

Japan International Cooperation Agency (JICA)
Yangon City Development Committee (YCDC)

The Republic of the Union of Myanmar **A Strategic Urban Development Plan of Greater Yangon**

The Project for the Strategic Urban Development Plan of the Greater Yangon

FINAL REPORT II

< SUMMARY >

January 2014

Nippon Koei Co., Ltd.
NJS Consultants Co., Ltd.
YACHIYO Engineering Co., Ltd.
International Development Center of Japan Inc.
Asia Air Survey Co., Ltd.
ALMEC Corporation



EI

JR

14-046

Japan International Cooperation Agency (JICA)
Yangon City Development Committee (YCDC)

The Republic of the Union of Myanmar
**A Strategic Urban Development Plan
of Greater Yangon**

The Project for the Strategic Urban Development Plan of the Greater Yangon

FINAL REPORT II

< SUMMARY >

January 2014

Nippon Koei Co., Ltd.
NJS Consultants Co., Ltd.
YACHIYO Engineering Co., Ltd.
International Development Center of Japan Inc.
Asia Air Survey Co., Ltd.
ALMEC Corporation

**The Project for
The Strategic Urban Development Plan of the Greater Yangon**

**Final Report II
< Summary >**

TABLE OF CONTENTS

	<u>Page</u>
CHAPTER 1: Introduction.....	1-1
CHAPTER 2: Phase II Works – Case Studies and Technical Transfer -	
1 CBD(Central Business District) Development	2-1
2 North-East Region Development	2-12
3 Transit Oriented Development “TOD”	2-18
4 Capacity Development Plan	2-24
5 Strategic Environmental Assessment “SEA”	2-27
CHAPER 3: Conculsion and Recommendation.....	3-1

Subsequent Works (Phase II) of the Strategic Urban Development Plan of Greater Yangon

1 Introduction

Yangon, the largest economic center of Myanmar, has about 5.14 million population and is experiencing rapid urbanization and accelerated development as the nation moves toward democracy. The current rapid urbanization is putting more pressure on the existing old infrastructures. Yangon Regional Government and JICA agreed to start the Study to prepare a well-thought future vision and strategic urban development plan. Accordingly, it will achieve balanced, inclusive, and sustainable growth, and cater to a better supply of urban infrastructure and services for the urban inhabitants of Greater Yangon.

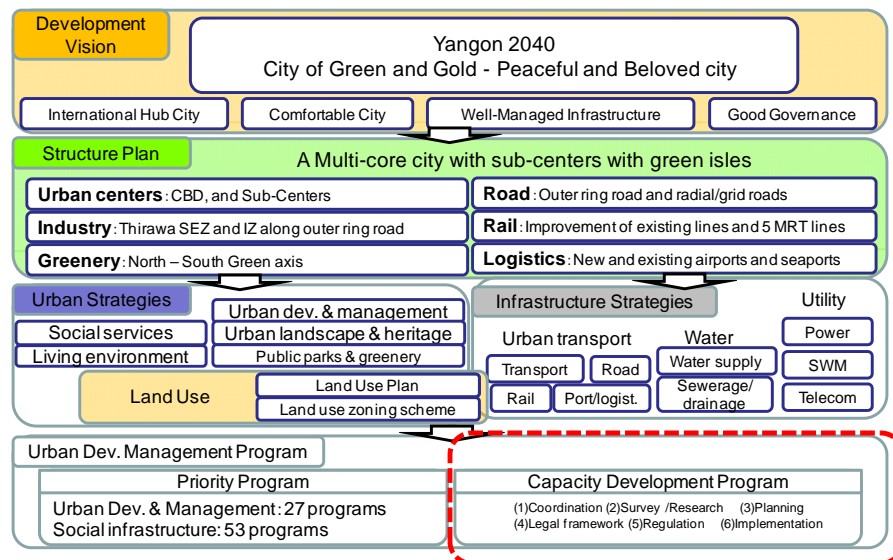
Since August 2012, the Study namely “The Project for the Strategic Urban Development Plan of the Greater Yangon” has commenced firstly as Phase I to formulate the master plan. With holding the Seminar of Japan in March 2013, the Seminars of Myanmar in June 2013, the work of Phase I has completed and subsequent works was launched to implement the plan as Phase II.

The planning work of Phase II intends to exchange opinions among concerned organizations carefully, but not to be officially approved by Myanmar side.

Table: Phased Work Plan

Phase	Study Period	Main Contents
Phase I (Final Report I)	August 2012 – March 2013	<ul style="list-style-type: none"> ● Making Urban Basic Information Data ● Formulation of Development Visions and a Structure Plan ● Formulation of Social Infrastructure Development Strategy ● Formulation of an Urban Development Master Plan
Phase II (Final Report II)	April 2013 – December 2013	<ul style="list-style-type: none"> ● Conducting a Case Study and Formulation of Capacity Development Plan

Source: JICA Study Team



Source: JICA Study Team

Figure: The Structure of Strategic Urban Development Plan and the Position of Phase II Work

2 Case Studies of Detailed Planning

The subsequent works of the strategic urban development plan of the Greater Yangon consist mainly of five (5) components as followings. To conduct the case studies, the JICA Study Team organized working groups consisting of the technical staffs from not only Urban Planning Division of YCDC but also other department of YCDC, townships, DHSHD/MOC, Yangon Heritage Trust.

Table2: Phased Work Plan

Title	Contents
CBD (Central Business District) Development 	Interactive planning process for Improvement, Development, & Conservation In order to take countermeasures against existing problems such as traffic jam, environmental pollution, rising land values, deterioration or damage to cultural heritage, and others, detailed CBD development plans should be carried out.
North-East Region Development 	New Urban Development planning in suburban area as models for suburban development This works is to formulate a detailed development plan for the “North-East Region” in which new urban development will be taken to realize the proposed strategic urban development plan of Greater Yangon. The land use plans should be linked with the master plan made by the townships.
Transit Oriented Development (TOD) 	Urban Development and Public Transportation in harmony The policy of TOD is “Achieve urbanization based on public transportation that intends high economical efficiency, and environmental friendliness, and traveler friendliness”. For introduce TOD concept development, the study of Yangon Circular Railway was conducted in the project.
Capacity Development Plan 	Improving and Developing the Capacity for the sustainable Urban development The Strategic Urban Development Plan is for future development in the Greater Yangon area. In order to realize the plan, it is necessary to establish an urban planning system for larger regions and a detailed plan for smaller area.
Strategic Environmental Assessment (SEA) 	Strategic Environment Assessment in application for the Master Plan Formulation In the Phase II of the Study, the workshop on environmental and social considerations which is necessary for future development programs in Yangon was conducted by the JICA Study Team in the course of technical transfer for the implementation of case studies.

Source: JICA Study Team



1.1 Introduction

1) Background and Objectives

Currently, the urban central function including administration, banking, business, and commerce are located mainly in CBD. The importance of CBD in Yangon and consequently, in Myanmar, shall remain unchanged in the future, even if the proposed decentralization by construction of sub-centers would be realized successfully. In order to take countermeasures against existing problems such as traffic jam, environmental pollution, rising land values, deterioration or damage to cultural heritage, and others, detailed CBD development plans should be carried out as mentioned in the followings.

2) Main Outputs

1. Formulation of CBD Conceptual Development Plan
2. Formulation of CBD Land Use Zoning Scheme
3. Formulation of CBD Historic and Cultural Heritage Conservation Plan

3) Review of Proposed Strategic Urban Development Plan in the Phase I

In the strategic urban development plan, development policies in CBD were proposed as follows:

(1) Development of Disaster-Resistant CBD

- ✓ A city resilient to earthquakes
- ✓ A city responsive to fires
- ✓ A city prepared for flooding

(2) Functional Traffic System in CBD

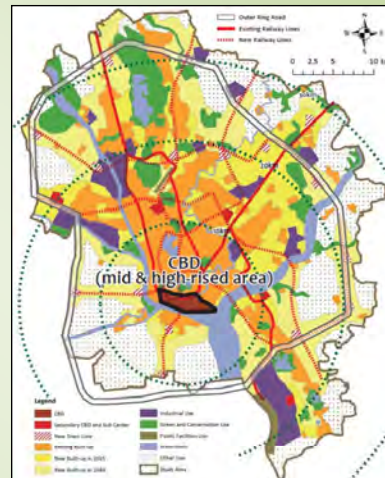
- ✓ Improvement of parking lots
- ✓ Limitation of vehicular traffic in CBD
- ✓ Development of a new public transport system

(3) Formation of an Attractive Urban Space

- ✓ Conservation and re-use of heritage buildings
- ✓ Promotion of tourism
- ✓ Development of waterfront

(4) Implementation Method for Urban Regeneration

- ✓ Implementation of urban redevelopment
- ✓ District planning for city
- ✓ Transfer of Development Rights (TDR) and funding



Source: JICA Study Team
Figure 1.1: Target Area

1.2 Overall Current Conditions

1 Traffic Condition

Roads in a grid-pattern generally cover the whole area of CBD. In the current traffic situation with the inflow of a number of vehicles to CBD, main gateways are limited in the north and west sides of CBD due to its topographic condition. The circular railway runs through northeast-northwest of CBD with four stations. The Pansodan Ferry jetty along the Yangon River is located in the southern center point of CBD.



2 Main Facilities and Land Ownership Condition

Large-scale public buildings such as hospitals, schools, and religious facilities are mostly located in the north-west area of CBD, and this situation makes the area to be more calm and green than other areas, although it should be noted that there is only one public park in CBD. Currently, citizens are unable to enjoy much of the riverside spaces along the Yangon River because the Yangon Main Port occupies these spaces. The southeastern tip of CBD, namely, "Monkey Point" and its surrounding areas are owned by the navy.





1.2 Overall Current Conditions

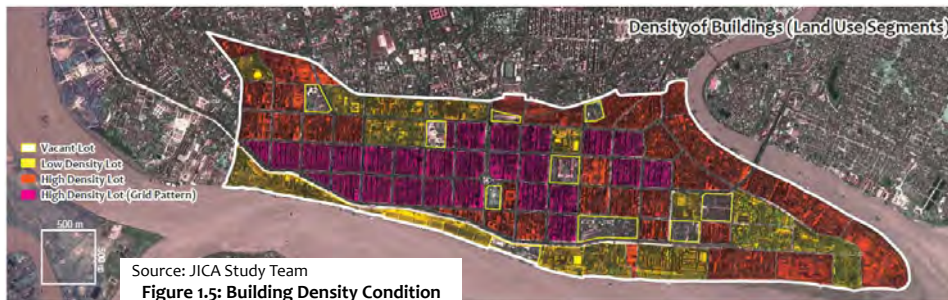
3 Heritage Condition

Setting subdivided heritage zones in CBD is proposed by the Myanmar side, although the zones have not yet been defined by any law or regulation. There are 189 designated heritage buildings in Yangon, approximately 40% of which are located in CBD. Such buildings do not seem to be in good condition.



4 Building Density Condition

In the British colonial period, the road network in a grid pattern was planned and formed as seen at present. The block units of the grid are occupied mainly by six- up to eight-story residential buildings in high density. On the other hand, in the northwest and southeast areas of CBD, lands are relatively used for large-scale land uses.



CBD Overview



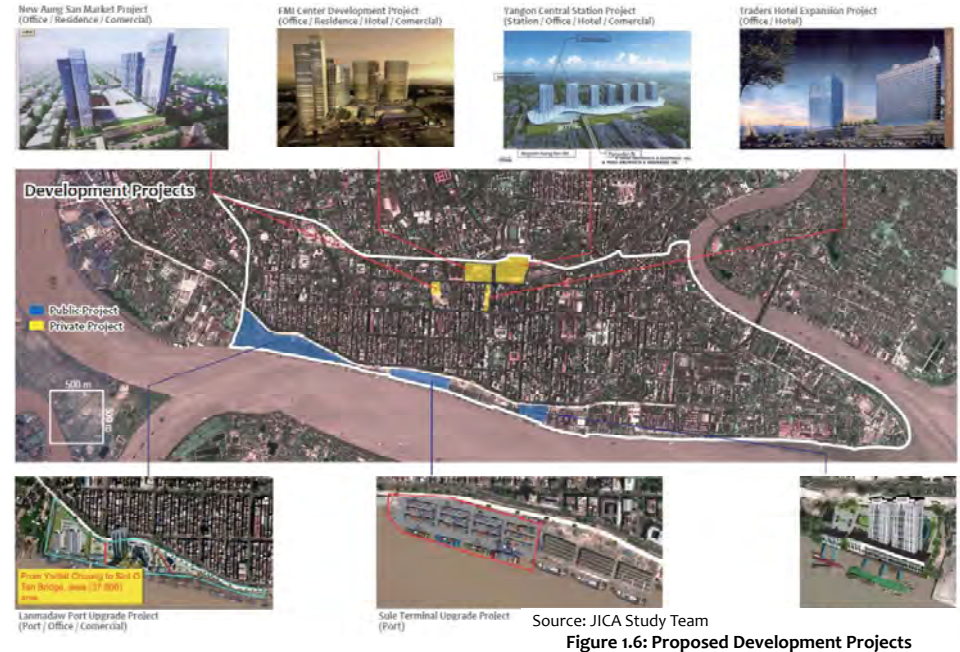
Grid-pattern Road



Heritage Buildings

5 Proposed Development Projects

Note: Some of the new development projects are proposed in CBD, but seemingly little consideration has been made to harmonize them with the condition of Yangon's heritage.



