Lake. HAIMUD2 focuses on a space of more than one hectare, which is required for temporary construction during the subway construction by the open-cut method and will be backfilled after the construction, and proposes the effective use of this space. Since this vast space does not require any open-cutting cost compared to normal underground construction, the construction cost can be significantly reduced. The final proposal is for a parking lot (12,600m²), but the text presents both proposals for use as commercial space and for parking. In this study, the main purpose of the research is to examine the possibility of partial transfer to commercial space with higher added value than the parking lot as the target site of the station mall development (ekinaka). The zoning plan for this area (Figure 3-20) very limited modifications from the current land uses due to the nature of the already well-developed business core area.



Source: HAIMUD2

Figure 3-19 Proposed C10 Station Access Facility by HAIMUD2



Source: DPA

Figure 3-20 Zoning Plan of C10 Station Area

Table 3-11 Breakdowns of Proposed C10 Station Facilities by HAIMUD2

Category	ID	Project Name		Quantity	Estimated Cost (mil. VND)	Implementation Category
Area within 500m Radius	a1	Improvement of vehicle traffic circulation and management of road space		---	---	Short
	a2	Development of underground walkway along Tran Hung Dao Street		--	---	Strategic ²⁾
	a3	Improvement of access alleys in Hang Bai, Tran Hung Dao, Tran Tien, Phan Chu Trinh Wards		8,000m ² (W=4m, L=2,000m)	17,000	Short (Minimum)
	a4	Provision of local mini-bus circulation and community bike services		---	---	Short
	Sub Total					17,000
TOD area	b1	Development of underground parking and walkway along Hue Street	Parking ¹⁾	6,300m ² x 2 floors (W=24.5m, L=255m)	196,000	Short (Minimum)
			Walkway	200m ²	34,000	
	b2	Development of underground walkway to connect Line 2 and Line 3 stations		400m ²	54,000	Short
	b3	Development of underground parking in conjunction with redevelopment of Hanoi Police area (TOD potential area)		--	---	Strategic ²⁾
	b4	Provision of intermodal facilities along Tran Hung Dao Street, Hue Street an Hang Bai Street		2 locations	4,000	Short (Minimum)
	b5	Improvement of traffic management in TOD area (sign, marking, benches, trees, etc.)		450m ² for marking	500	Short (Minimum)
Sub Total					288,500	
Total					305,500	

1) The civil work (excavation, construction of structure) is excluded which will be constructed by UMRT Line2 construction project.

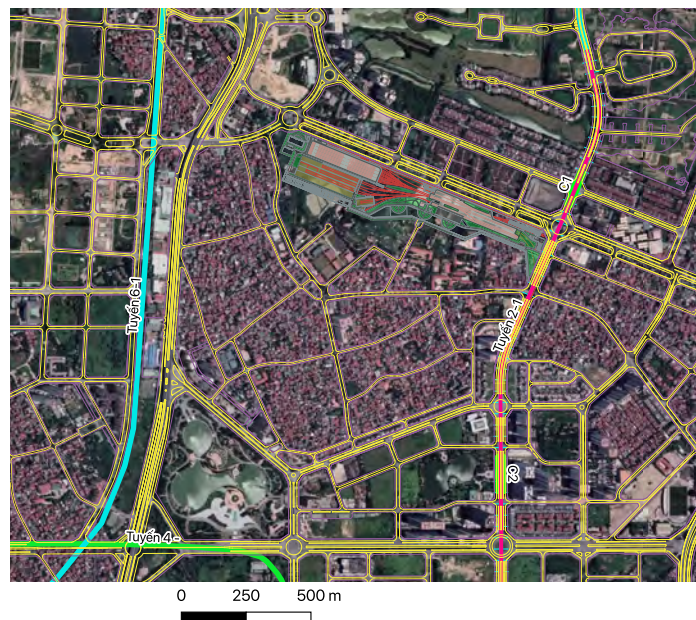
2) The strategic project is not estimated.

Source: HAIMUD2

11) Xuan Dinh Depot

There are currently no plans for a station at the Xuan Dinh depot on Urban Railway Line 2. In the future, when UMRT Line 2 will extend to Noi Bai International Airport, a large train depot will be built at Phu Lo near the airport. At that time, the function and space of this depot will be excessive. Of the 16ha of land for this depot, the facilities that require the most space is the track for stabling rolling-stocks. Most of these stabling spaces are future reserve spaces that will not be used for about 20 years even after the opening of Line 2.1, and are inefficient use of spaces economically. If the function and space of this depot can be compressed, the possibility of using it as a more economical urban space opens up.

Figure 3-21 shows the detailed land use plan for the Xuan Dinh area formulated by Hanoi City. Under the plan, Nguyen Hoang Ton Street, which runs north of the planned depot, will be widened to a 60m wide road as a trunk line connecting Ring Road 3 and Võ Chí Công (extending to Nhattan Bridge) Boulevard. On the north side of Nguyen Hoang Ton Street, the development of a large-scale luxury residential area of over 100ha, which includes an international school as a Ciputra area, is underway.



Source: : DPA

Figure 3-21 Zoning Plan for Xuan Dinh Area

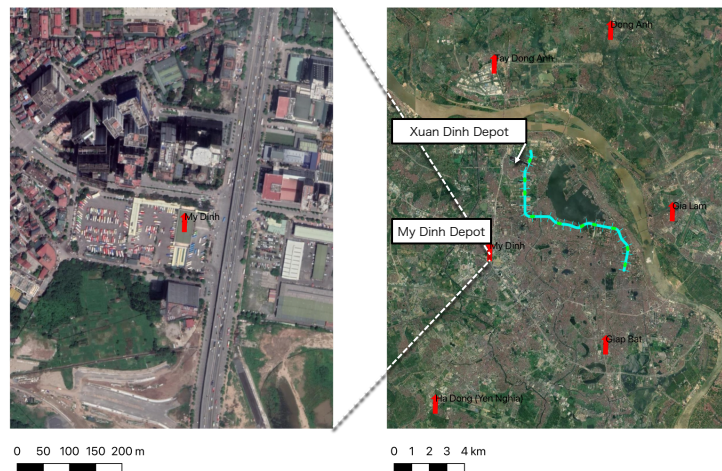
If road construction is completed according to the district plan, it is estimated that a fairly large-scale relocation of residents will be required. Figure 3-22 indicates the estimated number of buildings to be relocated from satellite images. The widening of Nguyen Hoang Ton Road will require the relocation of 500-600 houses, and the construction of the depot will require the relocation of about 150 houses. Such relocations generally require a long time to negotiate, but the land readjustment method introduced in Part I is better suited as a way to expedite the relocation process and relieve the hardship of residents. Road widening alone cannot generate enough space for plot adjustment. To realize land readjustment scheme, it is necessary to engage a larger area for adjustment of plots. The involvement of part of the depot could offer some area for land readjustment.



Source: : JICA STUDY TEAM

Figure 3-22 Requirement of Resettlement for the Widening Nguyen Hoang Ton

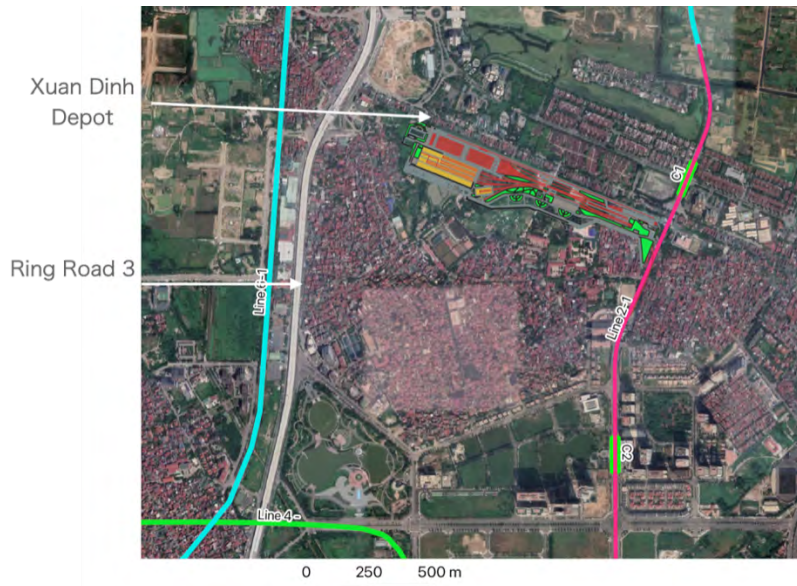
Figure 3-23 shows the location of the intercity bus terminals in Hanoi. Five terminals are located along the most complete ring road in Hanoi, the Ring Road 3. Of these, the terminal closest to the depot is the My Dinh Bus Terminal. My Dinh Bus Terminal is an open-air terminal that occupies an area of about 2ha.



Source: : JICA STUDY TEAM

Figure 3-23 Location Of The Intercity Bus Terminals In Hanoi and My Dinh Bus Terminal

As shown in Figure 3-24, the distance from the western end of the depot to Ring Road No. 3 is less than 300 m. There is a scope for improving the public transit connectivity, if a Line 2.1 station is added together with a bus terminal facility for intercity high-speed buses. The station will evolve to a western gateway of Hanoi City. The model is the case of Shinjuku Expressway Bus Terminal in Tokyo. A plan that incorporates future remodeling options will further reinforce the role of the urban railway line 2 as a core line.



Source: JICA STUDY TEAM

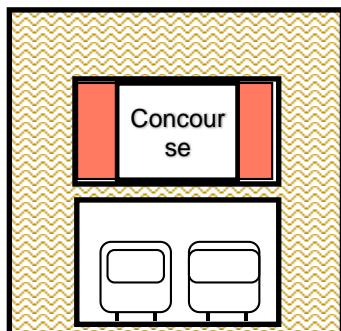
Figure 3-24 Xuan Dinh Depot

3.2. Possibility of developing commercial space in and around stations

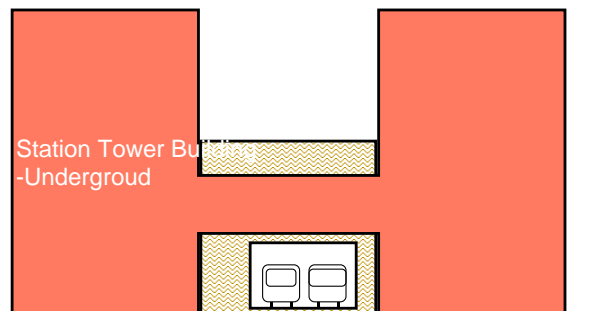
Another possibility for the land value capture in TOD areas is a joint venture with real estate developers to share the development profits, or through an auction of development rights. The most effective way to do this is to develop a station building or commercial complex called "ekinaka" that is space inside the station buildings to attract passengers as commercial services.

Along the Hanoi urban railway Line 2, Phase 1 project, the old quarter area runs on a narrow one-lane road with both sides already filled with buildings. The current station designs include only access paths from the sidewalk to the station, and no transfer facilities are planned. However, the risk of worsening traffic congestion on this road due to passengers actually getting on and off cannot be overlooked. For the station building, JICA study team will consider and propose the creation of a space where passengers from the surrounding commercial complexes can comfortably access the station, as well as a space where passengers can temporarily park their vehicles for transfer.

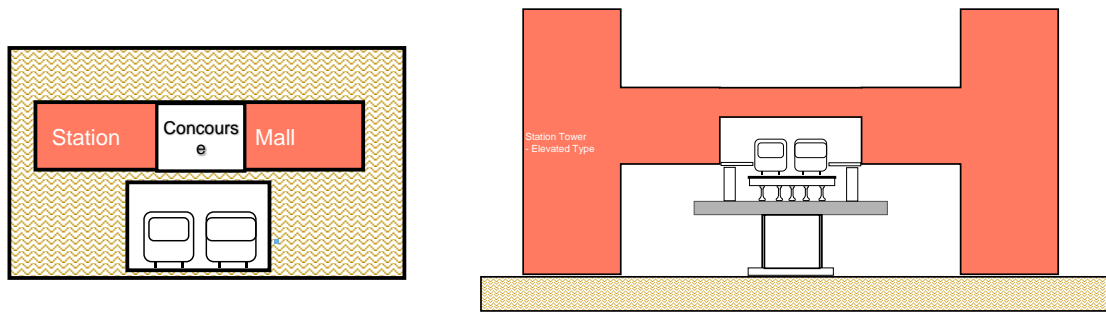
The type of station building or ekinaka will depend largely on the location of the station and the concentration and arrangement of land around the station.



① Station ekinaka / concourse



③ Station building / underground type



② Station ekinaka/ mall

④ Station building / aerial type

Note: commercial space is indicated in red.