1.3 CBD Conceptual Development Plan <Proposal>

Improvements for a sophisticated and attractive urban center leading the business and commerce of Myanmar

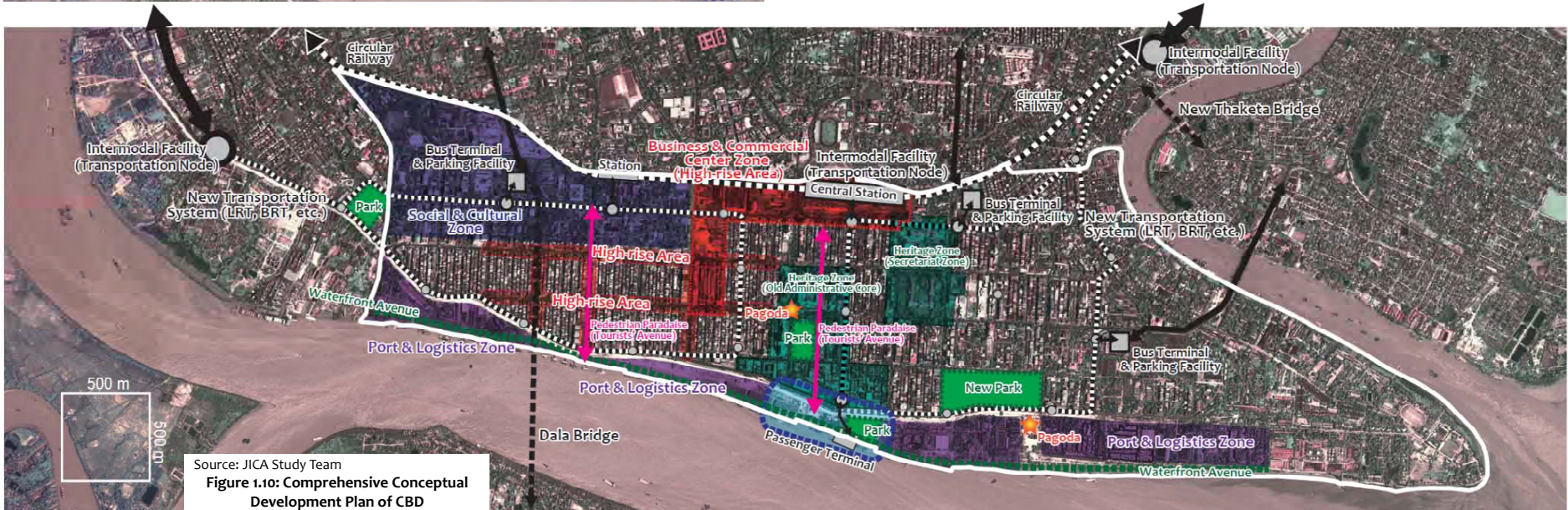
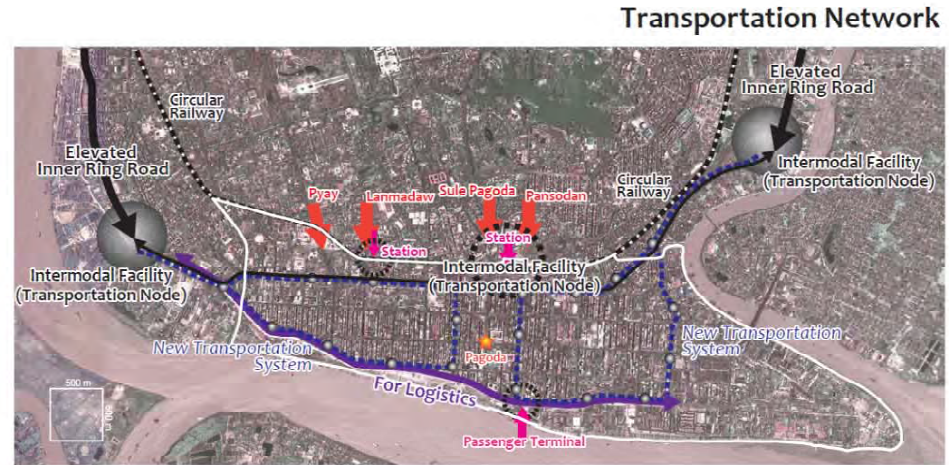
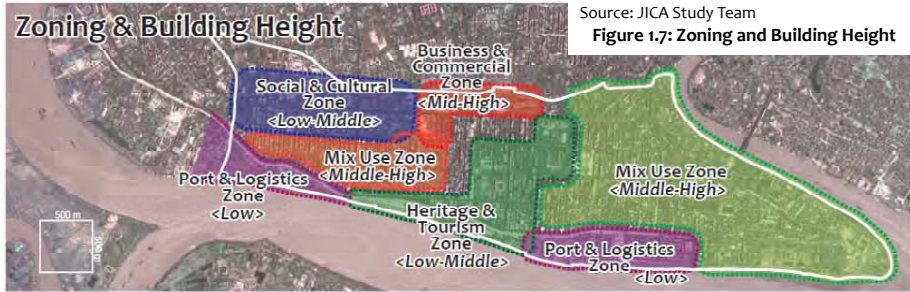
In order to solve or mitigate these outstanding problems, improvements and/or renovation of CBD must be considered in addition to the proposed decentralization by the construction of sub-centers for a better CBD.

Sophisticated and attractive urban management should be carried out sustainably to continue and develop an urban center strongly leading the business and commercial functions of Myanmar, moreover, as a main gateway of international business and tourism. Conservation of historical and cultural heritage and formulation of green and water network would be essential as well.

To realize the abovementioned plans several measures must be brought forward such as improvement of the public transportation system, control in the number of car inflow and parking vehicles, conservation and sustainable use of heritage buildings with protective care, provision of riverside spaces, construction of new parks, and development of attractive tourism destinations.



1.3 CBD Conceptual Development Plan <Proposal>





1.4 CBD Conceptual Development Plan < Future Images of Bird View >



Source: JICA Study Team
Figure 1.11: A Future Image of Bird View
(from south-east to north-west)



Source: JICA Study Team
Figure 1.12: A Future Image of Bird View
(from central-south to central-north)



Source: JICA Study Team
Figure 1.13: A Future Image of Bird View
(from south-west to north-east)



1.4 Land Use Zoning Scheme

1.4.1 Outline

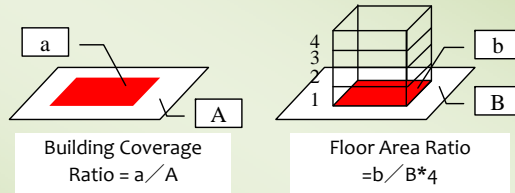
Necessity and Objectives

For the balanced development of Yangon City, innovative land use regulations for better urban planning would be essential. Looking at the recent trend of development proposals, a number of plans intend to introduce high density high-rise buildings. If such plan would be constructed in the central part of CBD, the said development may induce concentration of traffic and demand for car parking to the already crowded CBD area. Consequently, such development is not desirable in the central part of CBD but rather at sub-center areas or at the western or eastern fringes of the CBD area. In the JICA report entitled "Strategic Urban Development Plan of Greater Yangon", the central part of CBD, where many of heritage buildings are located, would be restraint and controlled under land use regulations (e.g., coverage ratio and floor volume ratio). There is a discussion that limiting the height of new buildings around Sule Pagoda similar to that of the areas around Shewe Dagon Pagoda would be considered.

What is a "Land Use Zoning Scheme"?

In land use zoning, the ratio of the building's site area (coverage ratio) and the ratio of the total floor area to the plot area (floor volume ratio) would be used. Building Coverage Ratio (BCR) is term of the ratio of a building coverage area on ground floor to the size of the site. In the case of building coverage area of 0.5ha (a) in site area of 1ha (A), the BCR is 50% (or 0.5). Floor Area Ratio (FAR) is term of the ratio of a building's total floor area to the size of the piece of land upon which it is built. In the case of building coverage area of 0.5ha (b) with 4 stories in site area of 1ha (B), the FAR is 200% (or 2).

The rule of limiting building heights will work well to achieve the integrity of a comfortable environment and also by restricting traffic volume, prevention against fire, noise, sunshine, lighting, and ventilation.



Source: JICA Study Team
Figure 1.14: Concept of Building Coverage Ratio and Floor Area Ratio

Methodology

For the CBD area, the JICA Study Team conducted a building investigation survey in which the current situation of the building coverage and floor volume ratio in the CBD area were studied completely. Based on the survey results, the JICA Study Team prepared a draft of the applicable land use regulation scheme in consideration of the present condition of the buildings in the area. In addition, a simulation analysis of the landscape view of Sule Pagoda Street was carried out with changing building height limit. Such results will be used in establishing a comprehensive land use zoning scheme for CBD and other areas.

1.4.2 Works and Discussions

Works and discussions records are followed.



Table 1.1: Meeting Record

No	Date	Meeting Theme
1	10 April 2013	Yangon Land Use Comprehensive Plan (YLUCP) (1)
2	18 May 2013	Yangon Land Use Comprehensive Plan (YLUCP) (2)
3	25 May 2013	About land use comprehensive plan (YLUCP) (3)
4	27 May 2013	Explanation of YLUCP to the Mayor and Executive Managers (1)
5	4 June 2013	Yangon Land Use Comprehensive Plan (YLUCP) (4)
6	30 June 2013	About land use comprehensive plan (YLUCP) (5)
7	14 July 2013	About and use comprehensive plan (YLUCP) (6)
8	3 Aug 2013	Yangon Land Use Comprehensive Plan (YLUCP) (7)
9	8 Aug 2013	Yangon Land Use Comprehensive Plan (YLUCP) (8)
10	23 Sept 2013	Explanation of YLUCP to the Executive Managers (2)

Source: JICA Study Team



1.4 Land Use Zoning Scheme

1.4.3 Current Conditions

Building Use

The CBD is the central area of Yangon built during the British rule, formed by the grid-like street from east to west around the Sule Pagoda Street. For the survey on the present uses of buildings, the buildings in CBD were examined according to 13 kinds of uses.

According to the results, the central part of CBD has intensive use for commercial and business purposes along Sule Pagoda Street. Commercial and business land uses are also predominant in the roadside of Strand and Kon Zay Dan streets.

The buildings in the central part of CBD follows a pattern where the lower floors of a building are for commercial and business uses, while the middle and higher floors are for residential use. However, as one moves away from Sule Pagoda Street to the east or west, the ratio of apartment buildings (no commercial use on the lower floors) becomes higher.



Source: JICA Study Team

Figure 1.15: Current Condition of Building Use

Building Height

In the by-laws of the Yangon City Development Committee (YCDC), the height of buildings within the CBD is regulated.

According to the findings of the building survey on the number of stories in CBD, even the high-rise buildings along the arterial roads, the building height is restricted to be less than twice on the front road width. The height ratio of the buildings to the front road within the inner blocks is regulated with a higher height limit of 2.5 times as that of the front road.



Source: JICA Study Team

Figure 1.15: Current Condition of Building Height



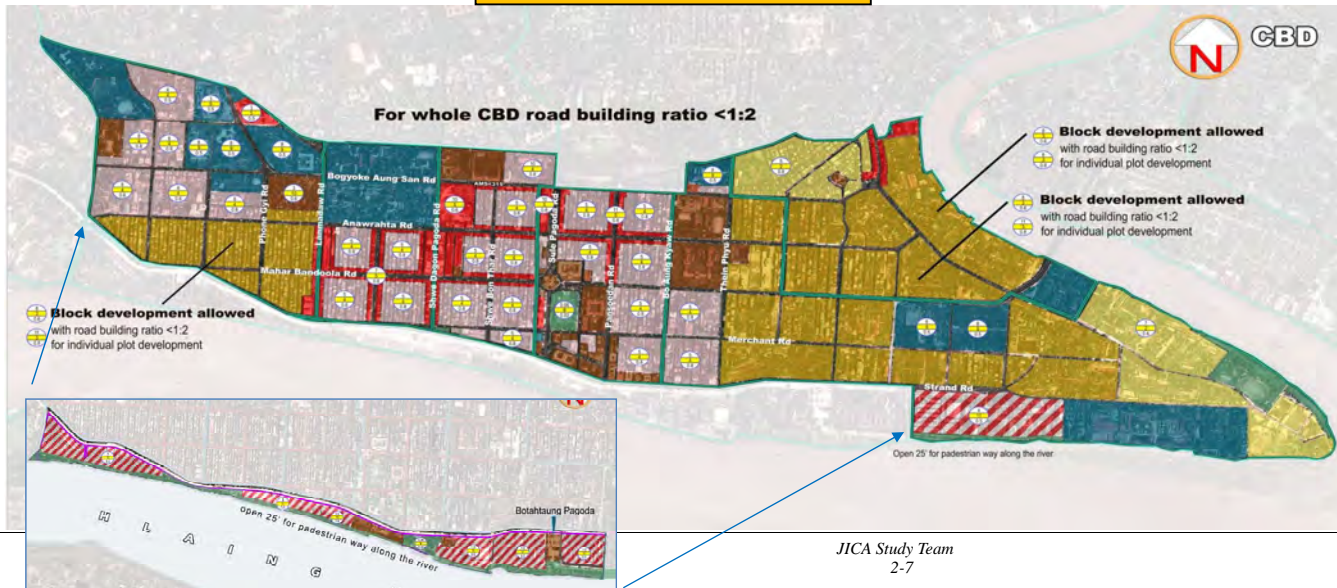
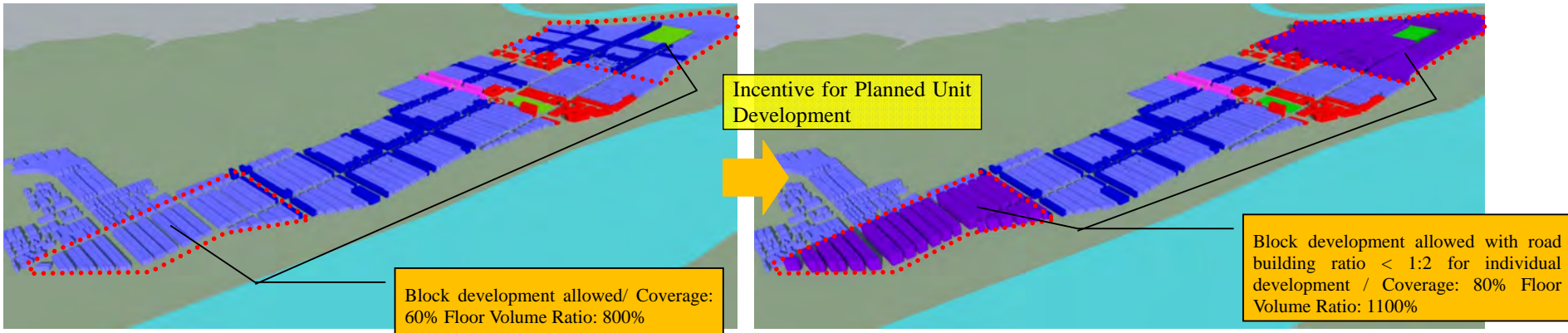
1.4 Land Use Zoning Scheme

1.4.4 Proposed Zoning Scheme

Basic Policy of the Zoning Scheme

The basic idea of the building regulation in CBD is to control the quick increase in the total floor volume in order to avoid damage to the heritage buildings and aggravation of urban problems such as traffic congestion. Subsequently, the standard regulation form is proposed to be changed from the present scheme of limiting the ratio of the buildings to the width of the front road to the floor volume ratio and building coverage.

However, in the western and eastern ends of CBD where a number of old and deteriorated buildings are located, the high-rise buildings which height were based on the existing regulation (twice of the front road width) will be permitted to a certain extent if the conditions of the parking area and green space are met. These areas could provide new residential areas. The aim of this plan is to form a new city center which is integrated with public transport.



Source: JICA Study Team
Figure 1.17: Development Policy by Zone

- 1 • Low-Density Residential areas
- 2 • Medium-Density Residential areas
- 3 • High-Density Residential areas
- 4 • Mix Use areas
- 5 • Commercial & Business areas
- 6 • Industrial & Warehouse areas
- 7 • Port & Related
- 8 • Green & Blue
- 9 • Government, institute, infrastructure areas.
- 10 • Urban heritage conservation areas
- 11 • Water front special development zone

Source: Yangon City Comprehensive Land Use, Zoning and Urban Design Review Working Committee
Note: This regulation has been not enforced yet, and it shall be further refined and modified through public consultations by the committee without JICA Study Team after completion of this Study.