Source: JICA Study Team

Figure 3-25 Schematic Diagram Of Station Buildings And Ekinaka

Station buildings can be defined as semi-public spaces with the following advantages

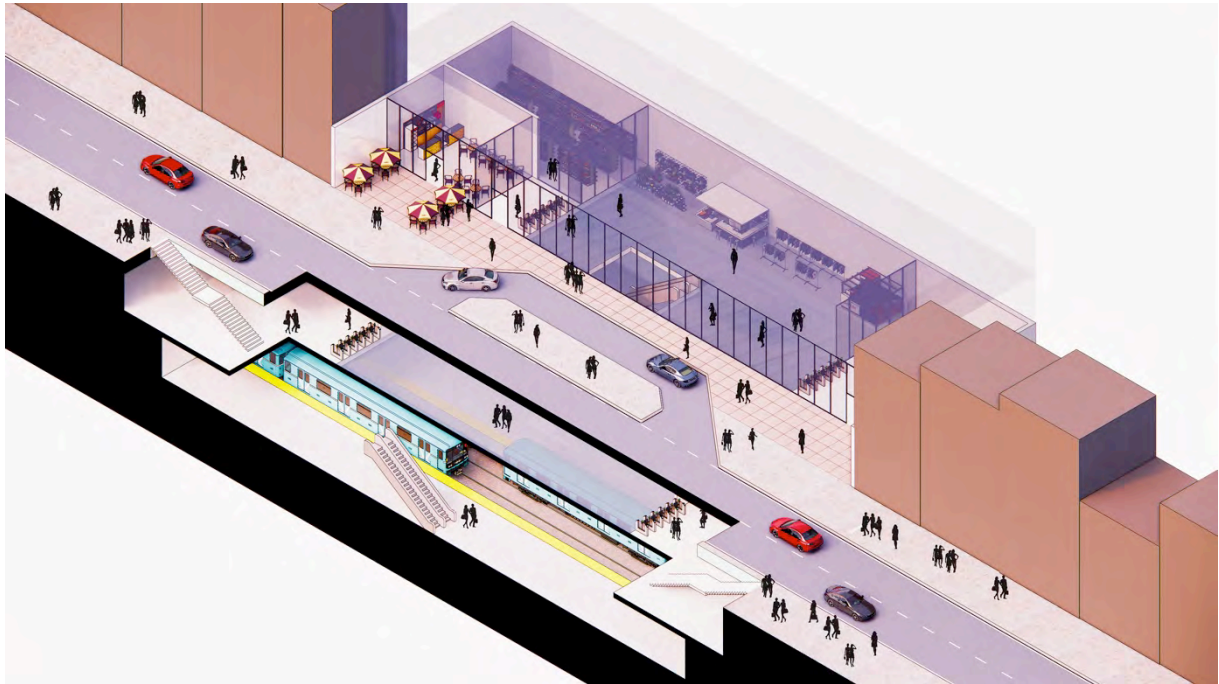
- Securing pedestrian space through setbacks when rebuilding buildings in front of and behind the station access road
- Creating an all-weather, comfortable, and safe traffic flow space to the station
- Securing space for getting in and out
- Promoting transportation technologies that minimize the number of stops and dwell time (on-demand buses, introduction of shared transportation modes)
- Creating commercial opportunities by setback + provision of public space in ekinaka
- Increasing urban rail passengers due to direct passengers from station building complexes
- Reducing feeder traffics

Basically, ekinaka is the creation of commercial space by using or widening the concourse space of a station, and with the recent boom in ekinaka , this type of space is being actively utilized in japan.

1) Transportation node development concept

(1) Underground station section

In the case of a stand-alone station building that provides a transportation node function for an underground station, there is the option of creating a drop-off bay for stopping vehicles from the street and also allowing passengers to access the station through inside the building. The station building will have the advantage of attracting a large number of passengers and increasing commercial opportunities.

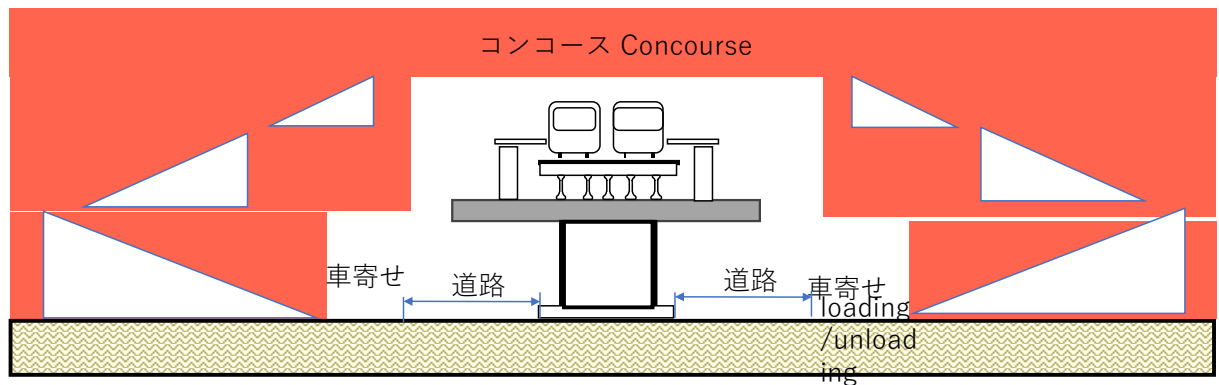


Source: JICA study team

Figure 3-26 Transfer Structure of An Underground Station

(2) Elevated station section

In an elevated station, the concourse can be placed above the platform to facilitate transfers and access from both sides of the road. By setting back the first-floor facade of the station building, it will be possible to install a porte-cochere space at the side of the road. By providing a single large bent vertical line of flow with escalators and stairs, passengers can move the station building in a large diagonal direction, which will slightly increase the access distance for passengers, but it will be a circulation route to the adjacent commercial facilities, which will be a circulation to the shopping district for passengers, providing access to shopping, dining, and other services.



Stairway
 階段・エスカレーター

Source: JICA study team

Figure 3-27 Transfer Structure At Elevated Station

3.3. Potentiality Analysis of TOD along UMRT 2.1 Stations

Table 3-12 shows the preliminary study results of the potential for a station building/ekinaka in the Line 2 Phase 1 stations and surrounding area of Hanoi urban railway Line 2 (referred to as the TOD area) in terms of land use and planning.

Table 3-12 Field Reconnaissance of Station Buildings And Ekinaka Along UMRT Line 2.1

Station attendant	Station building			Ekinaka			Points to keep in mind (focus on station buildings)
	Point on a map	Area (sqm)	Possibility	Point on a map	Area (sqm)	Possibility	
C1	1	11,450	L	Na			Difficult to construct a high-rise building in a low-rise residential district
C2	2	10,981	H	Na			Park land, but possible if mixed use can be designated.
C3	5	12,056	M	4	12,056	H	A Korean company has already obtained a license. A detailed district plan has also been submitted for approval.
				6	11,241	H	
C4	9	5,356	M	7	5,390	M	Many subdivisions are privately owned.
				8	4,911	M	
C5	12	7,680	L	14	4,810	M	Many subdivisions are privately owned.
	13	2,535	L	15	7,092	M	Many subdivisions are privately owned.
	16	4,472	L	17	1,215	M	Many subdivisions are privately owned.
C6	18	4,266	M	20	808	M	Many subdivisions are privately owned.
	19	5,514	L	21	1,023	M	
				22	692	M	
C7	23	20,645	M	24	2,042	M	
				25	1,687	M	
				26	1,636	M	
C8	29	420	L	27	1,350	M	Many subdivisions are privately owned.
	30	680	L	28	1,210	M	Many subdivisions are privately owned.
C9	Na			Na			
C10	33	1,733	L	31	1,733	M	Many subdivisions are privately owned.
	34	1,949	M	32	1,949	M	

Note: likelihood: h: high, m: medium, l: low;
Source: JICA study team

3.4. Proposed TOD Projects

As for the ODA loan formation along the Urban Railway Line 2 Phase 1, which is one of main objectives of this study, the project formation was based on the criteria as follows:

- Feasibility of government-led land assembly
- Combined urban and transportation functions
- Possibility of high-density development
- Contribution to urban rail travel demand
- Real estate investment value

Identified with the above conditions were the two potential projects of C2 Park Station and Xuan Dinh Depot Redesign projects, which aim to create new transport hubs. The projects were selected on the basis of possibility to implement independently even before the start of the Phase 1 of Urban Railway Line 2. including intercity buses, by modifying the base.

1) Park Station (C2) Square Plan

(1) Site Analysis

The surrounding areas of C2 station is planned to be developed as an embassy district in the future, surrounding the park to the west of the station, and the Vietnam-Japan International Hospital is located on the other side of the pond. The C2 station is unique in that it will be located in front of a park. Due to the scarcity of land in Hanoi, there is a shortage of public open space, and this park is expected to play an important role in enhancing the urban environment of the western area, which is undergoing rapid urbanization. During the weekday daytimes, park visitors will be limited since the activities of an open green space are limited. That means the maximization of land value is not realized. Therefore, JICA Study Team proposes to provide a commercial space that is contiguous to the station, and in addition, provide an office or residential space for an upscale clientele where people can enjoy the excellent scenery of the park. By enabling multifaceted use of the park, it is possible to ensure the land value capture, thereby recovering the public investment.

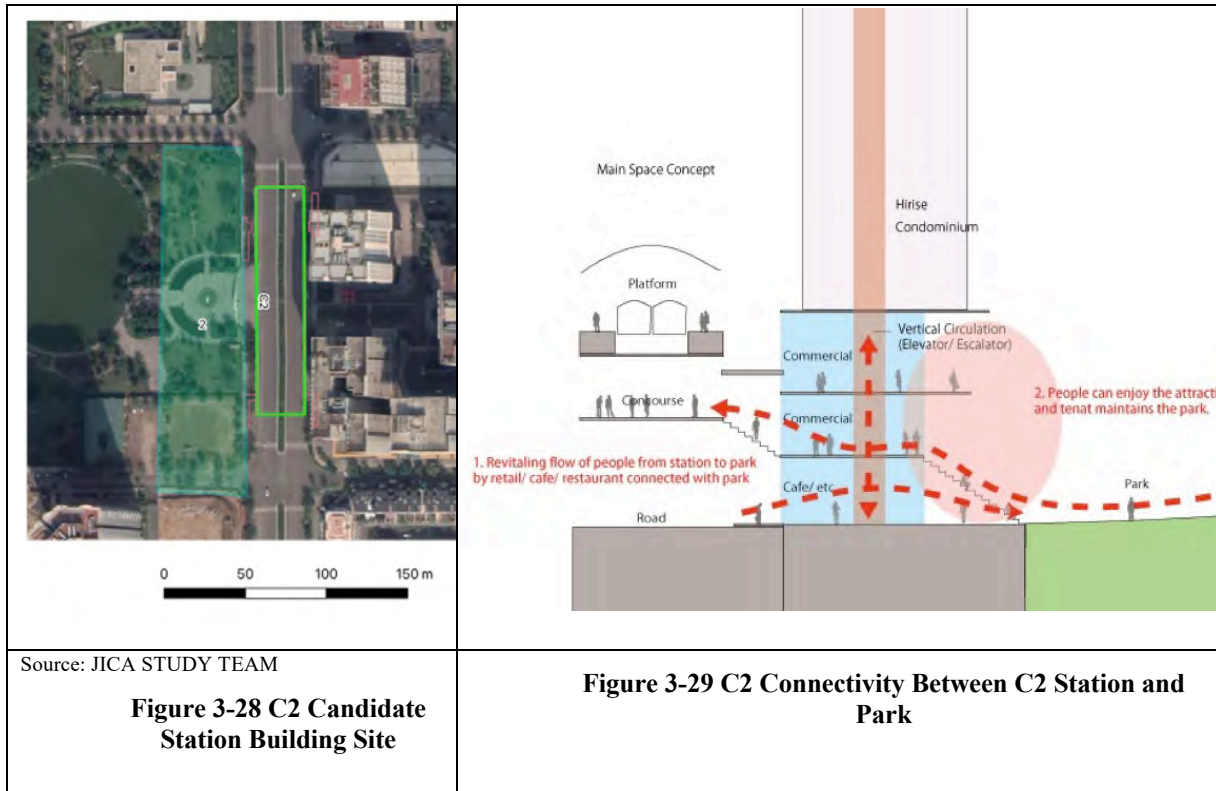
The proposed site for the station building as shown in

Figure 3-28 is designated as a park, so the development will take place on public land without resorting to eminent domain. Although there may be some opposition to reducing the park area, the benefits of enlarging park visitor base maximize the public space by devising a design, setting back the first floor facade, or allowing people to walk through, and to increase the number of people using the park by combining it with commercial services.