Figure 1.18: Land Use Regulation of CBD
[A Proposal of Myanmar Side]



1.5 Historical and Cultural Heritage Conservation

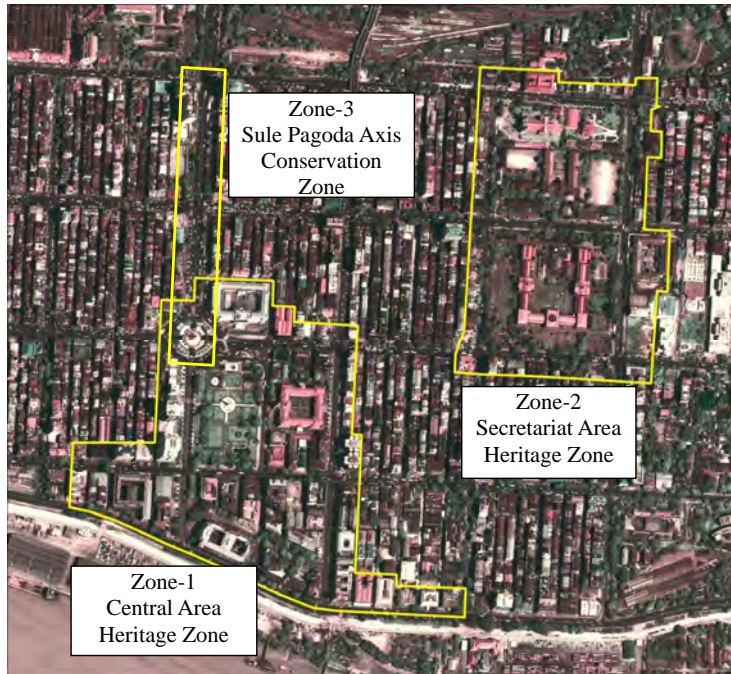
1.5.1 Outline

Necessity and Objectives

There are over 189 heritage buildings which the YCDC designated in the Yangon City, and there are other old buildings distributed in the CBD area which are not listed by YCDC. These old buildings are of very high importance for the identity of Yangon as a historic city, as well as a source of tourism attraction and as materials for historical studies.

For these reasons, a district, where a number of heritage buildings are accumulated, must be kept in good condition and landscape. In the near future, such heritage buildings will be utilized positively as a tourism attraction which maintains the outlook of the buildings. Respected private companies or organizations may utilize the heritage buildings for hotels or restaurants, while maintaining and preserving the buildings.

Thus, a district of historical heritages must be the subject to strengthen regulations on the conversion of the buildings. Incentives to protect these regulations are proposed.



Source: JICA Study Team

Figure 1.19: Target Area of Historic and Cultural Heritage Conservation

1.5.2 Works and Discussions

Works and discussions records are followed.



Table 2: Meeting Record

No.	DATE	Meeting Theme
1	January 2013	About Zone 2 (around the Ministry of Home Affairs building) regulations
2	4 March 2013	About Zone 1 (Central district of CBD) regulations
3	25 May 2013	About land use regulations in the heritage zone (1)
4	4 June 2013	About land use regulations in the heritage zone (2)
5	14 July 2013	About land use regulations in the heritage zones (3)
6	3 Aug 2013	About the landscape of Shwedagon Pagoda from some arterial roads.

Source: JICA Study Team



1.5 Historical and Cultural Heritage Conservation

1.5.3 Existing Situation of Heritage Zones

1 Central Area Heritage Zone

In the Central Area Conservation Zone (tentative name), there are 34 heritage buildings concentrated in the center area around the Sule Pagoda. Most heritage buildings are used for office or commercial purposes, e.g., No.2 building is used as YCDC's office. However, in some of the old buildings, only the ground floors are used. Some of the old buildings have become decrepit to a level of being dangerous. When a conservation plan is made for this zone, an activity plan for the old buildings for more positive uses and their conservation would be prepared at the same time.



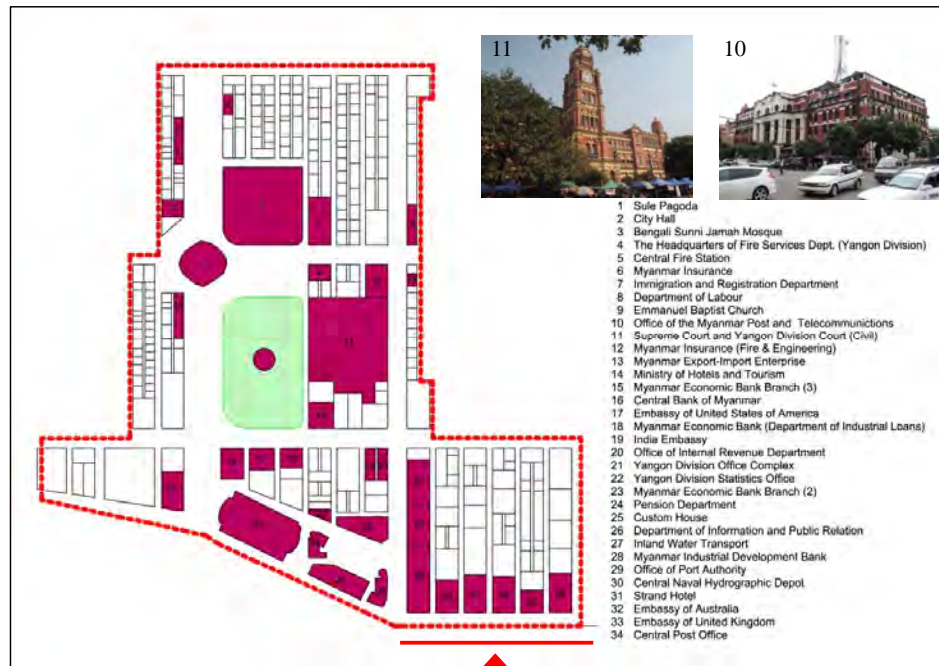
Section of A

2 Secretariat Area Heritage Zone

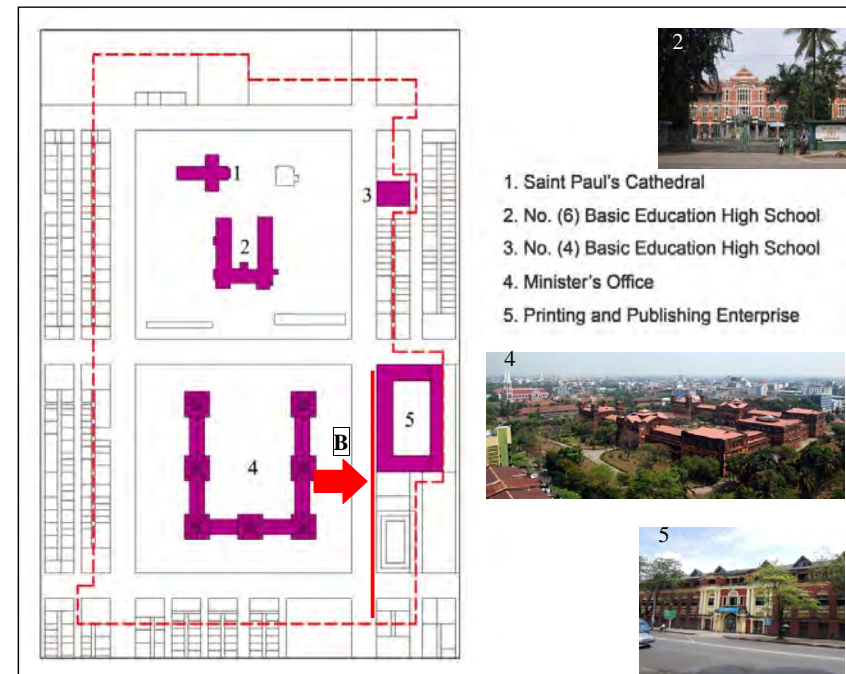
The Secretariat Area Conservation Zone (tentative name) is located east of the Central Area Conservation Zone. This area is composed of the secretariat building and other buildings around it. In addition to the secretariat building are the cathedral, schools, the Department of Human Settlements and Housing Development (DHSHD) building, and the Printing and Publishing Enterprise building.



Section of B



Source: JICA Study Team
Figure 1.20: Current Conditions of Central Area Heritage Zone



Source: JICA Study Team
Figure 1.21: Current Conditions of Secretariat Area Heritage Zone



1.5 Historical and Cultural Heritage Conservation

1.5.3 Existing Situation of Heritage Zones

3 Sule Pagoda Axis Conservation

The Sule Pagoda Street, which is located in the center of CBD, passes through north to south, has a width of over 60 m. The Trader's Hotel and Sakura Tower are located on the roadside of this street. While the Sule Pagoda Street is a symbol of Yangon urban areas, there are plans for the construction of proposed high-rise buildings along this street as well.

While a new and secondary CBD would be arranged in the suburbs of Yangon City, some urban functions (i.e., office, commercial, and convention) will be relocated from the CBD area. Such urban structure would be effective for the realization of smooth vehicular traffic and implementation of a balanced water demand. Moreover, some new standards for the design of new buildings are considered to be introduced.



Source: JICA Study Team

Figure 1.22: Current Landscape Section of Sule Pagoda Street

1.5.4 Proposed Plans

1 Conservation of the Central Area / Conservation of the Secretariat Area

The YCDC, Ministry of Construction (MOC), YHT, MAA, and JICA Study Team (also known as the Yangon City Comprehensive Land Use, Zoning, and Urban Design Review Working Committee (ZUDRWC)) has discussed and proposed the plan for the conservation of heritage zones. The plan is as follows:

(1) Strengthening the policy on limiting the floor area ratio and building coverage in heritage zones

The average number of floors of the heritage buildings in the Central Area and Secretariat Area Heritage Zones is about five stories. If high-rise buildings will be constructed, these will inevitably impair the continuity and integrity of the roadside landscape of Pansodan and Strand streets. For this reason, ZUDRWC has discussed and proposed a plan to restrain the construction of high-rise buildings in excess of the average height of the existing buildings.



(2) Unification of the floor height of buildings

The existing building regulation is a reference for the width of the front road. For this reason, there are some buildings with reduced floor height and increased number of floors. In such case, by constructing these high-rise buildings problems occur in the formation of a continuous facade. For this reason, ZUDRWC has discussed the proposal to align the floor height of the buildings.

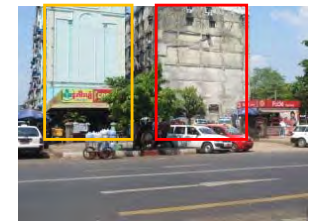
(3) Limit the installation of billboards

Some buildings are posting eye-catching outdoor advertisements covering the facade of the buildings. Bright colored materials of outdoor advertisements may interrupt the continuity and integrity of the landscape of the arterial roadside. In addition, it will ruin the landscape of the city if bright colors of red or blue are used. For this reason, ZUDRWC has discussed and proposed restrictions in the posting of outdoor advertisements that cover the buildings.



(4) Prohibition of a monotonous facade design and design considerations for the building side

Many of the heritage buildings are three- to five-stories high. Some high-rise buildings have aligned its design from the ground level up to the height of the heritage buildings to ensure the continuity of the facade. In addition, buildings with front curtain walls are also seen around the CBD area. Such design impedes the continuity of the roadside landscape. For this reason, ZUDRWC has discussed and proposed that buildings be constructed considering the continuity of the facade design and height of the heritage buildings that are located next to it.



Source: JICA Study Team

Figure 1.23: Floor Height of Buildings
Figure 1.24: Installation of Billboards
Figure 1.25: Monotonous Façade Design

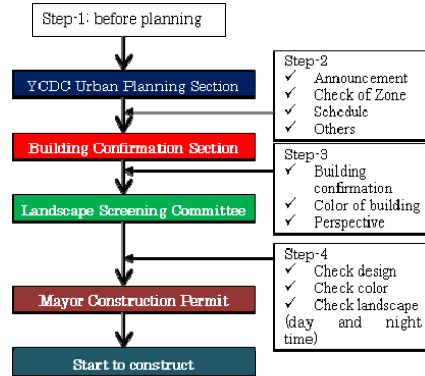


1.5 Historical and Cultural Heritage Conservation

1.5.4 Proposed Plans

(5) Establishment of the 'Yangon Landscape Council'

Advice from a professional is needed for the review of building plans as mentioned in (1) to (4), as well as architectural design, color, etc. For this reason, the JICA Study Team proposed the organization of a landscape council that will be made up of YCDC, YHT, Association of Myanmar Architects (AMA) and other professionals with extensive knowledge and experience.



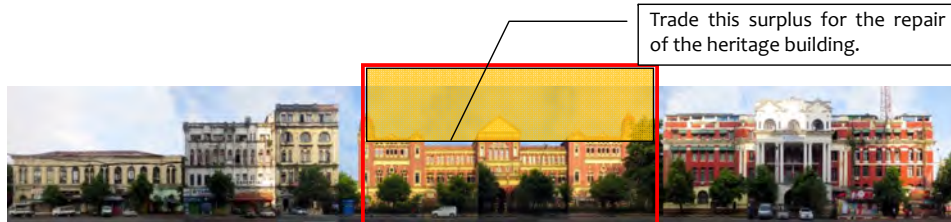
Source: JICA Study Team

Figure 1.26: An Image of Yangon Landscape Council

(6) Transfer of Development Rights (TDR) (proposed)

Most of the heritage buildings in CBD have been in existence well beyond 100 years or more, and the aging of these buildings is seriously impairing both the interior and exterior structures. If the heritage buildings are to be utilized for commercial or business purposes by private firms or organizations, they will need to consider first the seismic enhancement measures, refurbishing lifting equipment, air conditioning equipment, and building renovation. In addition, the heritage buildings often do not take full use of the floor volume ratio and coverage as specified in the future. For this reason, the heritage buildings have a surplus of floor volume rate.

The TDR would allow the surplus floor volume to be traded for money to other parties. For example, the owner of the heritage building who have agreed to restore the building and keep the landscape in good condition will be allowed to sell the surplus to a third party seeking to develop in suburban area. The owner of the heritage building would therefore obtain a fund that can be used to perform the restoration of the building. (For example, for the heritage building on the west side of Pansodan Street, if the regional government sets a 600% volume floor ratio, there will be 300% or more of the High Court building's surplus. Trade the market price of this surplus and then make funds for the repair of the building.)

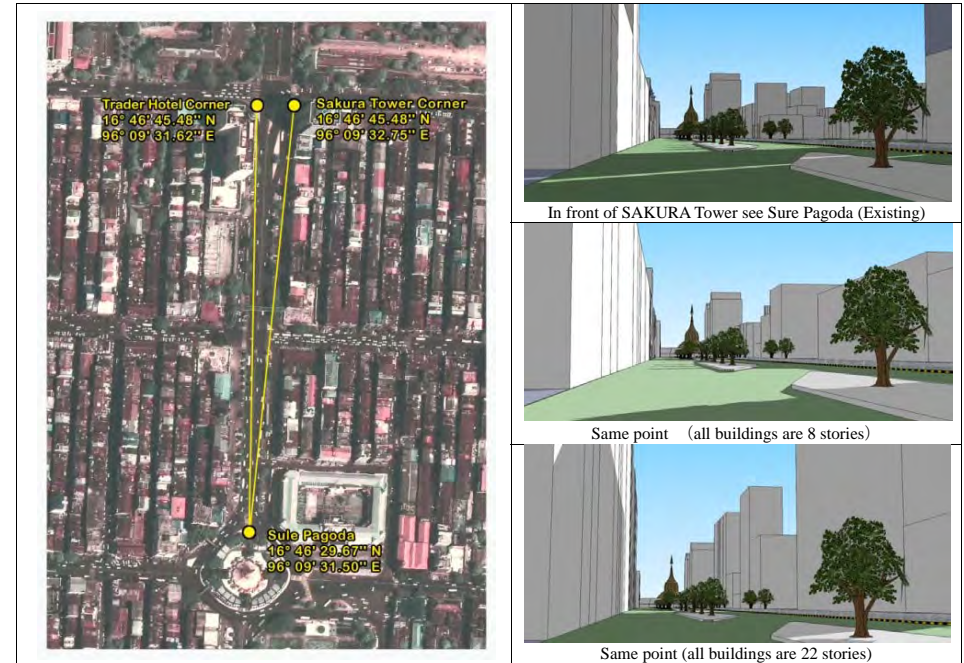


Source: JICA Study Team

Figure 1.27: Transferring of Development Right (TDR)

2 Conservation of Sule Pagoda Axis

ZUDRWC has discussed and proposed a landscape view of the future, when the height of the buildings located on the roadside of Sule Pagoda Street become taller. As Sule Pagoda is symbolic of the CBD, view of the Pagoda needs to be respected in the future skyline of Yangon CBD.



Source: JICA Study Team

Figure 1.28: Sule Pagoda Axis Landscape Simulations



2.1 Introduction

1 Objectives

- ✧ To formulate a detailed development plan for the “North-East Region” in which new urban development will be taken to realize the proposed strategic urban development plan of Greater Yangon. The land use plans should be linked with the master plan made by the townships.
- ✧ To carry out technical transfer through good experience in cooperative planning works with Yangon City Development Committee (YCDC), townships, and the JICA Study Team.

2 Main Output

- ✧ Map and Information Data on the Current Conditions
- ✧ Map and Information Data of Future Development Plan (Long-term target 2040)

3 Work Schedule

- ✧ Step 1: May-June 2013 Works for Reviewing the Current Conditions
- ✧ Step 2: July-August 2013 Works for Planning the Land Use and Infrastructure

4 Main Players of the Planning Work

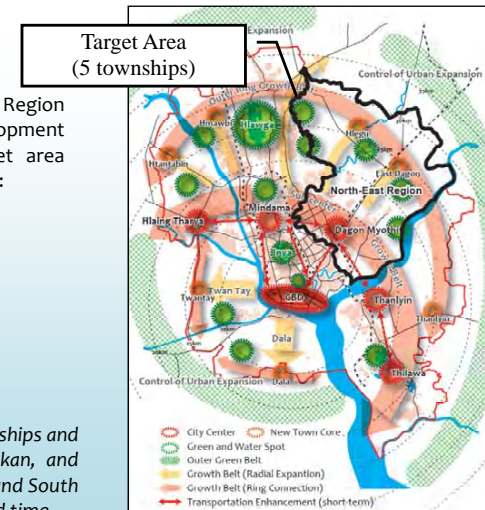
- ✧ General Administration Department, Township
- ✧ Urban Planning Division, Engineering Department (Building, Water and Sanitation, Road and Bridge), and Parks and Playground Department of YCDC
- ✧ Urban and Regional Planning Division, Department of Human Settlements and Housing Development (DHSHD) of the Ministry of Construction (MOC)
- ✧ JICA Study Team

5 Target Area

The target area of this work is the North-East Region of Greater Yangon in which new urban development will take place in short term. The target area consists of a total of five townships as follows:

- ✧ **North Dagon Township**
- ✧ **South Dagon Township**
- ✧ **East Dagon Township**
- ✧ **Dagon Seikkan Township**
- ✧ **Hlegu Township**

Note: The works and discussions with the townships and YCDC were done in East Dagon, Dagon Seikkan, and Hlegu townships only, but not in North Dagon and South Dagon townships, due to limited manpower and time.



Source: JICA Study Team

Figure 2.1: Target Area

6 Dagon Seikkan Project by DHSHD/MOC

Currently, the DHSHD and MOC, has been conducting a huge housing project, namely, “Ayeyarwun-Yadanar High-rise Building” in Dagon Seikkan Township. The profile of the project is shown as follows:

- Area: 89 ha (220 acre)
- Total Room Unit: 19,600 units
- Future Population: approximately 100,000 persons



Source: DHSHD, Ministry of Construction

Figure 2.2: An Image of the Project



Road No.2 (radial road)



Yangon-Mandalay line (railway)



Low lying flooded areas



Road No.7 (ring road)



Suburban areas for farming



Dagon Seikkan Project (see above)



2.2 Future Goals and Strategies (Giving Conditions)

1 Development Framework for 2040

Currently, the North-East Region has a population of 908,000 in 2011 and an area of approximately 37,600ha (376km²). According to the Strategic Urban Development Plan of Greater Yangon, the future population in 2040 is forecasted as 2,953,979 persons in the same area, which means 325% growth from the current population.

Table2.1: Development Framework for 2040 in the North-East Region

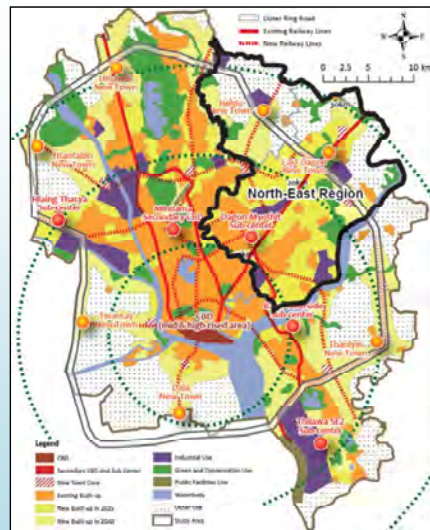
Township	Area (ha)	Current Status (2011)			Future Forecast (2040)	
		Population	Population Density (person/ha)	Growth Rate	Population	Housing Units
North Dagon	2,400	221,200	92	6.16%/year	287,188 (130%)	+13,000
South Dagon	3,800	370,403	97	7.75%/year	550,371 (149%)	+36,000
East Dagon	17,100	145,505	9	7.74%/year	1,183,320 (813%)	+208,000
Dagon Seikkan	4,200	120,161	29	15.59%/year	399,111 (332%)	+56,000
Hlegu (a part)	10,100	50,793	5	(no data)	533,707 (1,051%)	+97,000
Total	37,600	908,062	24 persons/ha	-	2,953,697 (325%)	+410,000

Source: JICA Study Team

2 Urban and Infrastructure Development Strategies

The main urban and infrastructure development in the North-East Region are expected not only in the short term but also in mid and long term as follows:

- ❖ Construction of two sub-centers, namely “Dagon Myothit” and “Bago Riverside”;
- ❖ Construction of two or three new industrial zones along the outer ring road;
- ❖ A large number of housing projects;
- ❖ Construction of an outer ring road using the existing Road No.7;
- ❖ Improvement of Road No. 2;
- ❖ Construction of a new bridge across the Bago River;
- ❖ Upgrade the existing Mandalay Railway line;
- ❖ Construction of the three new Urban Mass Rapid Transit (UMRT) lines;
- ❖ Construction of the expressway and railway connecting to the new international airport.



Source: JICA Study Team

Figure 2.3: Future Development Strategy

2.3 Works and Discussions

1 Meetings with Township

Meetings with townships to understand the current land use, public facility, housing situation, and infrastructure issues have been held from the middle of May until the end of August. The JICA Study Team, consequently, proposed a concept map of the future land use plan through the meetings. The meeting record is as follows:

2 Photos from the Meetings



16 May 2013 (East Dagon)



17 May 2013 (Hlegu)



23 May 2013 (Dagon Seikkan)



30 May 2013 (Hlegu)



27 Jun 2013 (East Dagon)



30 July 2013 (Dagon Seikkan)



1 Aug 2013 (Hlegu)



15 Aug 2013 (East Dagon)

Table2.2: Meeting Record

No.	Date Place	Meeting Theme
1	16 May 2013 East Dagon Dagon Seikkan 17 May 2013 Hlegu	<ul style="list-style-type: none"> • To introduce land use planning. • To ask for basic information.
2	23 May 2013 East Dagon Dagon Seikkan Hlegu 28 May 2013 East Dagon 30 May 2013 Hlegu 31 May 2013 Dagon Seikkan	<ul style="list-style-type: none"> • To get general information about current conditions. • To confirm current conditions on the map.
3	21 June 2013 Dagon Seikkan 27 June 2013 East Dagon 2 July 2013 Hlegu	<ul style="list-style-type: none"> • To confirm current conditions about public facilities and housing situation.
4	12 July 2013 Dagon Seikkan	<ul style="list-style-type: none"> • To confirm about specific lots on the map.
5	30 July 2013 East Dagon Dagon Seikkan 1 August 2013 Hlegu	<ul style="list-style-type: none"> • To confirm about future land use and road network. • To discuss about future road construction and urban development.
6	12 August 2013 YCDC	<ul style="list-style-type: none"> • To explain and discuss about future land use concept map of three townships.
7	15 August 2013 East Dagon Dagon Seikkan 20 August 2013 Hlegu	<ul style="list-style-type: none"> • To explain and discuss about future land use concept map.

Source: JICA Study Team



2.4 Current Conditions

2.4.1 Overview

Urbanization in South Dagon and North Dagon townships adjacent to Yangon central part has been progressing rapidly, and the population density is more than 90 persons/ha. On the other hand, urbanization in East Dagon, Dagon Seikkan, and Hlegu townships does not grow faster, and the current land use is mainly paddy field, farm village, and industrial park.

1 Land Use

- ❖ In North Dagon and South Dagon townships, the land use as residential area has been progressing rapidly, and the land use as farmland is scarcely seen.
- ❖ In East Dagon Township, farmland is a main land use. The main residential area exists around the township's central part, and development of a new residential area is expanding to the south side. An industrial park is in operation along Road No.2.
- ❖ In Dagon Seikkan Township, the main residential area is located in the neighborhood of Bago River Road, and a number of residential areas are under development. An industrial park is in operation along the Bago River. (Existing typical housing development: Yuzana Garden City)
- ❖ In Hlegu Township, most of the areas in the southern part are covered by prime agricultural lands with well-developed irrigation system including paddy fields and orchid gardens. Others are used for fishponds.

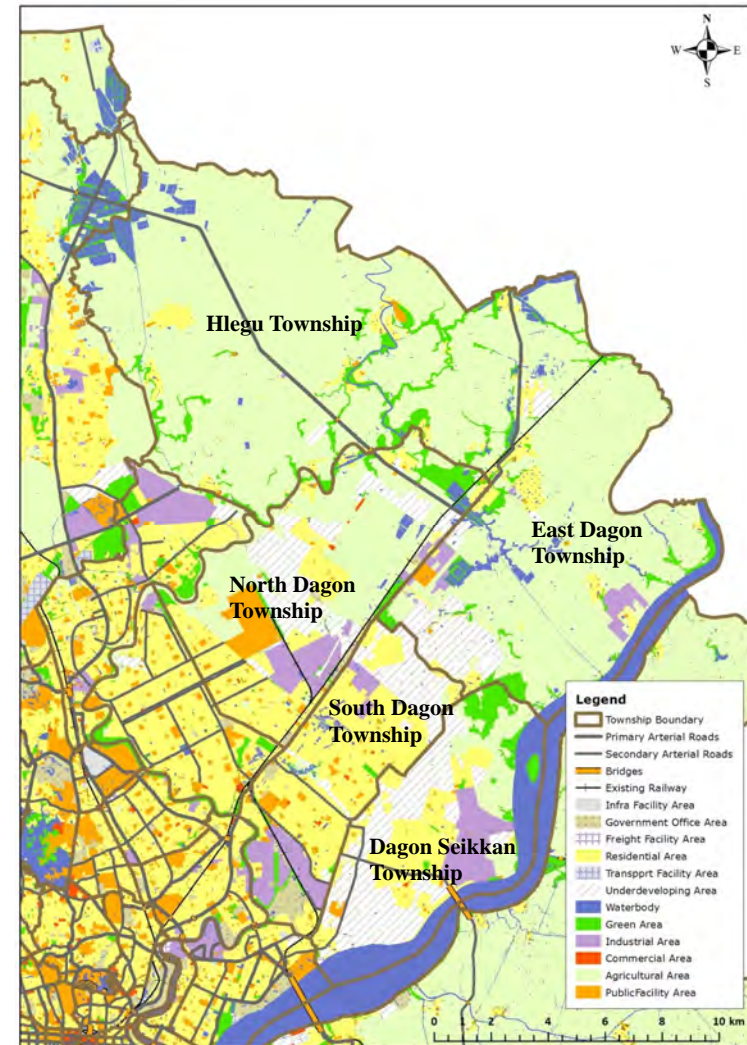
2 Road, Transportation & Urban Infrastructure

- ❖ Current major roads are Road No.2 and No.7 only, and the arterial road network is in undeveloped condition. All roads are in very poor surface condition.
- ❖ Current railways are only Yangon-Mandalay line and Thilawa line and there are a small number of passengers.
- ❖ Due to undeveloped drainage facilities in the whole region, floods happen frequently in lowlands during rainy season.

3 Social Service and Urban Utility

- ❖ Public facilities such as school, hospital, and pagoda exist mostly in the city area.
- ❖ The Dagon University and Institute of Economics as main educational facilities are located in the city.
- ❖ Supply of electricity and water are limited to some areas in the city.
- ❖ Although there is no prominent natural area to be protected strictly in this region, there are good natures, such as eco-tone area along the rivers, which has multi-function of flood control, water purification, and biodiversity.

2.4.2 Land Use



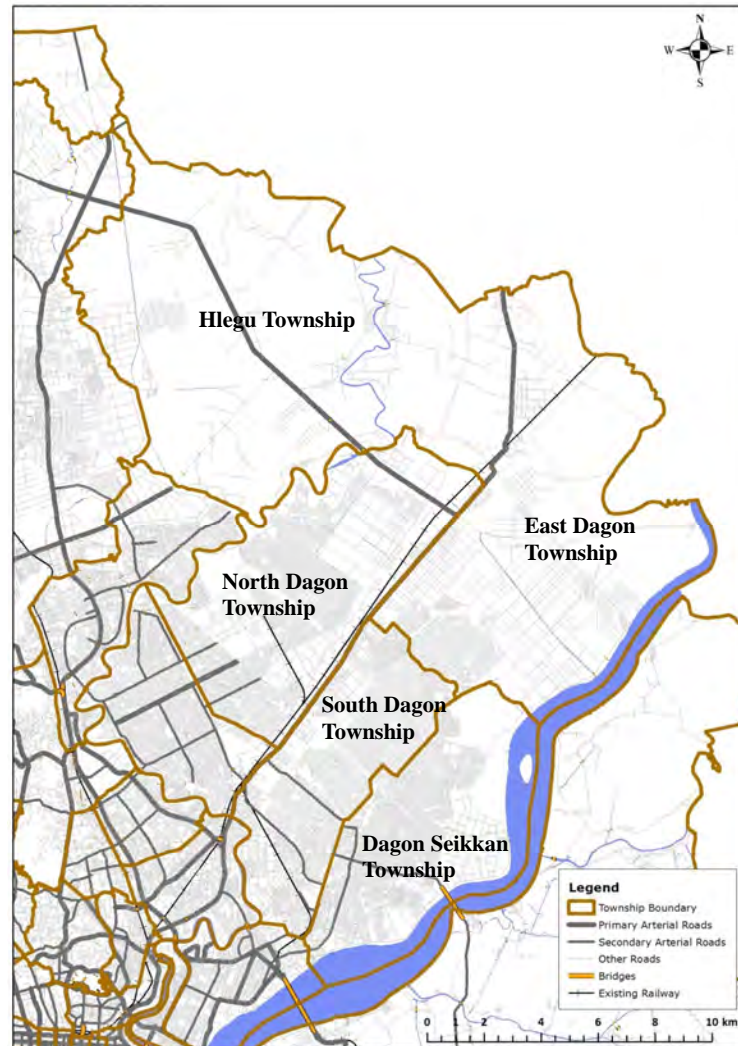
Source: JICA Study Team and the Working Group (YCDC and Townships)