(2) Park Station Square Concept

The basic policy for the Park Station square development is set as follows.

- i. Securing a linear pedestrian flow line and visibilities between stations and parks
- ii. Securing linear pedestrian flow lines and fields of visibility between road and park
- iii. Easy vertical mobility between levels
- iv. Creating a commercial / relaxing space between the station and the park
- v. Maximizing the commercial value of space by increasing the density



(3) Facility Design Policy

The facility in front of the park station consists of two parts, a high-rise tower and a base (podium). The podium consists of three layers, and the connection with the park is a gentle stepped terrace, and JICA Study Team proposes a design that serves as a passageway and a resting place while overlooking the park up front. The main functions of each floor are proposed as below.

The first floor is the access floor for pedestrians, taxis and bus passengers arriving at the road directly below the station. Passengers who transfer to the railroad use the escalator or elevator in the facility in front of the station to move to the second floor of the railroad transfer floor, and park users access the park via the passage. Commercial facilities such as cafes and restaurants to serve park users are expected to be installed on this floor.

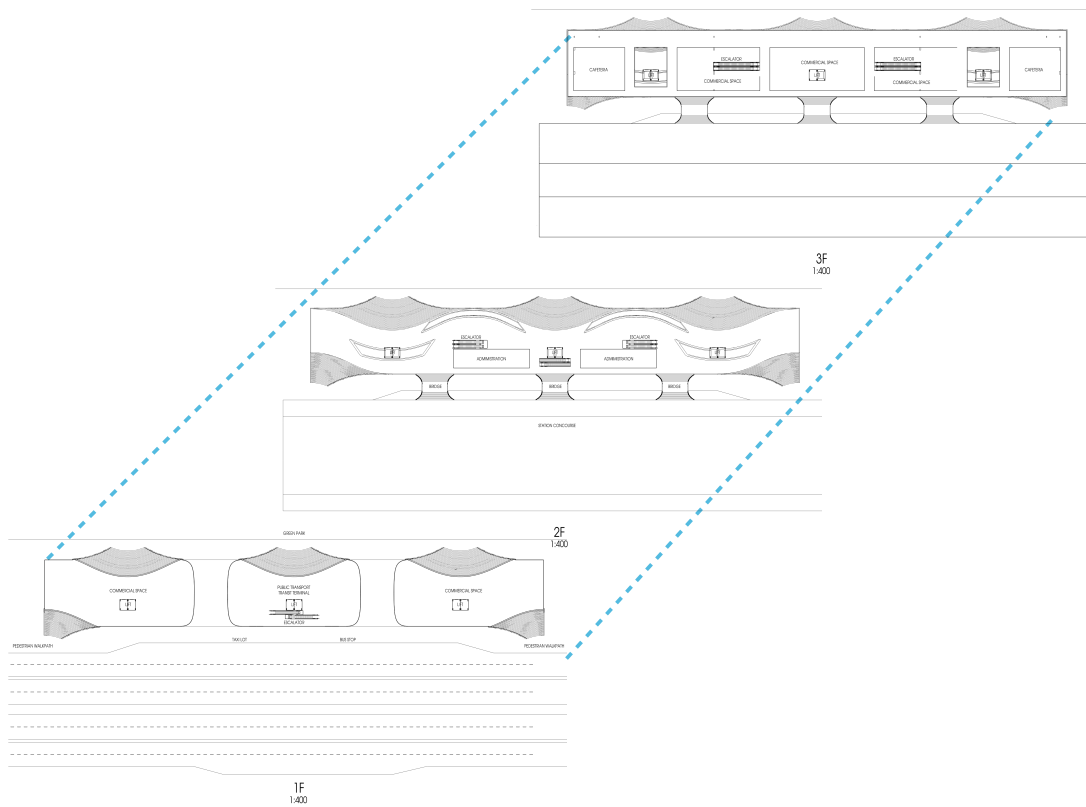
The second floor is the railway transfer floor, and railway passengers access other floors and park in the facility from this floor. There will also be an entrance hall for the condominium in the high-rise towers. Since this floor is a moving space that is continuous with the station concourse, commercial facilities such as kiosks that you can easily drop in are expected.

The 3rd floor is expected to offer commercial spaces for clothing and miscellaneous goods shops, and service shops such as photo studios or gallery, all of which expect relatively long stays of customers while enjoying the vista of the park.



Source: : JICA STUDY TEAM

Figure 3-30 C2 Park Station Square Perspective



Source : JICA STUDY TEAM

Figure 3-31 C2 Park Station Square Podium Floor Layout

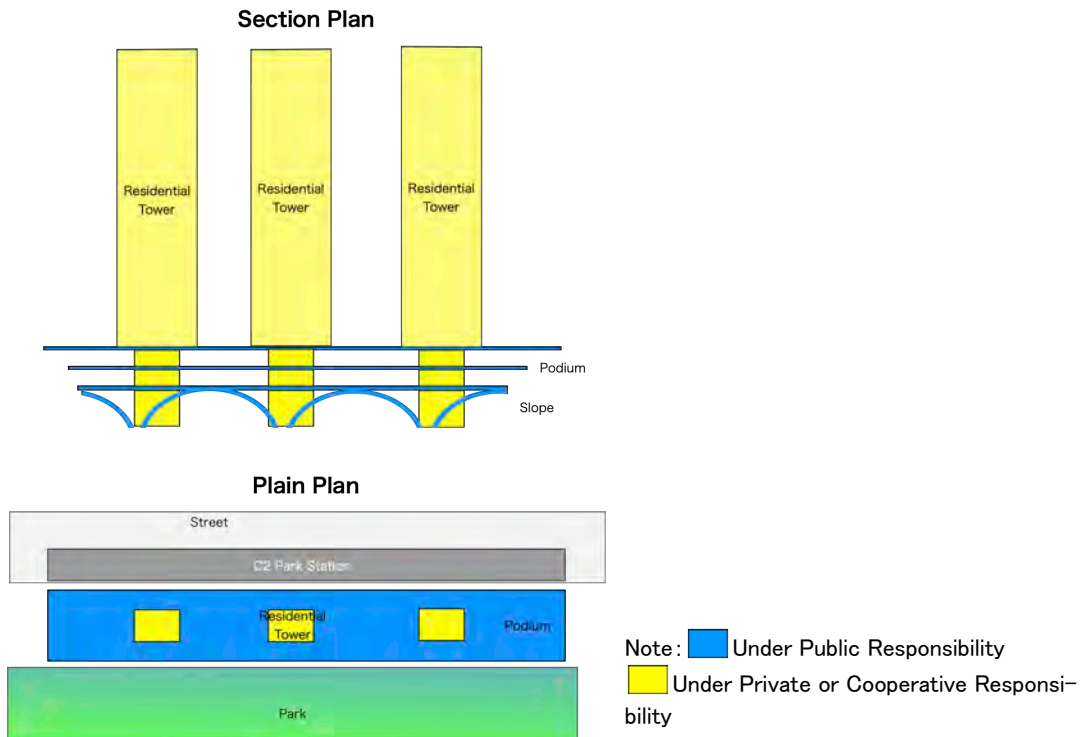
(4) Division of Responsibilities in Park PFI

The park station square facility project will be implemented in a public-private partnership. The private sector should be responsible for the development of the residential spaces which requires timely adaptation to the needs of the real estate market. The city government should take care of projects aimed at public objectives. The Podium will provide for commercial spaces along the pedestrian passages. Table 3-13 shows the division of responsibilities for components of the Park Station Square. Figure 3-32 illustrates the physical division of responsibilities for the main facilities.

Table 3-13 C2 Station Park PFI Division of Work Among Concerned Organizations

Tasks	Scope of Work	Organizations in Charge
District Planning	- Detail Plan revision - Tri-Mod Center Master Plan Creation Hanoi	City Government / DPA
Land Assembly	- Land recovery - Land readjustment project planning - Explanation of residents and consensus building - Land readjustment project implementation	HPC/DONRE/DPA
Public – Private - Partnership	- Public works sharing adjustment - Public-private business adjustment - Selection of PPP operator	HPC/ DPI
Podium Construction	- Podium plan - Podium design - Podium construction	HPC / MRB Operator: Private Company Tenants: Private Businesses
Podium Business Operations	- Podium operation and maintenance - Search and selection of tenant businesses and contract negotiation - Provision of commercial services	- Private company for podium operation - Tenant businesses
Park dwelling tower	- Residential tower plan - Residential tower design - Construction of a residential towers	Private Investors
Utilities	- Water and sewage, drainage, power facility planning - Water and sewage, drainage, power facility design - Water and sewage, drainage, power facility construction	HPC/DOC/MOIT
Other Public Facilities	- Other public facility plans - Other public facility design - Other public facility construction	HPC/DPA

Source: JICA STUDY TEAM

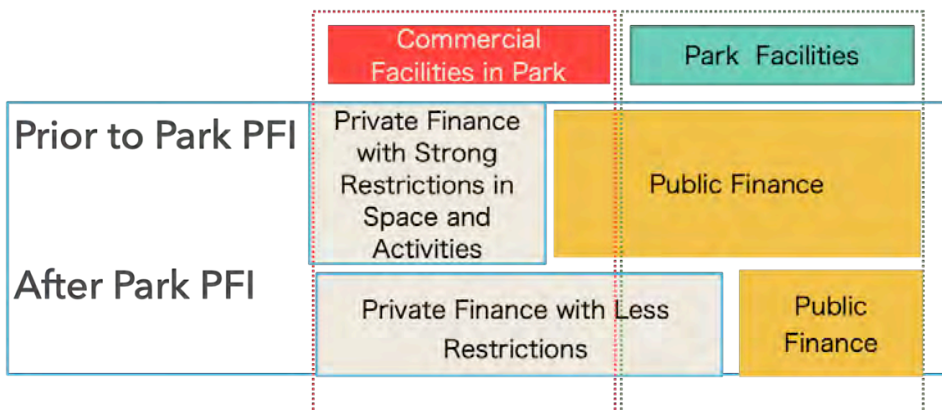


Source: JICA STUDY TEAM

Figure 3-32 C2 Park Station Square – Division of Public and Private Investment Responsibilities

Reference case in Japan

In recent years, the Government of Japan has been promoting land value capture through a PPP system for public parks, namely Park-Private Financing Initiative (PFI) system. The system is basically the commission of park management to the private sector and allowing more flexible utilization of parks as assets. Private operation can reduce park management expenditures and improve user experiences. The operator is required to pay a certain percentage of the payment and business profits to the park management municipality in exchange for permitting private commercial use in the park under Park-PFI. Figure 3-33 highlights the structural changes in the cost sharing of facility maintenance after the introduction of Park PFI.



Source : Ministry of Land, Infrastructure, Transport and Tourism

Figure 3-33 Cost Sharing Scheme of Park PFI

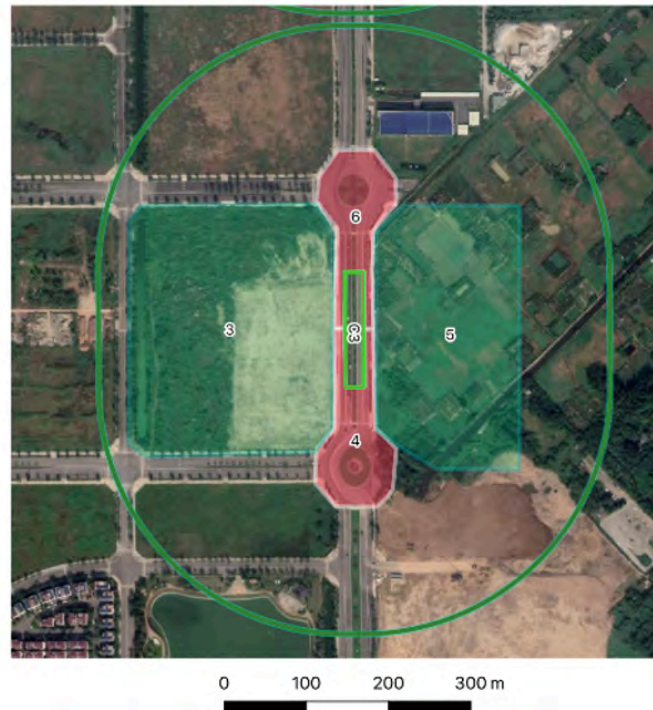
Typical examples of this system are Shinjuku Gyoen National Garden and Toyama Fugan Canal Kansui Park (see Fig. 33 3).