Figure 2.4: Current Conditions of Land Use



2.4 Current Conditions

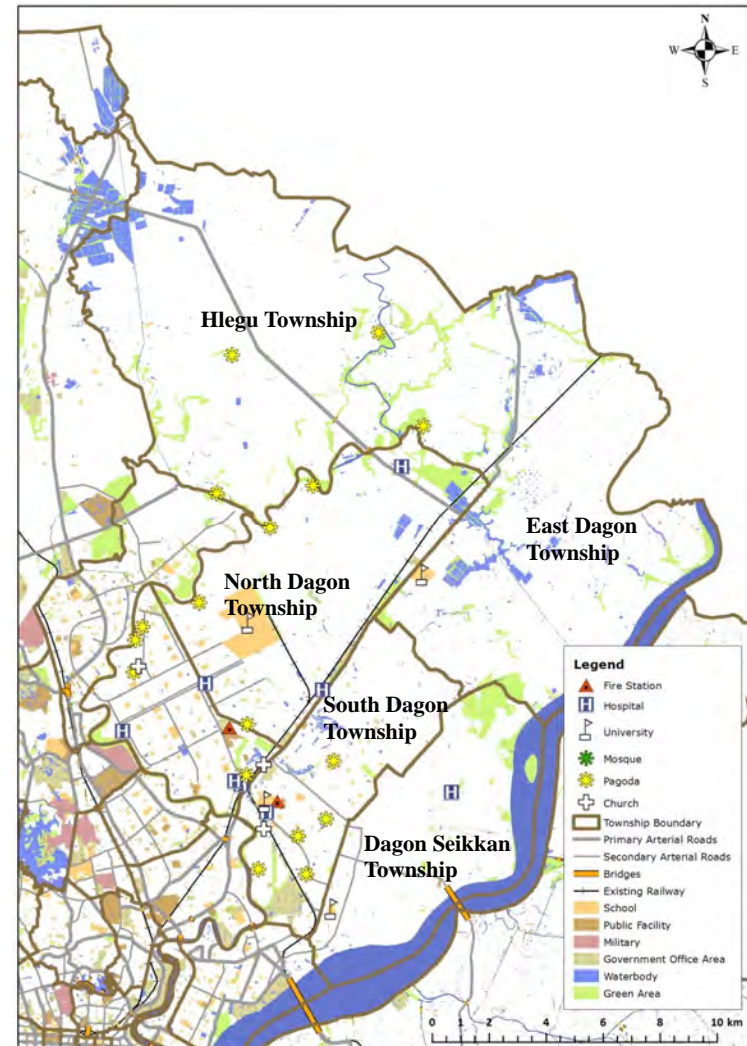
2.4.3 Road, Transportation & Infrastructure



Source: JICA Study Team and the Working Group (YCDC and Townships)

Figure 2.5: Current Conditions of Road, Transportation and Urban Infrastructure

2.4.4 Social Service & Urban Utility



Source: JICA Study Team and the Working Group (YCDC and Townships)

Figure 2.6: Current Conditions of Social Service and Urban Utility



2.5 Future Development Plan

2.5.1 Development Policy

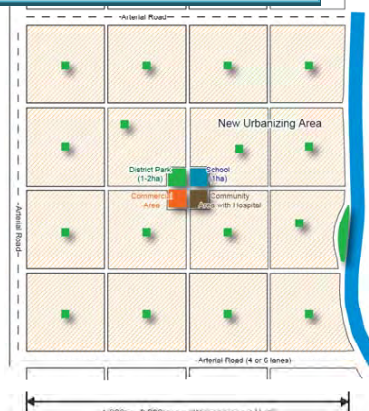
“Realization of an eco-friendly new town development with complex urban function”

- ❖ **Infrastructure development taking advantage of good access to CBD and Thilawa SEZ and gateway function in northern Yangon.**
 - Formulation of an arterial road network corresponding to the increase of vehicle traffic;
 - Railway development for traffic congestion resolution and suburban development; and
 - Center development with integrated residential, commercial, and industrial functions in the traffic nodal points.
- ❖ **Housing development for low and middle income people near the industrial park and commercial business area.**
 - Acceleration of new industrial and commercial business development;
 - Creation of a housing environment where residences are in close proximity to offices; and
 - Allocation of population from CBD.
- ❖ **Development and conservation for sustainable urban environment.**
 - Development of the drainage system for flood control;
 - Development of parks and greens for environmental symbiosis;
 - Conservation of superior agricultural lands with well-developed irrigation system; and
 - Conservation of the natural green area for flood control.
- ❖ **Sustainable urban development with mitigation of environmental and social negative impacts by means such as SEA concept**
 - Conservation of natural environment, such as riverside area, which contributes on multi function such as flood control, water purification, biodiversity.
 - Consideration of slums and squatters and provision of low income houses

2 Concept of Supplying Urban Utilities and Social Services

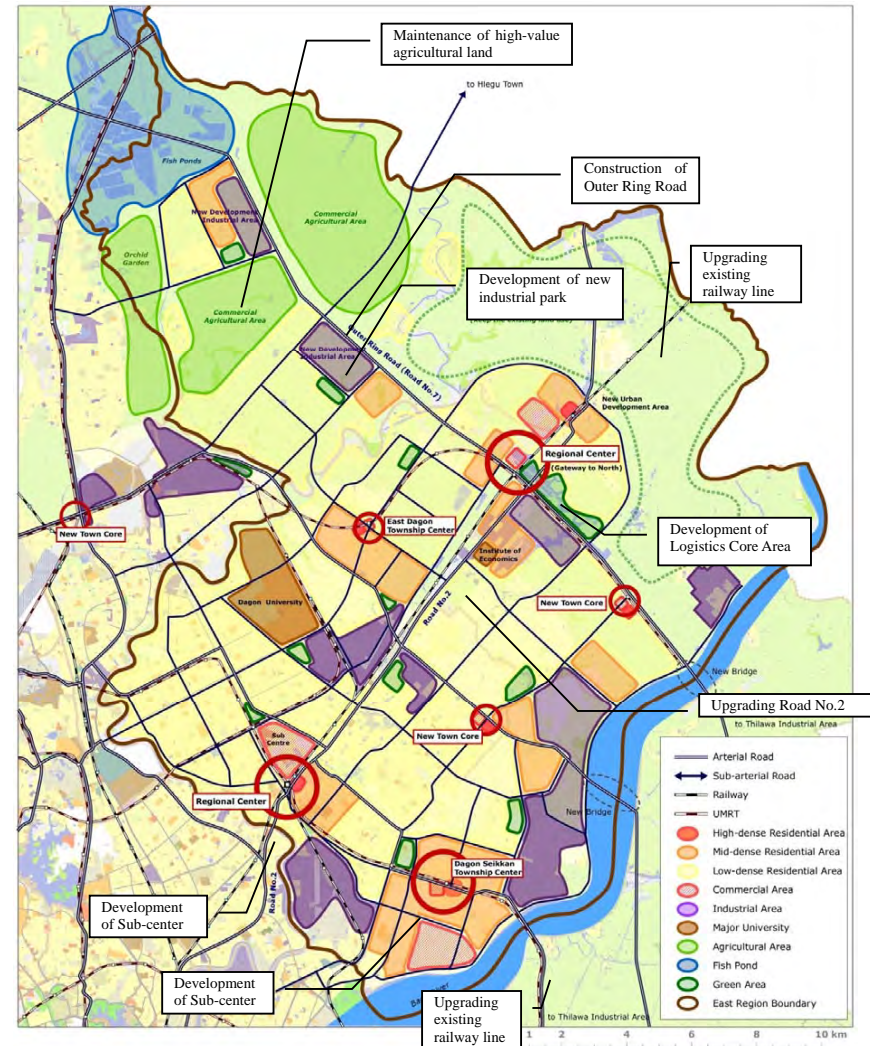
In order to secure a better living environment, it is necessary to provide urban utilities and social services such as public parks, schools, hospitals, community facilities, and others for new urban development areas with satisfaction of the standard supply level which will be defined. The JICA Study Team proposed the standard supply level in each neighborhood unit (hereinafter referred to as “one unit”) which has an area of 1.0 km² to 4.0 km².

- ❖ Public parks: One “District Park (2 ha)” per one unit;
- ❖ Elementary schools: One school (1 ha) per one unit;
- ❖ Large-scale hospitals : One hospital with 50 beds per one unit;
- ❖ Community areas (library, community building, post office, and hospital): One area per one unit.



Source: JICA Study Team
Figure 2.7: Concept of Neighborhood Unit Development

2.5.2 Development Plan



Source: JICA Study Team and the Working Group (YCDC and Townships)
Figure 2.8: Future Detailed Development Plan of North-East Region



2.5 Future Development Plan

2.5.2 Development Plan

1 Development Plan

- ❖ **Formulation of an Arterial Road Network**
 - Upgrading of Road No.7 to a “major arterial road” with a function of an outer ring road;
 - Upgrading of the Min Ye Kyaw Sawar and Aye Yarwon roads to “sub-arterial roads” with a function of a bypass for Road No.2; and
 - Development of the east-west arterial roads running through the center of the area.
- ❖ **Formulation of the Railway Network**
 - Upgrading of the existing railways, namely, Yangon-Mandalay Line and Thilawa Line; and
 - Development of UMRT.
- ❖ **Development of the Regional Center, Township Center, and Town Core in the Nodal Point of Transport Infrastructure.**
 - Urban development with mixed land use of residential, commercial, and business (Regional Center: Dagon Myothit, Township Center: Dagon Seikkan);
 - Development of logistics and industrial parks with superior traffic convenience (Regional Core: Northern part of East Dagon); and
 - Development of the town core as medium-high density residential area with traffic convenience of the UMRT Station (Town Core: Strategic positioning of each township).
- ❖ **Integrated Development of Industrial Parks and Residences for Laborers along Arterial Roads**
 - Along the Outer Ring Road, Road No.2, Bago River Road, and New East-West Arterial Road; and
 - Development of medium-density residences for laborers.
- ❖ **Conservation of Useful Current Land Use such as Superior Agricultural Lands and Natural Areas.**
 - Paddy field, orchid garden, and river-swamp zone in Hlegu Township.

2 Future Development Indicators

Table 2.3: Future Area Allocation by Land Use

Category	Area (ha)	
	Greater Yangon	East region
Residential Area	27,179.6	7,328.4
Public Facility Area	10,918.9	1,160.4
Commercial Area	807.0	37.1
Industrial Area	5,522.8	1,571.6
Agricultural Area	83,567.9	20,132.3
Under Developing Area	5,164.8	3,871.0
Green and Open Area	11,162.1	1,961.9
Waterbody	16,021.8	2,689.1
Total	160,344.7	38,751.7

Source: JICA Study Team

Table 2.4: Future Length of Road

Road Category	Length (km)	
	Greater Yangon	East Region
Highway	18.9	0.7
Primary Arterial Road	380.3	49.9
Secondary Arterial Road	294.4	61.6
Other Road	9,096.8	2,981.1
Bridge	28.1	2.5

Source: JICA Study Team

2.5.3 Future Images



Source: JICA Study Team

Figure 2.9: A Bird View Image looking from South side toward North



Source: JICA Study Team

Figure 2.10: A Bird View Image looking from West side toward East

3

Transit Oriented Development “TOD”

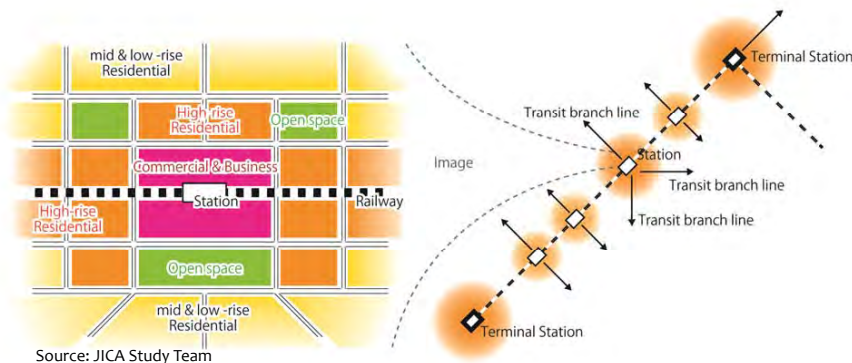


3.1 Introduction – Basic Information of Transit Oriented Development “TOD”-

3.1.1 What is TOD?

1 Policy of TOD

- ✧ TOD is abbreviation of Transit Oriented Development, which intends to achieve urbanization based on public transportation systems.
- ✧ In recent years, it has been demonstrated or verified beyond doubt that disordered increasing of private vehicles causes serious traffic problem, which results in huge economic loss and environmental degradation. Thus, appropriate TOD implementation is a key for sound urban growth
- ✧ The policy of TOD is “Achieve urbanization based on public transportation that intends high economical efficiency, and environmental friendliness, and traveler friendliness”.
- ✧ Major purposes of TOD are classified in the following;
 - A) Develop urban cores at railway station area
 - B) Connect residential areas to urban core with public transportation network
 - C) Strength in-area accessibility by light public transportation system

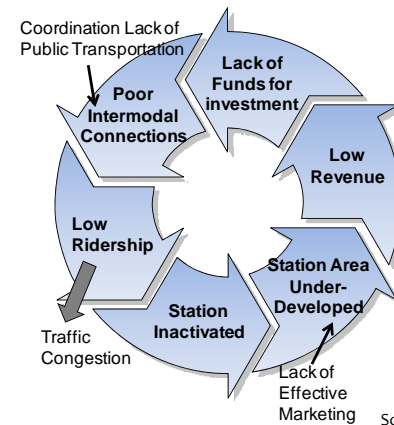


Source: JICA Study Team
Figure 3.1: TOD Image of Station Area Development

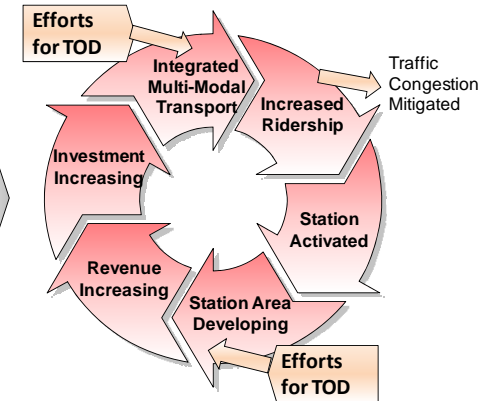
2 Strength and Benefit of TOD

- ✧ TOD has three major strategies, station area development, multi-modal facility integration, and role division of each station area. These strategies will bring benefit on not only urban economical efficiency and social public services, but also railway operator management with additional demand projection. Without TOD, railway operator would face the difficulty against sustainable operation.

Typical Vicious Cycle of Case without TOD



Future Cycle of Case with TOD



Source: JICA Study Team

Figure 3.2: Vicious Cycle without TOD (left) and with TOD (right)

3.1.2 TOD Examples in the World

Table 3.1: TOD Examples (Station and Distination Area Development)

	Docklands London, England	Tama New Town, Japan
Picture		
Type	Sub Center	Residential Town
Scale	56 ha	2,884 ha
Population	90,000 (2005)	216,400 (2010)
Public Transport	<ul style="list-style-type: none"> • Docklands Light Rail • London Metro Jubilee Line Extension 	<ul style="list-style-type: none"> • Tama Monorail • 3 Urban Railway line (Keio, Odakyu, JR)
Urban Function	<ul style="list-style-type: none"> • Business District • Commercial Center 	<ul style="list-style-type: none"> • Satellite City • Residential Town with Commercial Facility

Source: <http://www.ur-net.go.jp/syutoken/nt/housing.html>

3

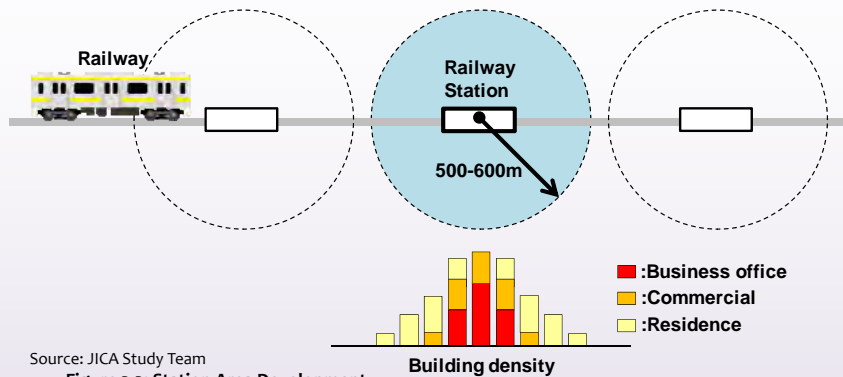
Transit Oriented Development “TOD”



3.1.3 TOD Strategy

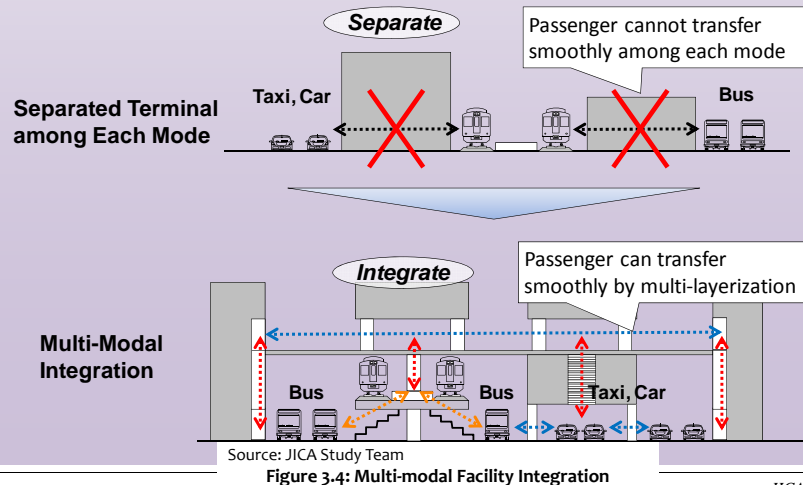
1 Station Area Development

Railway station area is developed as urban core where urban functions are aggregated including business, commercial, and public administrations. The aggregation area should be set walkable, 500-600m as desirable.



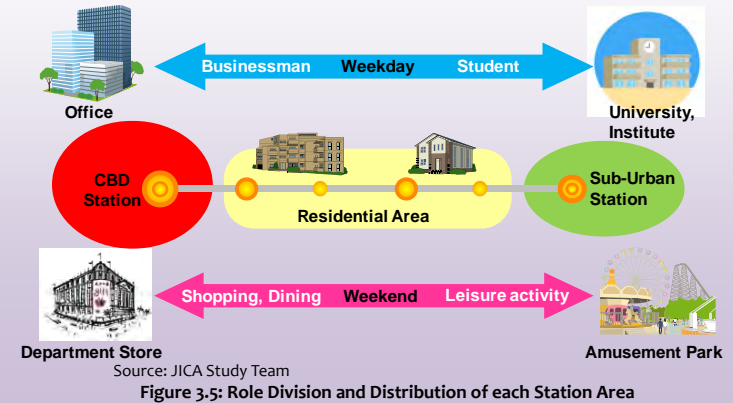
2 Multi-modal Facility Integration

Integration among each transport mode would be a key of TOD because the non-integration causes time-loss and uncomfortable transfer for passengers, and results in less-use of public transportation. The integration should be designed by combination of horizontal movement and vertical movement for passenger smooth transfer.



3 Role Division and Distribution of Each Station Area

Uniform development on every station area does not bring sufficient effect. Dividing roles and distributing each function along the railway line would produce further passenger demand with activating every station area.



3.1.4 Urban Public Transportation System for TOD

Following table shows the urban public transportation system which can be applied TOD.

Table 3.2: Urban Public Transportation System

System	MRT	LRT / Monorail / AGT	BRT
Image			
Traffic Capacity (passengers / hour)	30,000 - 85,000	10,000 - 30,000	~25,000
Scheduled Speed (km/hour)	25 - 55	20 - 35	15 - 30
Initial Cost (USD million/km)	50-320 (Underground) 50-100 (Viaduct)	10-50	0.5-15
Advantage	<ul style="list-style-type: none"> Large-scale impact on decongestion High energy efficiency 	<ul style="list-style-type: none"> Balanced development Passenger Friendliness 	<ul style="list-style-type: none"> Low initial cost Flexible development
Disadvantage	<ul style="list-style-type: none"> High cost Long time project implementation 	<ul style="list-style-type: none"> Integration problem Many crossings with road 	<ul style="list-style-type: none"> Interference on road traffic Low Capacity limit

Source: JICA Study Team

3

Transit Oriented Development “TOD”



3.2 TOD on Yangon Circular Railway (YCR)

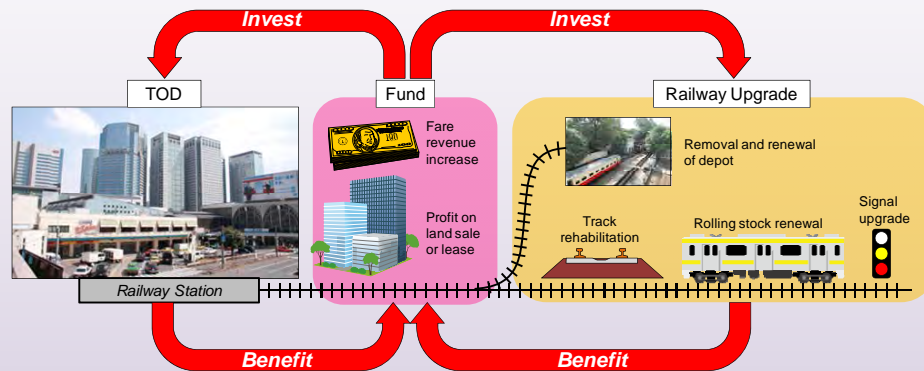
3.2.1 Strategy of YCR TOD <Proposal>

1 Existing Condition of YCR

Yangon Circular Railway (YCR) has around 47.5km length and carries one hundred thousand passengers per day. The number of daily operation train becomes 200 including suburban section lines. Although it has many things to improve, has large potential for TOD.

2 Basic Strategy

As referred in 3.1.1.2, TOD has benefit for railway operator with demand projection. The demand rising will bring both fare revenue increase and investment capability expansion by rising of value in station area. Thus, MR will gain large funds with TOD scenario and could make full use of it for other investments in railway such as operation system upgrades, track maintenance, rolling stock renewal, and electrification in the future.



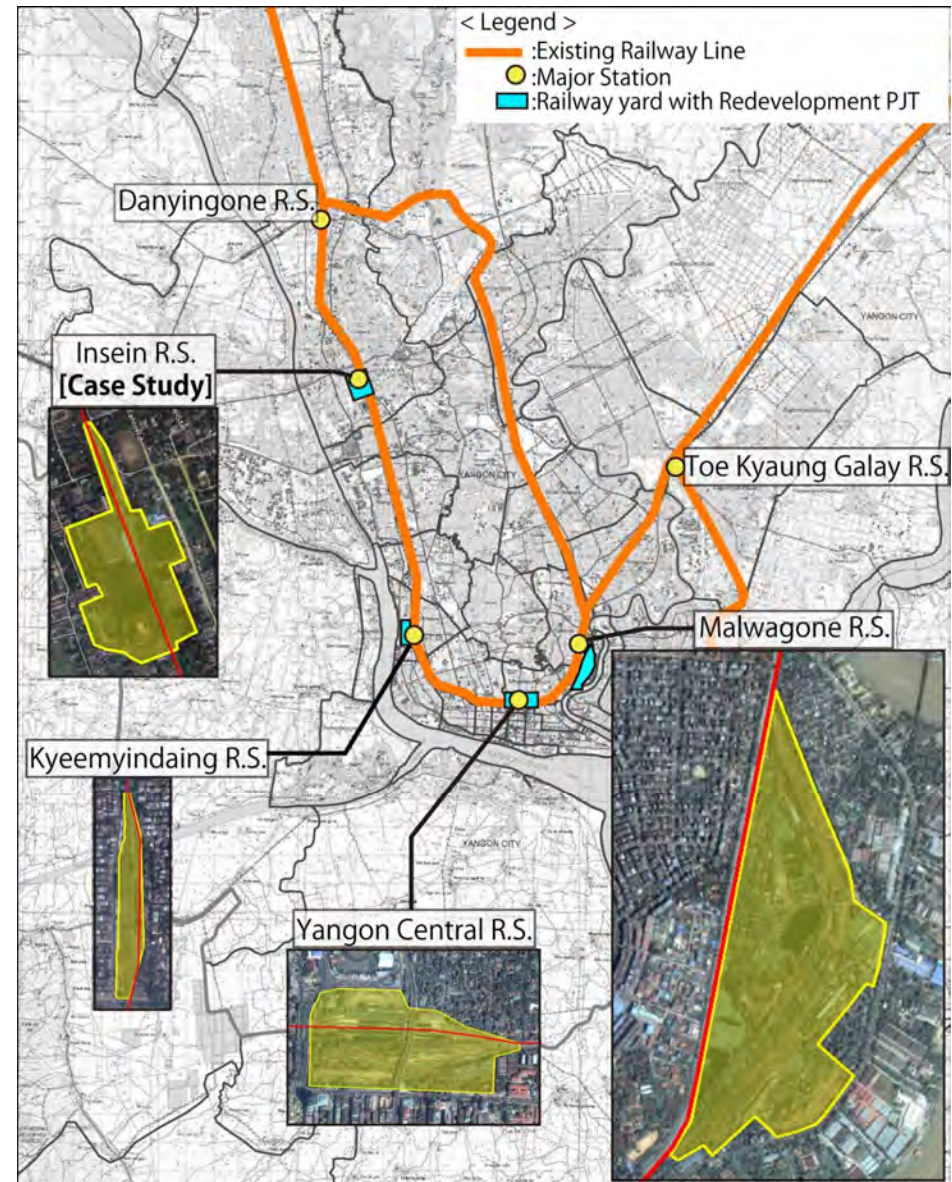
Source: JICA Study Team

Figure 3.6: Role Division and Distribution of each Station Area

The issue for this strategy is how to reflow the benefits from TOD towards railway upgrades and further developments. The fund is brought by urban development, and one of the investments is public transportation development. Thus, it is essential to prepare proper scheme to implement TOD under laws and regulations. The scheme should include PPP (Public Private Partnership) that attract private finance and know-how for the developments. Especially, stations in CBD area have substantial potential to develop. The development plan in each station should carefully consider the future land value increase.

3 Scope of Preliminary Development

Station area development projects are implemented in parallel with railway upgrades for collaborating with LoS (level of Service) improving. Firstly, YCR TOD implementation focuses on station developments in west half of YCR where population aggregated. Specifically, Preliminary development should be focused on the four station areas where MoR has land and doesn't need to purchase for development: Yangon Central, Insein, Malwagone, and Kyeemyindaing.



Source: JICA Study Team

Figure 3.7: Preliminary Target Area for YCR TOD

3

Transit Oriented Development “TOD”



3.2.2 Business Structure <Proposal>

1 Rule and Regulation to be clarified

Whether exist in Myanmar at present or not, the following items, but not limited to, shall be addressed to clarify.

- ✧ Process of Urban Planning is not established
- ✧ Restriction of land use in YCDC and concerned township
- ✧ Rule and regulations for sales of Air Right
- ✧ Restriction on Land Transaction for particular city planning
- ✧ Land Readjustment Project Law
- ✧ Integrating railway development and land readjustment Law
- ✧ Urban Redevelopment Project Law

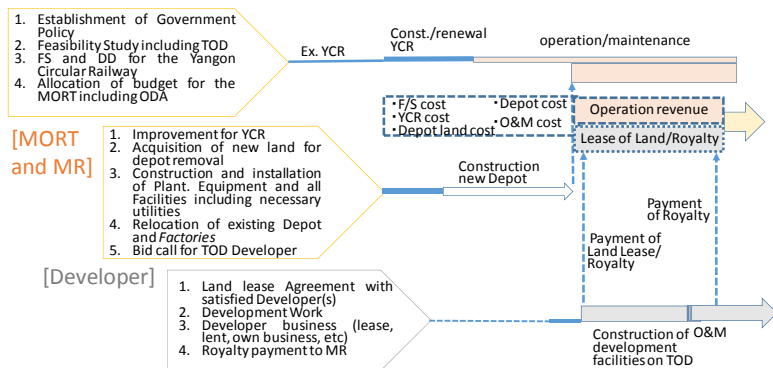
2 Issues on Financial Arrangement

< MORT/Myanmar Railway Finance Initiative >

- ✧ Uncertainty for the availability of fiscal budget in amount and timing
- ✧ Uncertainty for the financial contribution by sales of depots and factories in amount and timing.

< Developer Finance Initiative >

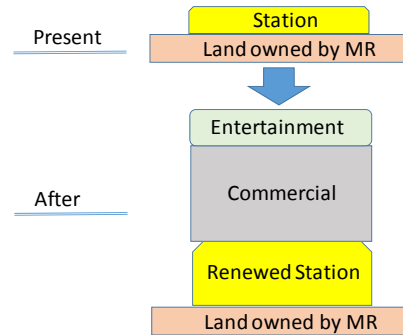
- ✧ Valuation for the land value at present situation may be physically hard in the absence of rules and regulations for land use/building code/any incentives/etc, future market focus, and so on.
- ✧ Advanced Payment to MR for acquisition of Depots/Factories by several years will be sever burden.



Source: JICA Study Team

Figure 3.8: Project Implementation Structure for YCR TOD

a) Commercial Development of Station



Source: JICA Study Team

Figure 3.9: Project Scheme for the Station

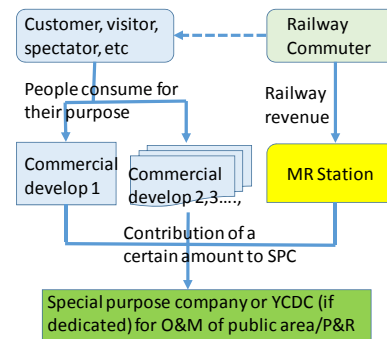
Classification of duty between public and private

1. MR enter the PPP Contract (30-50 yrs.) with Concessionaire under Foreign Investment Law. The Concessionaire shall develop the Station based on the Universal Design.
2. The scope of Concessionaire is construction of new station and TOD development.
3. Newly constructed station shall be dedicated to MR who shall operate and maintain the station.
4. Any privilege under Foreign Investment Law shall be granted to the Concessionaire.

(1) Comprehensive Development

In the scheme of comprehensive development initiative, MR issues the Request for Proposal (RFP) for the development of the depot and/or workshop adjacent to the station. The proposal shall comply with development plan, and/or any relevant rules and regulations.

Developer shall submit master plan including all necessary infrastructure and zoning of area. The developer who submitted the RFP, shall be responsible of undertaking all necessary finance to the land utilization fee of the depot area and to design, construct and operate, maintain the facilities and premises.