Source: Ministry of Land, Infrastructure, Transport and Tourism of Japan "Public Offering Installation Management System (Park-PFI)" <https://www.mlit.go.jp/sogoseisaku/kanminrenkei/content/001329492.pdf>

Figure 3-34 Tomiwa Canal Water Park (Toyama Prefecture)

2) C3 Elevated station building to the station



Source: JICA STUDY TEAM

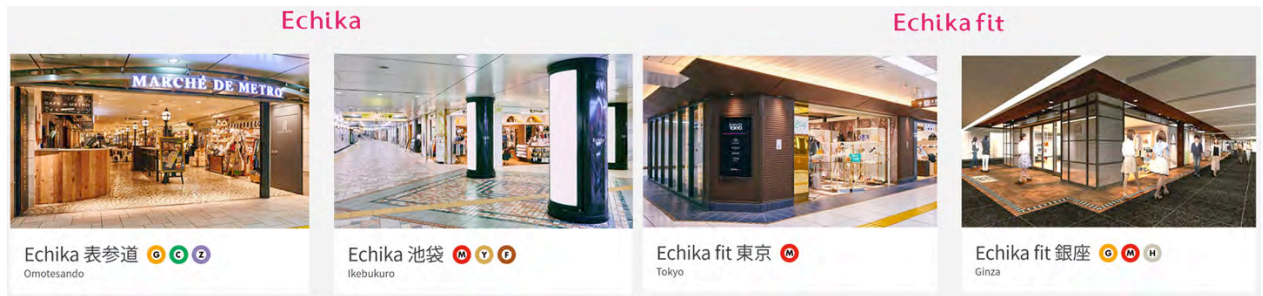
Figure 3-35 Station C3 Candidate station building site

The C3 station is the only place where both sides of the station are vacant. The east side is used for government offices, while the west side is already occupied by Korean investors. As the station is expected to develop into a business district in the future, the potential for a station building including a commercial complex is considered to be high.

3) C10 Station Ekinaka

The C10 station is located in Hai Ba Trung, which is a core district in the center of Hanoi, and is one of the most important political and commercial centers of the city. As this is the terminus of Phase I of the UMRT Line 2, there is a space extending 250m after the platform for the train switch-over and the two-floor worth of space above is available for commercial and public space utilization.

Case in Japan: In 2005, the Tokyo Metro created a commercial space in Omotesando Station, where three train lines intersect, by effectively utilizing approximately 1,300 square meters of space. The name of the commercial facility, "Echika," is a coined word combining the words "station" and "underground," meaning "E (good)" and "chika (underground)," and has contributed to improving convenience for users. Currently, the company is also developing "Echika Fit," a "convenient store complex unique to stations," which combines different categories of businesses that capture the characteristics of the times and the region.



Source: Tokyo Metro

Figure 3-36 Underground Shopping Mall Developments in Tokyo

If 6000m² of commercial space is allocated in the C10 station area, the expected revenue for space leasing would total to USD6-10 million per year, based on the current market in the central area.

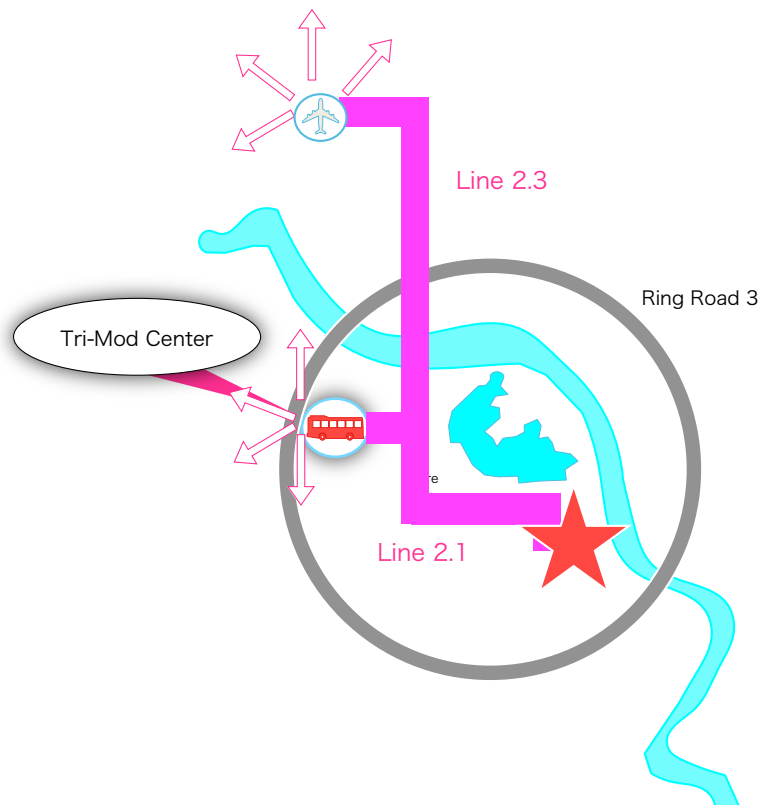
4) Upgrading of Xuan Dinh Depot to Integrated Gateway (Tri-Mod Center)

(1) Development Concept: Further Empowerment of Line 2.1

The basic objective of the proposal is to create a multi-modal transport hub integrated with business and commercial functions by economizing the space allotted for the Xuan Dinh Depot. The Tri-Mod Center will redefine the UMRT Line 2 as the strategically essential UMRT line that provides rapid links between Hanoi's political and business center to the gateways of the city for the inter-city bus and airlines (see Figure 3-37). The project will offer complex and highly productive land uses by taking the advantage of 16 ha land parcel set aside for the depot with a distance of only 300m to the Ring Road 3.

At the same time, the proposed downsizing plan will have zero impact on operation of the entire Line 2. Furthermore, in order to improve the road access to the entire district to closely pursue the zoning plan, the Tri-Mod Malls will absorb the needs of resettlements by offering accommodation and business spaces in close proximities to the current locations. By applying the land readjustment project, the district will be able to preserve the district communities by virtually eliminating the need for inhabitant relocation required by the improvement of the adjacent road network and at the same time improve the economic value of the entire region. It is a proposal for a three party win-win project among public transit riders, affected communities as well as the municipal government, serving comprehensive development goals.

The commencement of Line 2 with the proposed Redesigned Xuan Dinh Depot will further strengthen the hub functions of Hanoi as the capital and make a significant contribution to the improvement of the productivities of Hanoi as economic center.



Source : JICA STUDY TEAM

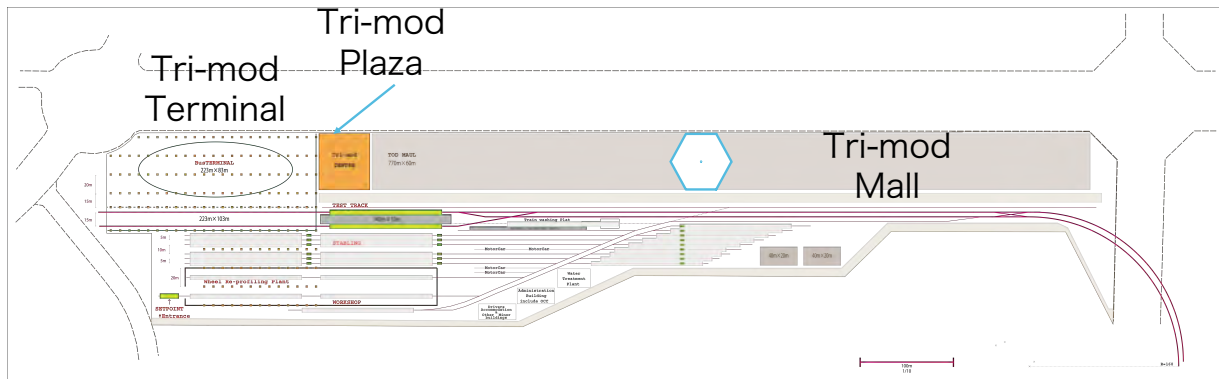
Figure 3-37 Tri-Mod Center (Xuan Dinh Depot) Development Concept

(2) Overall Layout Plan

Given the above depot capacity, the following facilities and functions will be added by tightly packaging the depot functions.

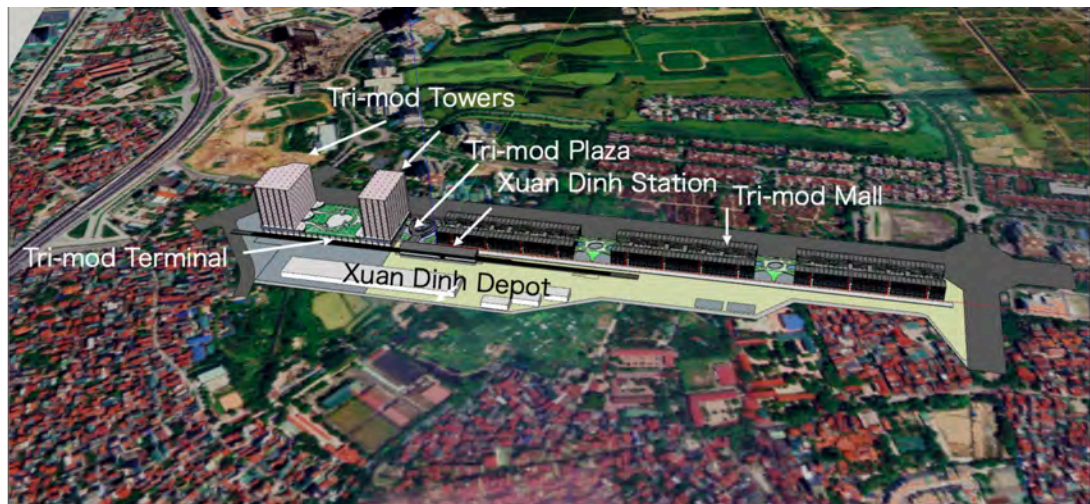
- i) Tri-mod Terminal: 1) Urban railway station x1, 2) Intercity bus stop, 3) City bus stop, 4) Taxi stand, 5) Bus ticket sales and waiting lobby, 6) Commercial facilities
- ii) Tri-Mod Towers: Office
- iii) Tri-Mod Plaza: Open to the public
- iv) Tri-Mod Mall: 1-2F Commercial Space, 3-6F Residence

Figure 3-38 shows the layout plan of the proposed facility, and Figure 3-39 shows the perspective showing the completed facility concept.



Source : JICA STUDY TEAM

Figure 3-38 Overall Layout of Tri-Mod Center + Xuan Dinh Depot



Source : JICA STUDY TEAM

Figure 3-39 Tri-Mod Center + Xuan Dinh Depot Perspective

(3) Depot Redesigning Plan

The proposal to change the depot proposes a change to the layout shown in Figure 3-40 of a redesigned plan by ensuring the depot capabilities as depot design standards as follows;

Depot Design Standards

- Stabling points: 22 (minimum 18)
- Rolling stock inspection and repair shop: 40 m x 300 m
- New train entrance
- Train wash
- Staff parking lot

- Office Building (Operation Control Center)
- Staff accommodation building
- Water purification plant

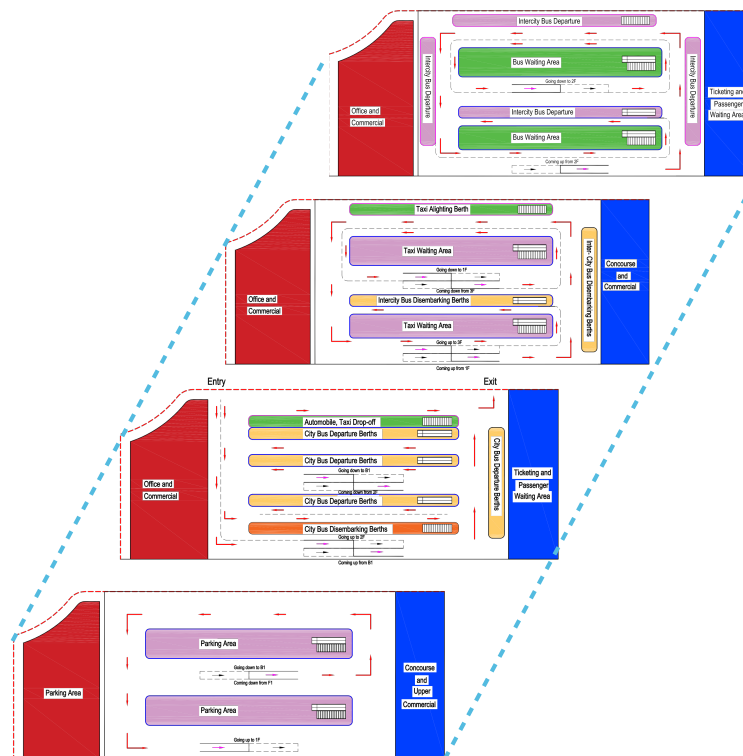
The reduction of the depot area is achieved largely by eliminating unused space as well as reducing the number of stabling points. There are at least 24 stabling points secured under the proposed design, which will enable the minimum headway of 2 minutes interval for the combined operations of Line 2.1 and Line 2.3.⁸ The proposed reduction should also result in the cost reduction of USD 5-10 million.

⁸ Line 2.3 operation is not included because Line 2.3 will have an independent depot at Phu Lo, thus it will not require the operation from Xuan Dinh Depot.

(4) Tri-Mod Terminal (bus terminal) layout

The bus terminal (Tri-mod Terminal) will be designed to serve an integrated terminal to provide connections between long-distance / intercity buses, city buses, taxis, and as well as UMRT trains with a minimum effort and time. In order to minimize intermodal transfer efficiencies and optimize the land use efficiency, the terminal will have a multi-layered structure with one basement floor and three floors above ground. The basement is a parking lot mainly for buses. The 1st floor will have a vehicle entrance, and platforms for taxi disembarkation, and city bus disembarkation. The 2nd floor will consist of intercity bus disembarkation platforms and taxi boarding platforms with waiting areas for taxis and buses. The 3rd floor will be an intercity bus departure area.

The bus terminals serve as a gateway for passengers visiting Hanoi from provinces outside of Hanoi. The vertical separation of the boarding and disembarking areas will eliminate the collision of arrival and departing passenger flows and congestions, as often seen in a conventional bus terminal to ensuring instantaneous transfers between different transport modes (see Figure 3-41).

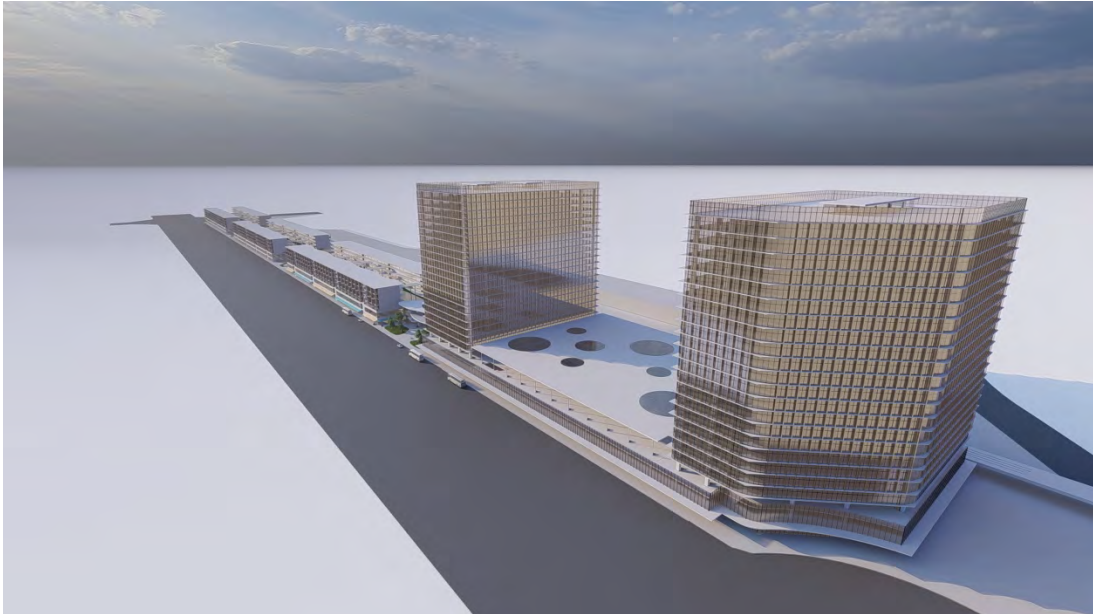


Source: : JICA STUDY TEAM

Figure 3-41 Tri-Mod Terminal Floor Plan

(5) Tri-Mod Tower (office)

Tri-mod Towers will be built in the space adjacent to the Tri-Mod Terminal by fully capturing superb accessibilities. The towers are expected to attract global companies with the railway station connecting to the airport in 20 minutes and to the Hoan Kiem area in 10 minutes as well as the bus terminals. The building design should follow international standards for sustainable office building with environmental certification such as LEED and LOTUS.



Source: JICA Study Team

Figure 3-42 Tri-Mod Office Towers

(6) Tri-mod Plaza (Open to the public)

Tri-Mod Plaza is a public plaza that serves as connecting space between the Tri-mod Terminal, a railway station, and the Tri-mod Mall (residential and commercial mix). It provides a waiting area for transport facilities, a place of relaxation for people working at the Tri-Mod Tower and people in the local community, and a lively place for various outdoor events on holidays.



Source: JICA Study Team

Figure 3-43 Tri-Mod Plaza



Source: JICA Study Tea

Figure 3-44 Inside Tri-Mod Plaza, 1st Floor (above) and 2nd Floor (below)

(7) Tri-mod Mall: 1-2F commercial space, 3-6F residence

The basic purpose of the Tri-Mod Mall is a commercial / residential complex to accommodate resettlement of residents caused by the widening of the Nguyen Hoang Ton Road and Xuan Dinh Depot constructions with extra floor spaces for revenue generation.

The commercial space on the 1st and 2nd floors will cater for not only business persons at Tri-Mod Center but also passengers to and from the railway station as well as local residents as an attractive shopping district (gallery) space.

3-6F residential facilities will house a new community of the relocated and newly entering people with common areas full of greenery for communication and relaxing.



Source: JICA Study Team

Figure 3-45 Tri-Mod Mall and Plaza



Source: JICA Study Team

Figure 3-46 Tri-Mod Mall Residential Section (above) and Commercial Section (below)

(8) Resident relocation and Land Readjustment Scheme for Urban Redevelopment

The construction of the depot and the widening of the Nguyen Hoang Ton Road as district arterial road will require the considerable relocation of residents, and the city government is currently struggling to secure land and housing for the relocation. An optimal relocation for residents is to allow them to continue to reside in the same neighborhood community. Similarly, many of the businesses want to continue the business based on the existing location-specific knowhow and local clientele while living in the same area. However, a simple road widening will force the residents to terminate the livelihood of the communities. The Tri-Mod projects implemented can generate space to accommodate the relocated people as well as for public spaces while creating more businesses. The approach proposed here is nothing but land readjustment and floor-to-land-use-right swap schemes introduced in the Part I of this Study. Utilizing spatial reduction of the depot while preserving the depot functions and staged relocation of residents will enable prompt implementation of road and block rearrangement with minimum disturbances as illustrated in Source: JICA Study Team

Figure 3-47.

It is the only way to create public space without displacing the existing people and to eliminate substantial resources required for relocation processes.



a) Stage 1 Land Readjustment

b) Stage 2 Land Readjustment

Source: JICA Study Team

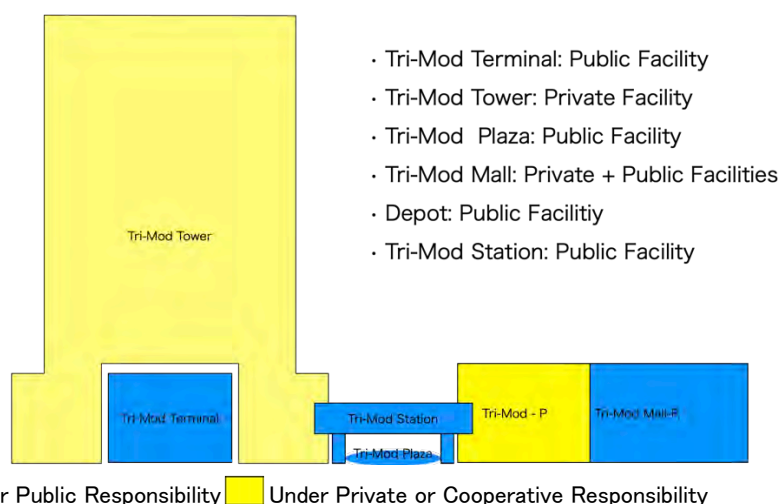
FIGURE 3-47 TRI-MOD CENTER LAND READJUSTMENT FOR RESETTLEMENT ABSORPTION

(9) Division of Responsibilities in Tri-Mod Center Project

The Tri-Mod Center project will be implemented in a public-private partnership. The private sector should be responsible for the development of the office tower and associated commercial floors which requires timely adaptation to the needs of the real estate market. The city government should be responsible for the development of terminals, Line 2.1 station, road widening, utilities and Tri-Mod Malls for resettlement. Table 3-13 shows the division of responsibilities for components of the Tri-Mod Center. Figure 3-48 illustrates the physical division of responsibilities for the main facilities.

Table 3-14 Tri-Mod Center Division of Work Among Concerned Organizations

Work/Facility	Scope	Related Agency
District plan	- Detail Plan correction - Tri-Mod Center Master Plan Creation	HPC/DPA/HUPI
Land accumulation	- Land use right recovery - Land readjustment project planning - Workshop and consensus building with residents - Land readjustment project implementation	HPC /DONRE/DPA
Business implementation adjustment	- Public works coordination - Public-private partnership arrangement - Selection of PPP operator	HPC /DPI
Tri-Mod Terminal	- Complex transportation terminal plan - Complex transportation terminal design - Construction of complex transportation terminal	HPC/DOT
Tri-Mod Tower	- Office tower plan - Office tower design - Office tower construction	Private Investors
Tri-Mod Plaza	- Plaza plan - Plaza design - Plaza construction	HPC/DOC
Tri-Mod Mall	- Development of commercial and residential buildings for re-settlers - Development of commercial and residential buildings for private investors	HPC/DONRE/DPA Private Investors
Depot	- Depot plan - Depot basic design - Depot construction	HPC/MRB
Tri-Mod station	- Train station plan - Railway station designing - Railway station construction	HPC/MRB
Road widening	- Nguyen Hoang Ton Road Widening Plan - Nguyen Hoang Ton Road widening design - Nguyen Hoang Ton Road widening construction	HPC/DOT
Utilities	- Water and sewage, drainage, power facility planning - Water and sewage, drainage, power facility design - Water and sewage, drainage, power facility construction	HPC/DOC/MOIT
Other Public facilities	- Other public facility plans - Other public facility design - Other public facility construction	HPC/DPA



Source: JICA STUDY TEAM

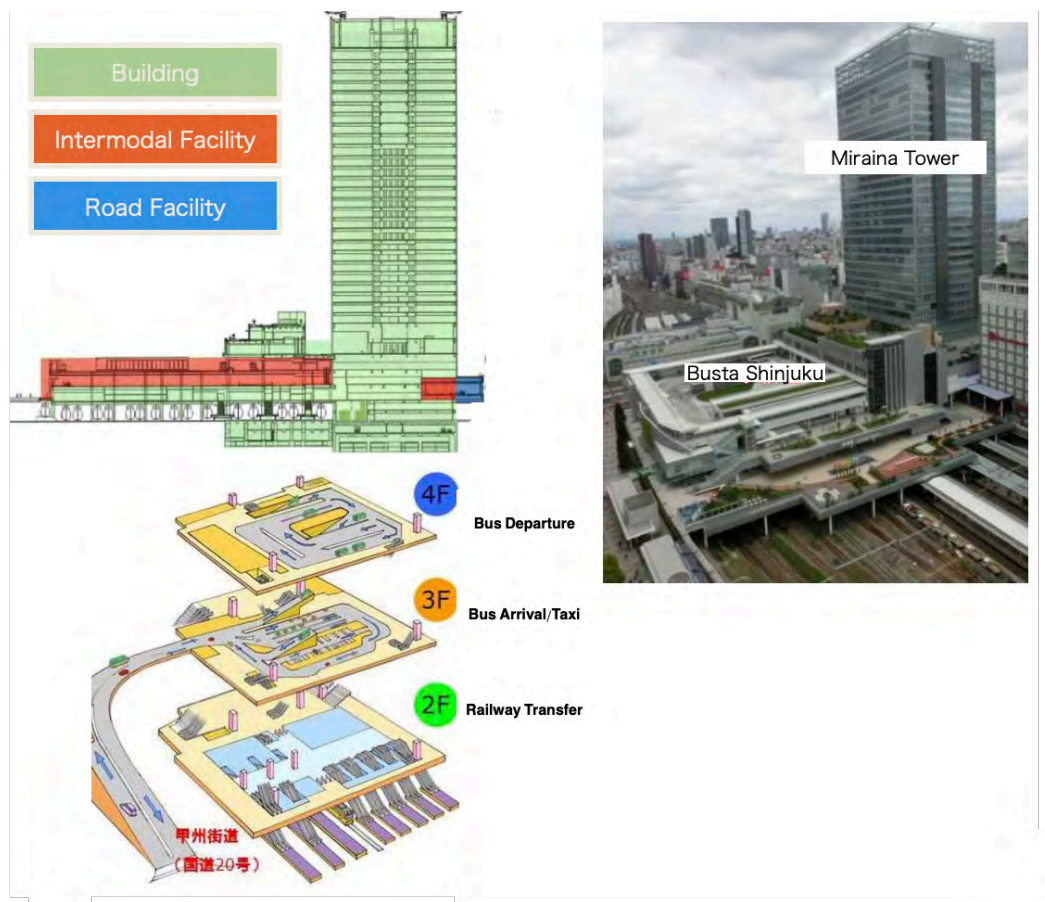
Figure 3-48 Tri-Mod Center – Division of Public and Private Investment Responsibilities

(10) Reference Case: Shinjuku Busta

The concept of the Tri-Mod Terminal is based on the very successful Shinjuku Busta as the model case. Shinjuku Station is the largest railway station in the world, handling 3.5 million passengers daily. The Shinjuku Bus Terminal (Busta) opened in 2006 adjacent to Shinjuku Station. The bus terminal is directly located adjacent to Shinjuku Station and can be accessed from the train platform (Figure 3-49). Cabs and passenger cars can also enter the terminal on the arrival floor, ensuring a smooth flow of passengers in and out of the terminal. To ensure safety and avoid confusion, the bus terminal is divided into two groups, which can depart every five minutes.