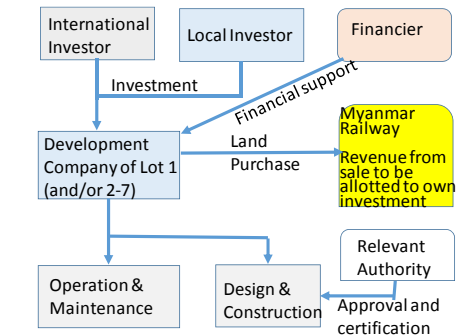
Source: JICA Study Team

Figure 3.10: Project Scheme for Comprehensive Development Initiative at Station Area

(2) Incremental Development

In the scheme of incremental development initiative, Association of Land Readjustment (Association) shall be established to undertake the initiative of the development of depot and factories adjacent to the station. Association will be the composition of MR, YCDC, Yangon Regional Government and any concerned Ministry of Central Government.

Association shall produce the master plan of development of depot/factories including zoning. All responsible member of Association shall acquire the necessary land for their infrastructure as shown on zoning plan.



Source: JICA Study Team

Figure 3.11: Project Scheme for Incremental Development Initiative at Station Area

3

Transit Oriented Development “TOD”



3.2.3 Major Issues for TOD Implementation <Proposal>

Table 3.3: Major Issues for TOD Implementation

Category		Issue	Assumed Action Plan	
Field	Group			
Urban Planning	Urban structure	a)	The budget for new road is not secured. There is only the budget for road maintenance. The beneficiary develop new road by himself.	a)-1: Preparing funds for road developments as public investment by incremental budget in Yangon development Plan for 20 years. a)-2: Establishing special tax for road developments like revenue source set aside for road construction. a)-3: Establishing subsidization scheme for diverting funds from development profit by private to public infrastructure investment.
		b)	The demarcation and cost share ratio among public sectors and private sectors is not clearly prescribed for high-publicness urban development projects.	b)-1: Clarifying the demarcation and cost share ratio in investments for railway station access road and station plaza. b)-2: Clarifying the demarcation and cost share ratio in investments for station free passage and park / green area.
		c)	The processes for planning urban railway, roads, and station plaza are not confirmed.	c)-1: Establishing process of urban planning and decision making concerning urban railway, road, and station plaza, which is composed of policy making, feasibility study (including traffic demand forecast, cost-benefit analysis), fundamental drawing, and conceptual designing.
		d)	There are no building restrictions concerning road alignment, railway alignment, and station plaza planning line.	d)-1: Installing regulations to control constructions, street stall, and squatters in future road space. d)-2: Establishing rules of land acquisition for road development and improvement
		e)	The regulation for setting parking with building is not clearly prescribed	e)-1: Installing regulations to obligate setting enough space parking with residential buildings and submitting building-use declaration at the time of application. e)-2: Installing development charge system to prepare investment funds for public works in township and wards like water supply and sewerage works, school buildings.
		f)	There are no prescriptions securing space for parks and green lands.	f)-1: Installing regulations to control green ratio for a development land above a certain squares.
	Land use	g)	There are no land use restrictions about building use, building-to-land ratio, and floor space ratio. There is only a restriction to regulate building heights by its front road.	g)-1: Implementing land use control for whole Yangon city area. g)-2: Installing “Floor area ratio trading system” (ex.)
		h)	In Yangon rural area, bus terminal has become a commercial hub. There are no cases that railway station area has become an efficient utilization district.	h)-1: Establishing integrated transportation system plan, which intends smoothing traffic of all transportation modes. It includes reorganizing feeder bus networks for promoting railway use, and flow line installation for smooth transfer between bus and railway. h)-2: Revising fare system for promoting railway use such as fare reduction for transferring passengers. h)-3: Payproviding commutation ticket and school seasonal ticket in collaboration with private corporations
		i)	There are few commuters to use railway stations.	i)-1: Improving flow line between railway station and commercial presence for higher ability to attract customers. i)-2: Developing commercial aggregation facilities like shopping mall at station area.
	Regional planning	j)	Building redevelopment projects base on purchase and sale of entitled floor. There are no methods for cooperative development by collaboration among small land owners and investors	j)-1: Establishing comprehensive system concerned with land arranging in order, land and building sharing, and site owning j)-2: Promoting institutionalization of land-based participation onto development project
Redevelopment	Promotion area	k)	There are no legislative systems to assign an efficient utilization district on major railway station and the second CBD.	k)-1: Establishing section assignment system in re-development area with tax break incentive for efficient utilization districts k)-2: Installing regulation setting deck and vacant space at an efficient utilization district
		l)	There are no rules to deregulate building-to-land ratio, and floor space ratio.	l)-1: Promoting institutionalization concerned with efficient utilization districts
Land	Price	m)	Land price is valued by the purchase and sale records at surrounding area, which is not consistent with theoretical land price.	m)-1: Installing the concept of theoretical land price into business planning.

Source: JICA Study Team

3

Transit Oriented Development "TOD"



3.2.4 Case Study at Insein Station Area <Proposal>

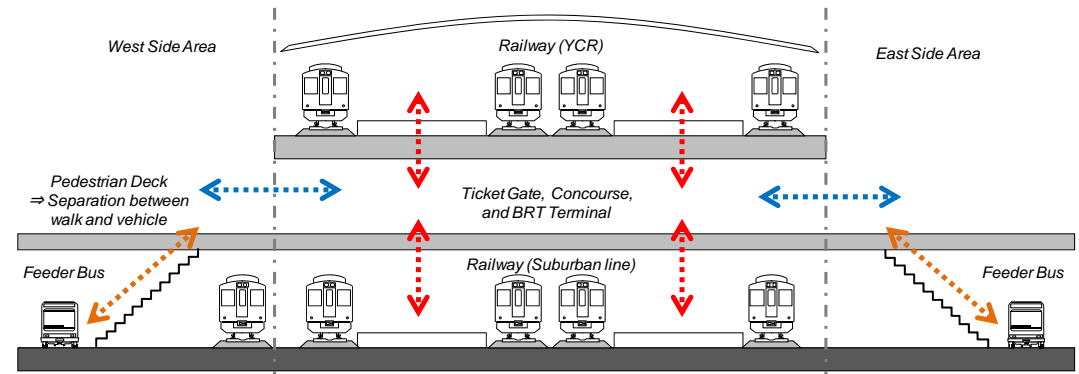


Source: JICA Study Team
Figure 3.12: Present of Insein Station



Source: JICA Study Team
Figure 3.13: Short-term Plan
<A Future Image in the Case Study Work>

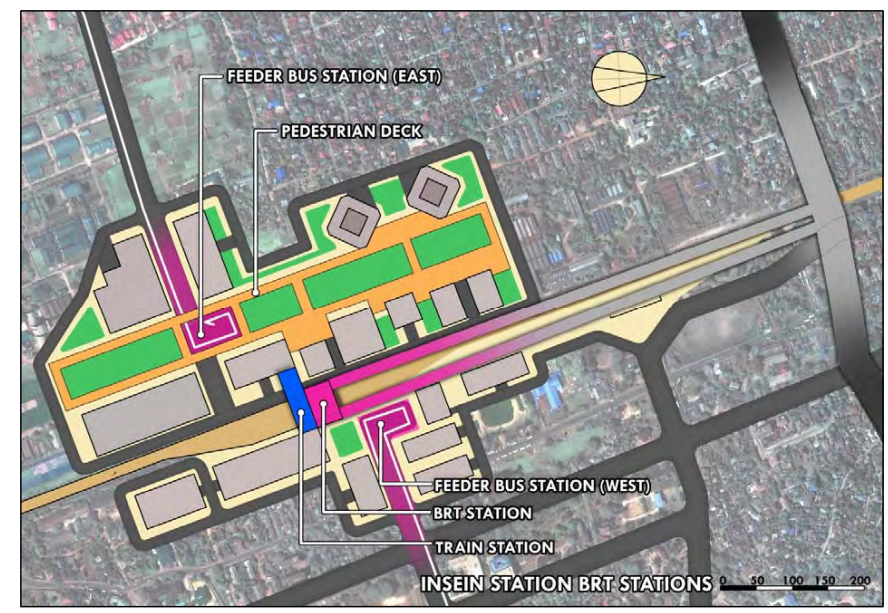
- ### 1 Development Policy
- ❖ Utilize workshop area for development
 - ❖ Develop following facilities;
 - business offices,
 - commercial facilities
 - residential apartments
 - park & ride facility
 - ❖ Integrate Inter-modal facilities (Railway, BRT, Feeder Bus, Taxi, Car), separate pedestrian flow and vehicle traffic, connect buildings by pedestrian deck, and connect transportation at station area with north highway
 - ❖ Introduce enough green space inside development area
- Note: This case study is just one of the desired future images through the technical transferring works, therefore, it is necessary to further discussion and coordination by Myanmar side, EIA procedures in environmental and social consideration and other required matters to make it realize.



Source: JICA Study Team
Figure 3.15: Long term plan of station section sketch at Insein station TOD
<A Future Image in the Case Study Work>



Source: JICA Study Team
Figure 3.14: Long-term Plan of Facility Layout at Insein Station
<A Future Image in the Case Study Work>



Source: JICA Study Team
Figure 3.16: Long-term Plan of Pulic Transport Facility Layout at Insein Station
<A Future Image in the Case Study Work>

4

Capacity Development Plan



4.1 Administrative Roles and Duties for Urban Planning

4.1.1 Related Organizations

(1) Current situation of the administrative works for urban planning works and development

Table4.1: Current Administrative Works for Urban Planning Works and Development

Categories	Working Details for Urban Planning
1.Coordination	<ul style="list-style-type: none"> UM, RM: Coordinating with related ministries. Dis., TS: Conducting PIC discussion. Ycdc: Having discussion with developers
2. Survey/ Research	<ul style="list-style-type: none"> Dis., TS: Possessing basic social information. Ycdc: Conducting basic urban planning and social surveys.
3. Planning	<ul style="list-style-type: none"> UM: Formulating national and regional plans. RM, Dis., TS: Formulating development policies and subprojects. Ycdc: Formulating the “Urban Development Master Plan” (with the JICA Study Team).
4. Establishing a Legal System	<ul style="list-style-type: none"> UM: Formulating the “National Building Code”. UM, Ycd: Studying the land use control system.
5. Controlling	<ul style="list-style-type: none"> UM, RM, Ycdc: Examining application for building construction. TS: Providing recommendation letter for building construction.
6. Realization	(No specific urban project except small-scale individual construction works)

Legend: Union Ministry Regional Ministry District Township YCDC

(2) Future proposal of administrative works for urban planning works and development

Table4.2: Proposal of Administrative Works for Urban Planning Works and Development

Working categories	Working details for urban planning
1.Coordination	<ul style="list-style-type: none"> UM, RM: Coordinating with related ministries. Arranging the necessary budget. Dis., TS: Conducting planning discussions with related stakeholders. Ycdc: Giving technical assistance to planning discussions.
2. Survey/ Research	<ul style="list-style-type: none"> UM, RM: Formulating the survey/research format. Ycdc: Conducting urban planning survey and monitoring.
3. Planning	<ul style="list-style-type: none"> RM, Dis., TS: Formulating the implementation plan with subprojects. Ycdc: Giving consultancy services and technical advices for planning.
4. Establishing a Legal System	<ul style="list-style-type: none"> UM, RM: Formulating the necessary laws, regulations including regional regulations. RM, Dis., TS: Formulating detailed plans for land use control.
5. Controlling	<ul style="list-style-type: none"> UM, RM: Assessing and providing permits for development activities. Ycdc: Assisting the technical examination. Giving consultancy services.
6. Realization	<ul style="list-style-type: none"> RM, Dis., TS: Advancement of urban projects for public welfare. Ycdc: Supporting public-oriented development / spatial improvement projects.

Source: JICA Study Team (both of Table 4.1 and Table 4.2)

4.1.2 Matters to be considered for urban planning system

According to the current duties in urban planning works and their future prospects, the main works of the Urban Planning Unit of Yangon City Development Committee (YCDC) are summarized in the following three categories:

- (1) Survey and Research
- (2) Planning
- (3) Controlling and Realization of Projects

(1) Survey and Research

The following survey and research matters are expected to be conducted by the Urban Planning Division of YCDC, collaborating with the district and township offices:

- ✧ Basic survey for city planning;
- ✧ Specific urban planning survey (e.g., survey of the condition of infrastructural facilities);
- ✧ Environmental survey; and
- ✧ Monitoring the progress of urban planning matters.

(2) Planning

The Urban Planning Division of YCDC is expected to assist in the planning works which are conducted by the regional government, district offices, and township offices.

- ✧ Updating and revision of the urban master plan;
- ✧ Technical support for detailed spatial plan;
- ✧ Technical support for the formulation of regulatory land use plan; and
- ✧ Technical support for planning development for public purposes.

(3) Control and Realization of Projects

The Urban Planning Division of YCDC is expected to execute control and realization of planning works for urban development projects which are conducted by the regional government, district offices, township offices, and other departments of YCDC that are related to urban planning matters.

- ✧ Technical assessment of large-scale development for approval;
- ✧ Advise on infrastructure implementation planning;
- ✧ Advise on project implementation; and
- ✧ Assistance in the acceleration of development and spatial improvements for public purposes.



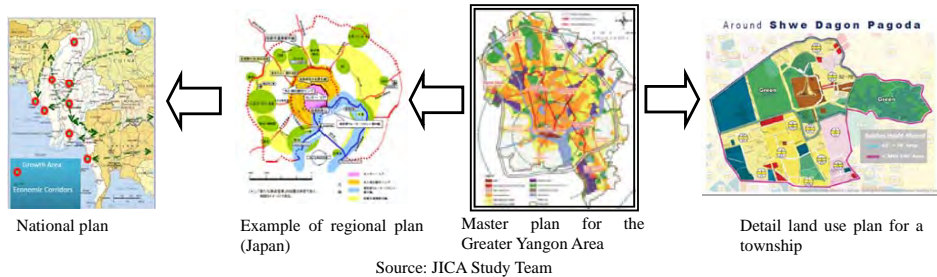
4.2 Legal System for Urban Planning

4.2.1 Administrative Hierarchy in the Urban Planning

The Strategic Urban Development Plan is a master plan for future development in the Greater Yangon area. In order to realize the plan, it is necessary to establish an urban planning system for larger regions (national/region) and a detailed plan for smaller area (district/township). The following shows the hierarchy in the urban planning system:

(1) Planning Hierarchy

Planning consistency should be secured within the national/regional system and local district planning.

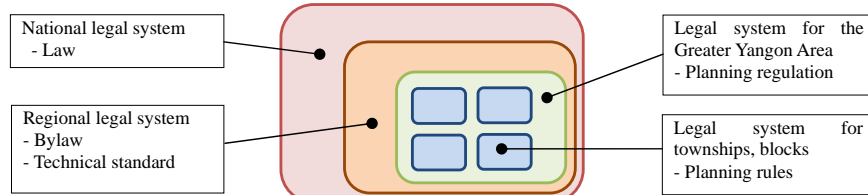


Source: JICA Study Team

Figure 4.1: An Image of Planning Hierarchy

(2) Legal System Hierarchy

Plural legal systems, which cover general and specific matter, are applied according to its situation.



Source: JICA Study Team

Figure 4.2: An Image of Legal System Hierarchy

(3) Project and Budget Hierarchy

Each organization should take responsibility for the integrated urban planning.