- 12 bus departure bays and 11 bus waiting bays.
- Buses arrive at the departure bays 10 minutes before departure, with a waiting time of 20 minutes.
- Maximum bus capacity is 72 buses per hour, every 10 minutes.

The Miraina Tower, a terminal building directly connected to Busta, is a building complex of commercial floors (1-4F) and office floors (5-32F) with a total floor area of 136,875m².



Source: Ministry of Land, Infrastructure, Transport and Tourism of Japan, "Case study on bus-centered transportation nodes".

Figure 3-49 Shinjuku Busta

3.5. Financial Evaluation of TOD Projects

In this section, JICA Study Team provides a summary economic evaluation of the technical proposals as shown in Table 3-15. The evaluation is based on the assumption of development right auction of public land assembled by the public initiative as recommended in Part I, 4.5. The projects listed include all the projects proposed in 3.3 and 3.4 above and ekinaka projects. Ekinaka projects do not require any substantial investments since it is space economization within the concourses of the planned stations. The business revenue is not the actual revenue from commercial services but rather the estimated leasing revenue based on the assumption that commercial floors are leased to private businesses. The estimated business revenue per floor area is based on the real estate information in Hanoi collected in this study. Table 3-15 shows the expected revenue, investment, and operation/maintenance costs to derive the net present value of each project. The total net present value of all the projects is estimated to be USD 390 million, out of which C2 station and Xuan Dinh projects, i.e., proposed TOD sector loan, are estimated to worth USD 260 million. These economic effects are limited to projects with potentials for land value capture. The benefits exclude the benefit of a new station, the bus operation benefits from the Tri-MOD Terminal, and the pure private businesses that may be developed around the station in the future.

Table 3-15 Summary of Station Buildings and Ekinaka Project Economic Evaluation

Station	Purpose	Development area (m ²)	Annual lease revenue	Initial investment	Maintenance cost	Present value of investment income NPV (USD '000)
C2	Public + Commercial	9,000	2,000	9,000	400	23,000
	Residence	23,000	3,000	35,000	600	13,000
C4	Ekinaka Commerce	33	10.0			200
C5	Ekinaka Commerce	75	30.0			600
C6	Ekinaka Commerce	70	30.0			600
C7	Ekinaka Commerce	33	10.0			200
C8	Ekinaka Commerce	33	20			400
C10	Ekinaka Commerce	8,000	8,000	24,000	480	126,400
Xuan Dinh Railway extension terminal	Tower Office	171,528	29,000	343,000	5,800	121,000
	Tower Commerce	24,504	9,000	61,000	1,800	83,000
	Mall Residence*	18,000	1,000	11,000	200	6,000
	Mall Commerce*	12,000	2,000	18,000	400	14,000
total		266,276	54,100	501,000	5,010	388,400

Note*: The space excludes the relocation requirements through land readjustment schemes
Source: JICA Study Team

3.6. Realization of Land Value Capture

As mentioned in Part I, there is no single means of land value capture but rather a wide variety of means, including taxation, floor area ratio sales, JVs with developers, and land readjustment projects. The choice of the main system for land value capture will depend on the political and social systems of each country and city.

In the following sections, JICA Study Team will examine the possibility of developing a land readjustment project and a mixed-use facility through PPP, with the area along Hanoi Urban Railway Line 2 in mind. For other more financially viable approaches, such as the introduction of special fees for TOD districts, floor area ratio auctions, etc., please refer to Part I.

3.7. Application of Land Readjustment To Dilemma of TOD Area Development

As described in 3.1 the plan to improve the access and transfer functions around the Urban Railway Line 2 station is still in its infancy. In fact, a major renovation of the spatial structure in front of and around the station, as analyzed in 2.4 and 2.5 of Part I, would mean that the cost of land recovery would be almost all of the project cost, and the surrounding landowners who did not lose their land use rights would enjoy the windfall benefits of rising land prices without incurring any financial costs. The asymmetry between the cost burden and the benefit is a hindrance to large-scale public investment in the TOD area, as the government has to pay for the recovery of the land and cannot recover any benefit from the increase in land prices.

As for a basic method for land value capture, Vietnam does not even have a property tax system, which could be considered a general-purpose tool. Under these circumstances, the land readjustment project introduced in Part I is one of the most promising candidates for a straightforward solution to the TOD development dilemma.

(1) Applicability of the Land Readjustment Project and Urban Redevelopment Project

Method in Hanoi

The most promising target area for a land readjustment project is the area around the Xuan Dinh Depot area, followed by the C4-C8 station areas as identified in 3.4. Xuan Dinh area has the potential to develop to a business core as a transportation gateway, while the arterial road of Nguyen Hoan Ton Road is a narrow street. C4- C8 area has a mixture of dense private houses and relatively high-rise buildings. In the future, the C5 area will have the terminal of the UMRT Line 5 and has a high potential for growth as a railway hub. Its function as a hub is expected to be further enhanced when it becomes possible to provide transfers to and from the city's bus transportation system.

The biggest obstacle to urban redevelopment in Hanoi is the high price of land. Along UMRT Line 2, the official price is usually USD 1000 to 2000/m², and in some places, it is valued at USD 20,000 /m². Actual transactions are known to reach about five times the official price. Assuming that one hectare of land is needed for the development of the town area and the station square, if the land is to be expropriated, it will cost at least USD 10 million, and if the transaction is to be completed quickly, it will cost several times that amount to secure the land. As a result, it is expected that nearly 90% of the project budget will be spent on the expropriation of land. Such a project would be an inefficient investment. This situation is common in densely populated Japanese cities, and the land

readjustment scheme introduced in Part I and the floor-to-land use right swap system were created as a way to overcome this social situation.

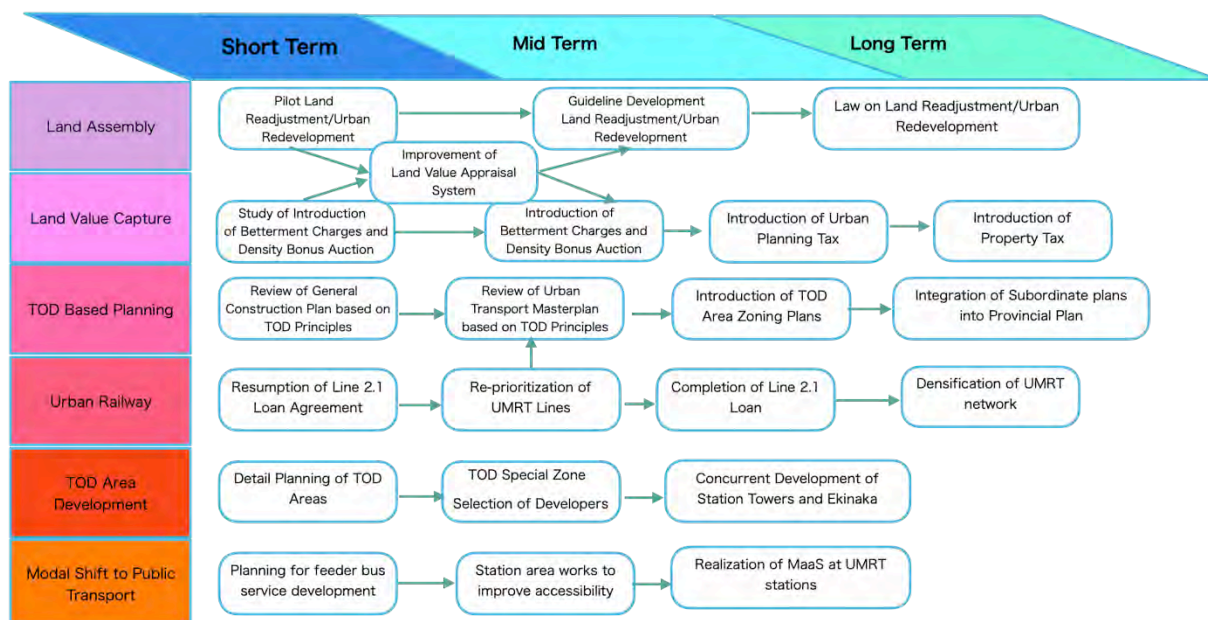
In Vietnam, it is believed that social innovation, based on a similar idea, is necessary to redevelop existing urban areas. In the case of land readjustment projects, landowners offer land value capture to the local government through in-kind land contributions for public space and reserved land for sales.

Potential sites for land readjustment around the C4-C8 stations will be explored for a pilot project, and then JICA Study Team will discuss the introduction of TOD-style urban development with HPC.

4. Action Plan and JICA Cooperation Possibilities

4.1. Action Plan To Promote TOD

Based on the analysis in Part I and Part III, the following recommendations are made for TOD promotion action programs in Hanoi. Figure 4-1 shows the actions organized into the horizontal time axis and vertical field axis.



Source: JICA STUDY TEAM

Figure 4-1 Hanoi TOD Action Plan

The following is an overview and flow of the TOD Action Plan.

(1) Short-term action

Land Assembly

- Select pilot project sites for land readjustment among the urban railway stations with the highest potentiality of economic and mobility improvements where the district landowners are highly interested in improving the district through urban land readjustment.
- Summarize the experiences in implementation and accumulate experiences for the formation of a broader system of land readjustment projects.

Land Value Capture

- Study the introduction of the Betterment Charges and Additional Floor Area Ratio Auction Systems introduced in Part I to Hanoi.
- Improve the system and strengthen the capacity of the public land value assessment system to become more market-oriented, transparent and accountable.

TOD-based Planning

- Revise the urban master plan to incorporate the TOD principle as pointed out in 2.5. For this, JICA's support will be considered in 4.3.

Urban railways

- Sign a yen loan extension agreement for Phase I of Urban Railway Line 2, to commence the construction at the earliest date.
- Re-examine the alignment and priority of Hanoi's urban railway plan from the perspective of TOD as pointed out in 2.4 and 2.5. Simultaneous revision of the plan is recommended in order to ensure its linkage with the Urban Master Plan.

TOD District Development

- Carry-out TOD based district planning of the TOD zones along priority UMRT lines in line with the revision of the General Construction Plan.
- As recommended in Part I, examine introducing the building regulations that should be applied only to the area around TOD, such as access roads, land uses, floor area ratios, etc., as a special TOD district plan. The plan should be introduced as special TOD district plans.

Modal shift to public transportation

- Review city bus routes to synchronize with the opening of urban railways, develop methods to link them with demand bus and shared-ride services, and identify requirements for facility and digital infrastructures.

(2) Medium-term actions

Land Assembly

- Develop guidelines for the universal implementation of the land readjustment or urban redevelopment projects to define the procedural requirements based on the lessons learned from the pilot projects initiated in the short term.

Land Value Capture

- Introduce Betterment Charges and an additional floor area ratio auction system in Hanoi.

TOD-based Planning

- The Urban Transport Master Plan will be revised in accordance with the Urban Master Plan revised in the short term. Also, approve the zoning plan for TOD special zones.

Urban Railways

- Revise the alignment and priorities of urban railways in the Urban Transport Master Plan. Early completion of the second urban rail line is also targeted.

TOD District Development

- Establish TOD Special Zones. The developers will be publicly solicited and selected based on the TOD special zone plan formulated in the short term.

Modal shift to public transportation

- Develop the facilities for intermodal transfer, waiting, commercial and digital infrastructure in accordance to the requirements of the new fixed-route city bus, on-demand buses, and shared-ride services in conjunction with the opening of the urban railway system.

(3) Long-term actions

Land Assembly

- Enact laws to define the statutory requirements such as implementation procedures, transparency of finance, and accountability, to ensure the implementation of land readjustment programs or the floor and land use right swap system for urban redevelopment.

Land Value Capture

- Introduce the "urban planning tax," as described in Part I, to precede the property tax, with the aim of institutionalizing Land Value Capture in a wider area than the city. Since the introduction of the tax is a matter under the jurisdiction of the central government, it is hoped that the Ministry of Finance will implement the tax in a way that meets the needs of large cities such as Hanoi. However, from the perspective of fairness in taxation, the property tax should be introduced in the long term, and the city planning tax should be reduced or abolished.

TOD-based Planning

- Integrate short- and medium-term plans into the Provincial Plan.

Urban railways

- Enhance the tightness and connectivity of the urban rail network.

TOD area development

- Expedite to complete the construction of the station building and Ekinaka project.

Modal shift to public transportation

- Further, develop the use of public transportation by making full use of MaaS and other digital infrastructure.

Based on the foregoing analyses and corresponding action plans, JICA STUDY TEAM discussed the possibilities on the future JICA supported projects with the HPC and their relevant departments. In this section, JICA STUDY TEAM lists the potential projects and their scopes. The JICA support falls into two categories of ODA loan and technical cooperation projects.

4.2. Potential ODA Loan Projects for TOD Promotion

As the use of urban railways increases, automobile traffic is expected to increase further in the vicinity of stations. For this reason, it is important to improve the space around stations to facilitate passenger boarding, alighting, and traffic circulation. At the same time, it is also important to develop public private-sector cooperation in the form of station buildings and ekinakas that will maximize the economic potential of the station areas. There are possibilities for future ODA loans as below.

The second option is a more conventional financing method for specific projects, but in the case of TOD, the target areas are dispersed in the areas surrounding each station, and each station requires different improvements, and the division of labor between the private sector and the public sector is difficult.

However, in the case of TOD, the target areas are dispersed around each station, and each station requires different improvements, so the division of work between the private sector and the public sector needs to be clearly defined. One option is to restrict the TOD public works to infrastructure development of transfer facilities and access improvements. As pointed out in the analysis of Part I, 2.4, land recovery costs may account for most of the project cost. In such a case, the project cost that can be covered by the yen loan will be minor, and there will be a risk that the project will not proceed if the budget allocation by the Vietnamese government is delayed.

One way to deal with this is to bundle many small projects under a sector loan by targeting dispersed but highly public projects such as road and street improvements in the wider area around the station. Furthermore, the adoption of a land readjustment scheme could exclude land recovery costs from the project cost.

1) Program Loan for TOD Promotion

One of the major institutional issues in Part I is the establishment of a system for the land value capture, and although various proposals have been made as part of the action plan in Part I, legal and regulatory improvements are needed to establish the system. The land value capture is nothing more than a system that obliges the public to pay a portion of public investment that has not been borne by developers, landowners, or residents in general, and the establishment of such a system requires careful preparation and the implementation of measures to ensure that development benefits are realized. The proposal is to provide loans that correspond to the budget for supporting implementation in exchange for the HPC's implementation of policies related to the land value capture. For the loan structure, please refer to Part I, Section 4.7. The Decree 114/2021/ND-CP, "On Management and Use of Official Development Assistance (ODA) and Concessional Loans Provided by Foreign Donors," Article 9 stipulates the requirement of approval by the prime minister for the policy related loan. This new decree may inhibit the program loan to be executed by the ministerial level. The promotion of the program loan requires future research for the adoption of a program loan at the ministerial level.

2) Sector Loan for TOD

JICA Study Team proposes here a TOD sector loan that bundles multiple subprojects into a single loan. The subset of the projects will include the urban infrastructure projects to be undertaken within TOD areas by the city of Hanoi. The outline of works for lending needs to be identified in advance.

The candidate projects for the sector loan are the TOD project proposed in 3.4. However, the underground shopping mall development at Tran Hung Dao Station at C10 Station can only be started after the completion of all urban railway lines 2.1. Furthermore, the C9 station located before the C10 still has deep-rooted dissenting opinions due to concerns about the negative cultural impact of that station, and there is no confirmation of the extension to the C10 station at this moment. For the C3 station, it is difficult to estimate the specific facility scale because the implementation schedule of development in this area is not yet fixed. Considering these restrictions, the sub-loan candidates at this stage are C2 Park Station Square and Tri-Mod Center (Xuan Dinh Depot Upgrade). These two facilities can even be constructed in advance separately from the railway of Line 2 and to connect to the railway platforms after the UMRT Line operation commencement. In addition, if the construction of Line 2 can be started from C1 to C10 eastwards, the completion of the Xuan Dinh Depot will give an option of partial operation commencement. Even if it becomes difficult to construct the railway

all the way to the final station, C10, due to the C9 station problem, it makes it possible to complete the railway up to a station before C9.

Table 4-1 shows the scope of TOD ODA sector loan sub-projects of the two stations. The total estimated investment cost is approximately USD 220 million.

Table 4-1 Summary of Line 2.1 TOD Sector Loan Components

No.		Unit	Quantity	Unit Cost (VND thousand)	Total Cost (USD thousand)	Note
1	C2 Park Station Square					
-	District Plan	MM	15	69,600	45	
-	Land Preparation	m2	3000	53	7	
-	Podium Area (1-3F)	m2	9000	23,082	9,000	
	Subtotal				9,052	
2	Line 2.1 Grade Up					
-	District Plan	MM	20	69,600	60	
-	Land Preparation	m2	80000	53	184	
-	Tri-Mod Terminal	m2	40000	27,698	48,000	Calculated for building with 5 basements
-	Tri-Mod Plaza	m2	2500	6,930	751	Calculated for multi-purpose buildings
-	Tri-Mod Mall-R	m2	164,000	12,488	88,729	For a 6-storey building, there are 4 basements, including the cost of equipment such as elevators...
-	Tri-Mod Station	m2	4500	115,000	22,420	Elevated station 2 floors
-	Tri-Mod Station Tracks (double)	m	400	54,546	945	
-	Road Construction West	m2	74000	597	1,913	Asphalt concrete T=7cm
-	Road Construction East	m2	53000	597	1,370	Asphalt concrete T=7cm
-	Water Supply Line	m	2000	1,800	156	Reconstruction of water pipe of 200 mm in dia of PVC
-	Sewer Line	m	2000	1,800	156	drainage pipe size of 300 mm in dia of PVC
-	Drainage Pipe	m	2000	4,000	347	drainage pipe size of 1000 mm in dia of Concrete
-	Intercity Bus Ticketing System	Nos	1	23,200,000	1,005	
-	Others	%	10		16,604	
	Subtotal				182,639	
3	Consultancy	%	5		9,132	
4	Contingency	%	10		19,177	
5	Grand Total				220,000	

Source: JICA Study Team

In Hanoi, the UMRT Line 2.1 to be funded by Japan's ODA loan is still in the pre-construction stage. If the ODA loan is agreed upon again, the project is expected to enter the construction stage any time soon. The development around the stations to be carried out in advance or in parallel is expected to make an immediate contribution to the enlargement of the passenger base.

4.3. Potential Technical Cooperation Projects for TOD Promotion

In terms of TOD implementation, the concept of TOD in Vietnam has already been grounded, but the land value capture method has not yet been established, which is a hindrance to the sustainable and autonomous expansion of urban public transportation networks. The basis for land value capture is to assemble the core land by the public side (see Part I, 4.8). The most effective way to secure core land while minimizing social friction is the land readjustment scheme, but Vietnam has not yet attempted to introduce this method. In order to have a universal impact, it is ultimately necessary to build a legal framework for land readjustment schemes at the national level, but first of all, concrete success cases are needed. Therefore, it is necessary to identify a specific district and community. Dialogues with the concerned communities are vital, and technical support for the dialogue is also necessary.

Regarding the implementation of TOD, it is necessary for the government side to systematically cooperate with the urban transportation and other infrastructure departments to promote the project at the same time as the city planning, investment application/approval, and urban development. It is also necessary to recognize that an effective and efficient implementation system among multiple departments is still inexperienced, and sufficient ingenuity and understanding of the other party are required to create an execution organization. With regard to PPP, it is important to establish a highly transparent and fully accountable investor selection system.

1) Strengthening TOD-oriented city planning capacity-Support for revision of General Construction Plan

Background: There is a need for support for strengthening planning capacity from the aspect of TOD for the review work of the General Construction Plan starting this year and the formulation of the Provincial Plan planned as an extension of it. As is clear from the improvements pointed out in the analysis of this survey, there is a high need for technical support for reviewing land use plans and urban railway line plans for TOD promotion. On the other hand, Provincial Planning has not been started yet. The main purpose of this plan is to integrate national, city, and sector plans. The most important thing prior to this integration work in Provincial Planning to ensure consistency and feasibility is the General Construction Plan, which is a comprehensive land use plan for the city.

Counterpart Agency: Department of Planning and Architecture and Hanoi Urban Planning Institute

The scope of technical cooperation from the perspective of this survey is proposed as follows.

Output (Goal):

Development of comprehensive and integrated capacity to formulate public transportation and land use planning in Hanoi

Scope of Activities: To support the following activities of Hanoi City and to strengthen its capacity.

would ensure much faster implementation by assuring the residents to continue the current social life and livelihood.

Counterpart Organizations: Department of Planning and Architecture, Department of Natural Resources, Department of Investment

Outputs (Goals):

Output-1. To develop comprehensive and practical TOD project planning capabilities in Hanoi.

Output-2. To extract lessons for strengthening the system for promoting TOD at the national level.

Activities:

Output 1: Development of comprehensive and pragmatic TOD project planning capacity

The project will support the implementation by the counterparts and develop their capabilities.

Activity-1. TOD implementation organization development

The activity will assess the allocation of the human resources, expertise, experience, and budget for the TOD work of the counterpart organization and advise on the appropriateness of resource allocation for the estimated workload. The activity will support the realization of organizational structure and budget allocation so that full-fledged task force from the departments of urban development, urban transportation, and urban railways.

Activity-2. Analysis of TOD Pilot District

The activity will focus on collecting and analyzing data on population composition, economic and social activities, community characteristics, land use right ownership registry, topography, drainage, transportation, and current land use plan information in the target area. For specific detailed surveys such as land use right registry and traffic surveys, the sub-projects will be formulated to be collected by selected local consultants.

Activities-3. Development of a future vision of the TOD pilot district

After sharing and discussing the results of the problem analysis with stakeholders, including residents and landowners, the activity will formulate a district development vision that is shared by all the stakeholders.

Activities-4. Adaptation of Land Readjustment Scheme in Pilot Projects

Based on the common vision of the future of the district, the activity will support the full implementation of a land readjustment in the TOD pilot area. This activity will lead to the development of an agreed land readjustment plan that includes land parcel reductions to secure the land necessary for constructing the facilities in the target area.

Activities-5. Support for public investment project formation and planning in the TOD pilot area:

The activity will coordinate the basic designs of public facilities (in relation to the ODA sector loan) and the overall plan based on the district vision.

Activities-6. Support for PPP project formation and planning in the TOD pilot area

Activities-7. Training to develop the ability to carry out the above activities smoothly.

Output 2: Lessons for strengthening the system for promoting TOD

To utilize the lessons from Output 1 at the national level, the following activities will be carried out.

Activity-1. Support for formulating project implementation manuals in TOD districts

Activity-2. Support for creating PPP implementation guidelines in TOD district

Activity-3. Support for creating guidelines for land readjustment project formation in Vietnam

Timeline:

Outputs	Activities	CP	2023	2024	2025	2026	2027
Output 1 Pragmatic TOD Implementation Capacity Development	Activity-1. TOD implementation organization development	DPA/ DONR E/DPI	■	■	■		
	Activity-2. Analysis of TOD pilot district		■	■			
	Activities-3. Creating a vision for the future in the TOD pilot district		■	■			
	Activities-4. Support for land readjustment project formation and planning in the TOD pilot area		■	■	0.0	■	0.0
	Activities-5. Support for public investment project formation and planning in the TOD pilot area			■	0.0	■	
	Activities-6. Support for PPP project formation and planning in the TOD pilot area					■	0.0
	Activities-7. Provide necessary training to develop the ability to carry out the above activities smoothly.		■	■	■	■	
Output 2 Lessons Learned for the Promotion of TOD	Activities-1. Support for formulating project implementation manuals in TOD districts		■	■	0.0	■	0.0
	Activity-2. Support for creating PPP implementation guidelines in TOD district				0.0	■	0.0
	Activities-3. Support for creating guidelines for land readjustment project formation in Vietnam					■	0.0

Source: JICA Study Team

Figure 4-3 Schedule of Tod Implementation Capacity Enhancement Project

4.4. The Way Forward for Future Cooperation

1) ODA Loans

The above-proposed TOD sector loan combines an ODA loan and private investments. Following the development model prescribed in Part I, 4.5 of the development right auctions of the public lands assembled by the city government, the estimated land value capture potential is USD 260 million (See 3.5 for the economic evaluation.) If the realization of ODA loans is not accepted, it is necessary to explore the possibility of combining the city government budget with private investments, including those by Japanese companies. Even in that case, Japan's technical cooperation support is desired in the area related to the land readjustment project. The proposal to create a multimodal public transport hub by modifying the current design of the Xuan Dinh Depot, which is the core of the TOD sector loan, has gained wide approval of the concept itself but has raised two concerns. One is the influence on UMRT Line 2.1, and the other is the planning approval procedure.

Line 2.1 is currently in the process of the cost and plan review. After the approval, revising the investment cost again may further delay the implementation of the project. However, the proposed

reduction of the depot area will reduce the overall cost. Furthermore, since each of the proposed Tri-MOD Center facilities can be installed independently in a modular manner according to the prevailing situations, the proposed project will not affect the construction schedule of the depot. In short, what is required is to design the elements of a long-term perspective in advance. The current achievement in the land recovery and inhabitant resettlement for the depot's area is approximately 80%. As evidenced in the recent delay of Line 3 due to the reluctance of a few residents for resettlement, it is probable that the construction of the depot may experience a similar delay due to the lack of consent of the last few houses for a depot that requires an area of 16 ha. The proposed plan, which includes resettlement accommodations (Tri-MOD Mall) of attractive incentives for resettlement, has the potential to promote the smooth and prompt realization of the railway operation commissioning in the long run. It is necessary to continue to convey these advantages to the Vietnamese side. Despite the recognition of the merits of land readjustment in Vietnam, there has been no commitment to a real case so far. It also has the potential to be the first land readjustment project that JICA can support for Vietnam.

Regarding the planning approval, the inclusion of the proposed project into the General Construction Plan, which is now under the revision process with the added function of the regional gateway hub linked to the UMRT Line 2, will automatically facilitate the incorporation of the project into the related planning documents including the zoning plan. For this reason, proposed technical cooperation to support the revision of the General Construction Plan is essential.

At present, the interest of related departments in Hanoi City for a new ODA loan, including program loan, is low. There are multiple reasons. The first reason is the ongoing government's policy to curb the external public debt. The second is the policy limiting the ODA loan to social infrastructures without recourse for financial recovery. Such social infrastructure includes public transportation. The third is that any public investment prospect for investment recovery, including TOD projects, should resort to PPP for the funding.

All related organizations noted that the Hanoi municipal government has a policy of implementing TOD-related public works by the PPP method to the extent possible. Vietnam's private real estate investment is booming as global monetary easing continues. Given the lack of public funding due to the tightening of public debt, including ODA loans, this policy orientation should continue.

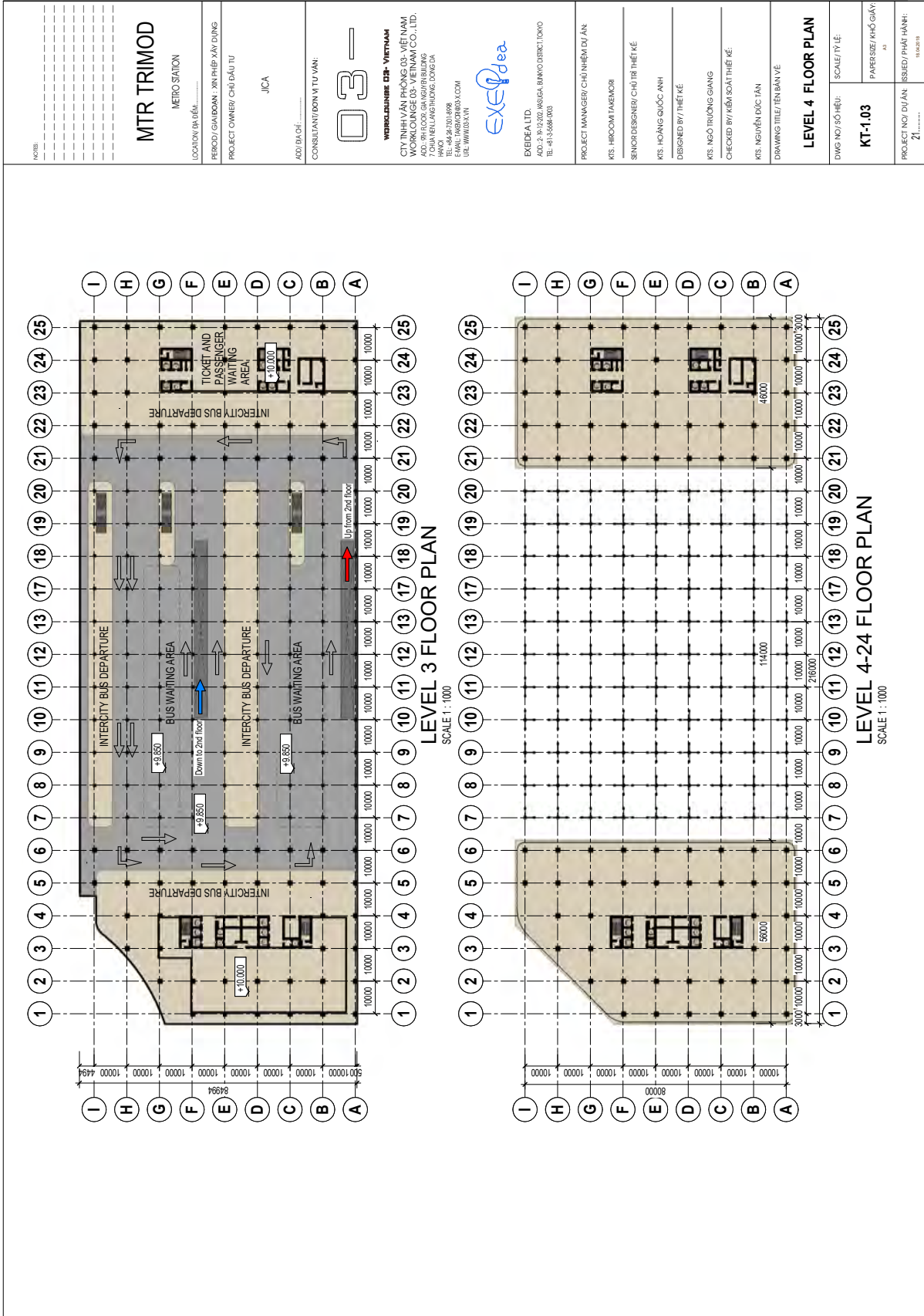
As pointed out in Part I and III, land use control and building controls are not effectively binding with no effective land value capture mechanism in place in Vietnam; the developer has a free hand in monopolizing development profits. To overcome this situation, as shown in Part I, 4.5, it is essential to develop a proactive PPP method such as auctioning development rights under the premise of effective land use regulation and public-led land assembly in the TOD areas. To lead a PPP, it is essential that city governments undertake public investments to create new development opportunities. The JICA should continue to formulate ODA loans related to such proactive public investments.

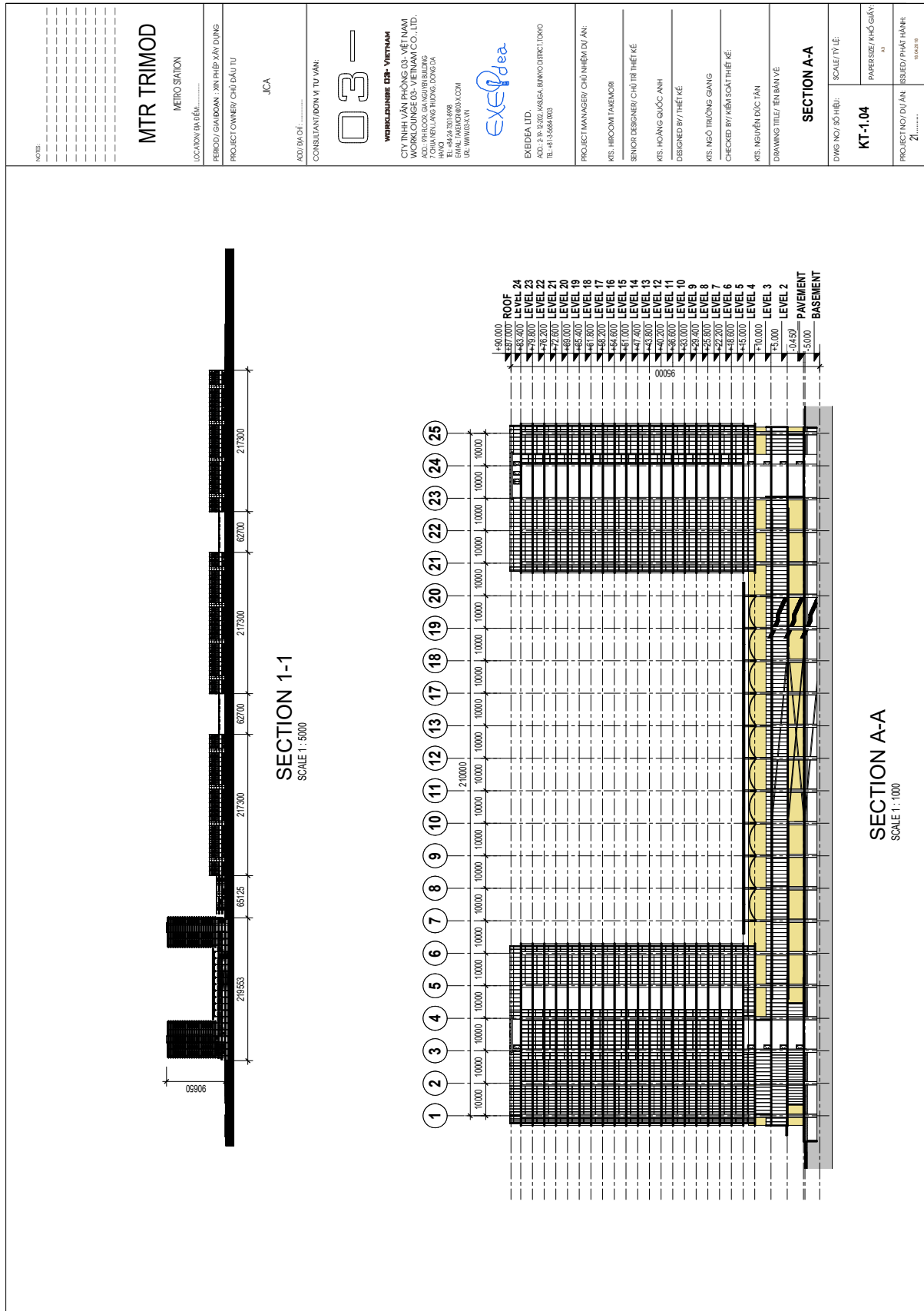
Post-corona financial markets and urban development are likely to be impacted significantly. It is necessary to pay close attention to the changes in needs for both fiscal support and urban infrastructure investment support.

2) Technical Cooperation

Technical cooperation to support the revision of the General Construction Plan proposed in this survey will likely have significant impacts. First of all, it will provide an opportunity to redesign the urban structure of Hanoi from a broad TOD perspective, which is lacking in the current master plan. An urban structure linked tightly to public transport networks is essential to solving the current traffic and environmental problems. The recommendations also include a review of implementation priorities of urban railways, including the next line for implementation as part of the scope. The agency in charge has supported the proposed scope of examining the urban structure and public transport priorities. Broad-based data collection and advanced analytical technology as part of cooperation should ensure the rational debates of the cooperation outputs.

The need for technical cooperation should be geared more toward specific TOD implementation capacity development instead of policy levels. Discussions with the relevant authorities of Hanoi have revealed the need to focus on specific projects to extract lessons for institutional design from the implementation experience. When implemented in tandem with specific projects identified by a TOD sector loan or PPP project, the TOD technical cooperation will have a synergistic impact.





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 PROJECT OWNER: CHỈ ĐẠU TƯ

JICA

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Appendix 2 Basic Plan of Xuan Dinh Station Section