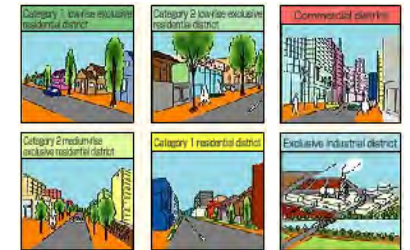
Source: JICA Study Team

Figure 4.3: An Image of Project and Budget Hierarchy

4.2.2 Proposed Legal System for Urban Planning

The following are the proposed laws and regulations, which are expected for the execution of urban planning matters. It is necessary to formulate laws and regulations concerning the following:

- Spatial control;
 - Land management;
 - Project management; and
 - Financial support (management).
- Fundamental Legal System
 - Strategic urban development plan (Urban master plan);
 - Urban planning law;
 - Building code;
 - Land use zoning regulation; and
 - Permission system for large-scale development.
 - Urban planning system for acceleration of spatial improvement
 - Incentive (subsidy) for desirable development according to the development plan;
 - Incentive (subsidy) for installation of public facilities in development projects (e.g., parking facility, park/open space, flood retarding basin, etc.);
 - District planning system;
 - Protection system for cultural and historical buildings and areas; and
 - Landscape design and management system (creation of beautiful landscape)



Source: JICA Study Team

Figure 4.4: Example of Land Use Control Categories (Japan)



Source: City planning Master plan of Joyo city (Web site of Joyo City)

Source: JICA Study Team

Figure 4.5: Preceding Decision of Urban Planning Infrastructure Facilities (Japan)



Source: JICA Study Team

Figure 4.6: District Planning System (Japan)

4

Capacity Development Plan



4.3 Capacity Development Plan for Urban Planning

4.3.1 Issues to be Considered for Capacity Development

(1) Results of Personal Interview for Needs Assessment

In order to identify the issues for capacity development and level of understanding about urban planning matters, a personal interview survey was conducted on 62 staff of the Urban Planning Division, YCDC, from 16 to 29 July 2013. The following are notable results of the interview:

- Understanding roles in urban planning.
 - Strongly aware:
 - Implementation of development 60%
 - Making plans 50%
 - Aware:
 - Survey and research 21%
 - Lack of awareness:
 - Coordination 13%
 - Business program 3%
 - Control/guidance 2%

Source: JICA Study Team
Figure 4.7: The Result of Interview Survey

- Necessary capacity development subjects.
 - Understanding the general urban planning system.
 - Specific technical knowledge corresponding to sectors.
 - Technical knowledge transfer based on job training.

(2) Organizational System and Legal System to be Improved

Myanmar stands at the dawn of the urban planning system. It is necessary to prepare the legal and organizational system in order to execute an effective capacity development program and technical assistance.

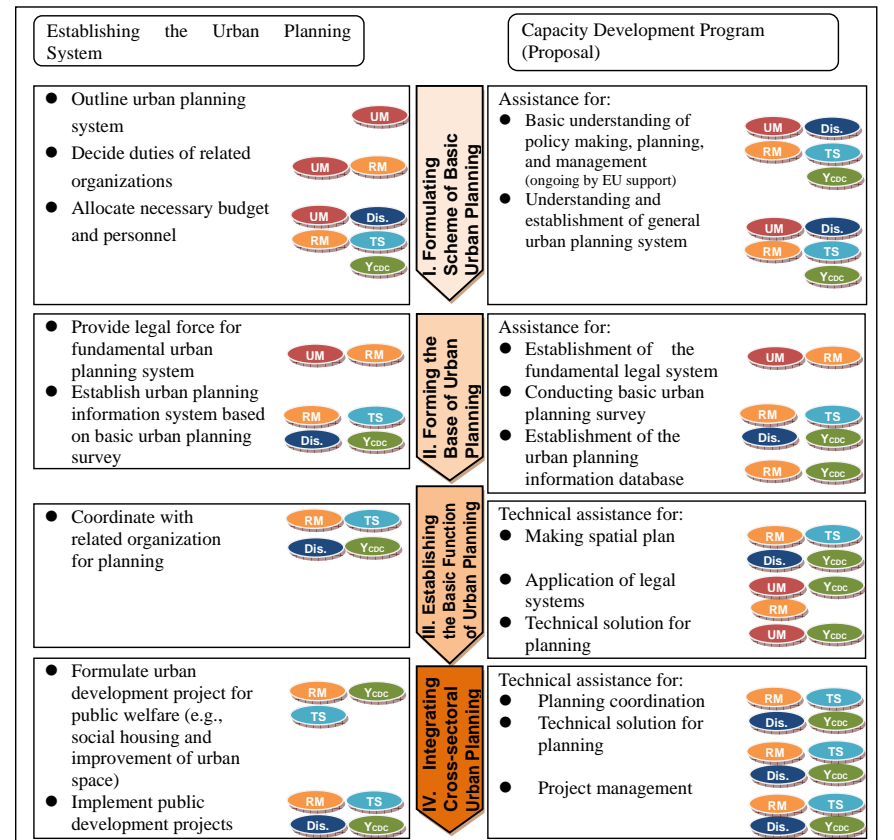
The following are issues to be considered beforehand:

- Forming a general scheme of urban planning system in Myanmar.
- Deciding roles and duties of related organizations.
 - Among union government, regional government, district/township offices, and development committee.
 - Among related departments (sectors) in each organization.
- Formulating the legal systems related to urban planning.
- Establishing a cooperation system among related administrative organizations.
 - Among related organizations.
 - Among related departments (sectors) in each organization.
- Deciding on the priority projects.

4.3.2 Proposed Capacity Development Program

Below are the proposed capacity development programs classified into four phases.

According to the progress on the establishment of urban planning system in Myanmar (see left part of the figure), corresponding capacity development programs are proposed.



Legend: ● UM Union Ministry ● RM Regional Ministry ● Dis. District ● TS Township ● YCDC

Source: JICA Study Team

Figure 4.8: Urban Planning Phased Capacity Development Plan in Myanmar

5

Strategic Environmental Assessment (SEA)



5.1 Introduction

As a rule, JICA requests the project proponents to pay appropriate environmental and social considerations when implementing an ODA project based on the JICA Guidelines for Environmental and Social Considerations (April 2010) (JICA Guidelines).

According to the JICA Guidelines, the Strategic Environmental Assessment (SEA) will be applied in conducting a master plan study to integrate appropriate environmental and social considerations in the early stage of the proposed project.

In this Study, the SEA was carried out during the examination of development vision and basic policy for development in the future. The result of SEA was reflected in the development of a master plan in the Greater Yangon area.

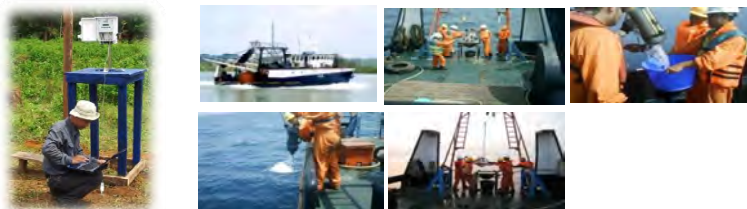
5.2 Outline of Technical Transfer in the Phase II

In the Phase II of the Study, the workshop on environmental and social considerations which is necessary for future development programs in Yangon was conducted by the JICA Study Team in the course of technical transfer for the implementation of case studies. The attendees of the workshop were the key persons in the planning department of YCDC.

It was expected that the attendees were not familiar with the environmental and social issues. Therefore, the JICA Study Team made efforts to conduct a plain presentation not only focusing on the technical matters in terms of environmental and social considerations but also the reasons why the considerations through the conduct of environmental impact assessment (EIA) and/or SEA are necessary for development projects.

The attendees in the workshop were key persons in the planning department of YCDC. It was expected that the attendees were not familiar with the environmental and social issues. Therefore, the JICA Study Team made an effort to conduct plain and straightforward presentation focusing not only on technical matters in terms of environmental and social considerations but also on the reason why these considerations are necessary in conducting environmental impact assessment (EIA) and/or SEA for the development projects.

Note that the workshop was carried out in a participatory manner. The time for questions and answers were allocated during the presentation. In the end of every session, attendees were requested to make comments on the presentation.



Source: JICA Study Team
Figure 5.1: Photos of Environmental Filed Survey (Image)

5.3 What is Strategic Environmental Assessment?

1 Definition

The SEA is an environmental impact assessment on the “three P’s”, namely “policy”, “plan”, and “program”.

The SEA is understood as a tool for integrating the appropriate environmental and social considerations based on sufficient environmental and social information into the development process of the PPPs.

“Policy” is considered as administrative policies of the government showing the basic principle of plans and/or projects in the whole policy system, which will not decide on the necessities and/or concrete contents of each project. Therefore, the policies are generally abstract not concrete.

“Plan and Program” show the scenario which explains methodologies and schedule to implement the project systematically, but the details of the project are not decided. In this sense, “Plan and Program” are more concrete than policy and more abstract than projects.

The Project for the Strategic Urban Development Plan of the Greater Yangon is considered under the category of “Plan and Program”.

2 Significance of SEA

In relation to the national development and environmental context, the SEA is said to have two important significances, given as follows:

- (i) To integrate appropriate environmental and social considerations into the process of decision making; and
- (ii) To supplement the limitation of conventional environmental impact assessment that will be carried out in the implementation stage.

3 Methodologies

At the moment, no single “best” SEA process has been established. Different techniques or methodologies have been applied in various stages and activities of SEA. The choice of techniques depends on a whole range of factors, including the purpose of SEA, the availability of data, local environmental assessment capacity, decision-making structure and culture, and resource constraint.

The SEA for the project was carried out over the process of establishing development visions and structure plans for Greater Yangon.

The detailed methodologies for SEA are discussed in the next page.



5.4 Work Flow for the SEA in the Phase I

(1) Discussion on the Present Environmental Issues in Yangon City

The present environmental issues in Greater Yangon were discussed in the course of SEA study preparation. The target year of the master plan is 2040, therefore, it will be useful to discuss the present environmental issues in Greater Yangon considering the future environmental issues.

(2) Review Process for the Preparation of Draft Structure Plans

Initially, three draft structure plans were reviewed carefully. In the review, confirmation was made on the contents of each structure plan as well as the process of establishing the development visions.

(3) Preliminary Stakeholders Meeting Through Interviews with Related Townships (TSPs)

It is essential in SEA to incorporate opinions of related stakeholders into the plan formulation as early as possible. Therefore, the interviews with all related 39 TSPs were carried out as a preliminary stakeholders meeting to ask their preferences on the proposed structure plans. At the same time, the opinions on various topics such as environmental concerns and socioeconomic issues were discussed between the chief of TSPs and the JICA Study Team.

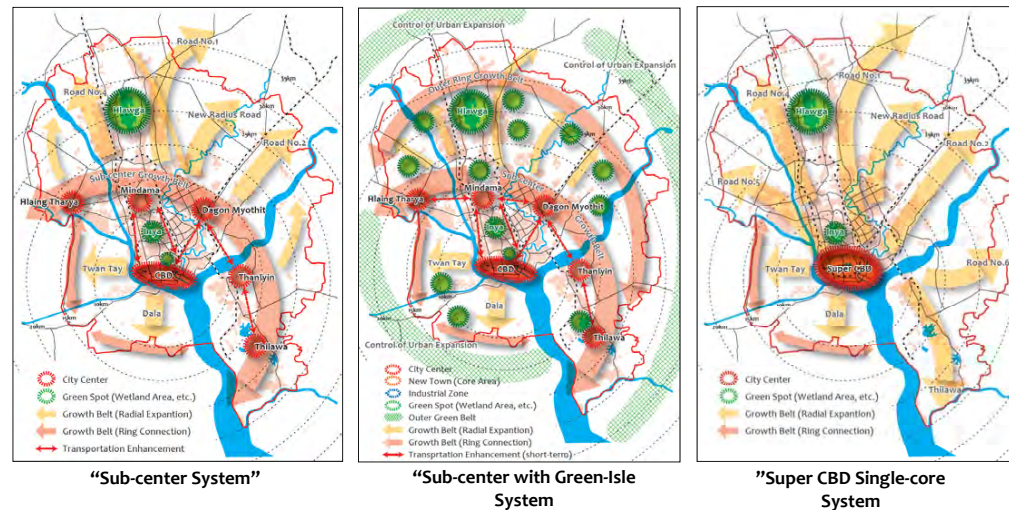
As for the question of their preferences on the three alternatives, 29 persons preferred the plan of “Sub-centers with Green Isle system”, eight (8) persons preferred “Sub-center system” and 2 persons had no answer among the chiefs of 39 townships.

Regarding the environmental concerns and socioeconomic issues, 28 persons mentioned that the traffic jam is a serious problem of Yangon Region. The traffic accident is the second serious problem as mentioned by 22 persons. The traffic jams occur in the main road, at road junctions and at market places. Given that the illegal parking is one of the main reason for traffic jam, the shortage of parking space is a problem.



Source: JICA Study Team

Figure 5.2: Work Flow of SEA



Source: JICA Study Team

Figure 5.3: Three Alternatives of Draft Structure Plans



Source: JICA Study Team

Figure 5.4: Interviews to the Chief of Townships



5.4 Work Flow for the SEA in the Phase I

(4) Environmental Scoping

Anticipated actions necessary to realize the proposed four development visions were clarified first. Subsequently, the environmental impact items which should be considered in the realization of the development visions were selected using an environmental checklist. In the process, the results of discussion for the present environmental issues in Greater Yangon and opinions in the preliminary stakeholders meeting with related TSPs were considered.

(5) Evaluation of the Environmental Impact Items

Anticipated environmental impacts caused by each of the alternatives were evaluated using the matrix. The magnitude of environmental impact was considered in the three levels, namely A, B or C in the positive impact; and X, Y or Z in the negative impact, respectively.

“Sub-center with Green-spot System” was selected as an most recommendable structure plan for the “Master Plan for Yangon City” as shown in the below Table.

Table 5.1: Evaluation Matrix of the Environmental Impacts

Items		“Sub-center System”	“Sub-center with Green-Isle System	”Super CBD Single-core System
Positive Impact	Social Environment	B	A	C
	Natural Environment	B	A	C
	Pollution	B	A	C
Negative Impact	Social Environment	Y	Z	X
	Natural Environment	Y	X	Z
	Pollution	Z	Y	Y
Comprehensive Evaluation		Recommendable	Most Recommendable	Not Recommendable

Source: JICA Study Team

(6) Establishment of the Environmental Mitigation Plan

An environmental mitigation plan necessary in the implementation stage was prepared for the optimal alternative that was selected based on the evaluation of the environmental impact items.

(7) Stake holders Meeting (SHM)

The information disclosure and the transparency is one of the most essential factors in the process of SEA. Accordingly the results of the SEA were explained and discussed at the stakeholders meeting (SHM) for the purpose of information disclosure and transparency.

The presentations including explanations on the “Strategic Environmental Assessment (SEA) for Development Visions and the Structure Plans for Greater Yangon” were carried out by YCDC personnel appropriately. Accordingly the SHM was conducted successfully with the 169 attendants.

Although there were less number of questions and comments related to the SEA itself, the high interests of the attendants to the Master Plan were observed in the SHM.



Source: JICA Study Team

Figure 5.5: Stakeholder Meeting

5

Strategic Environmental Assessment (SEA)



5.5 Result of the Technical Transfer Workshop in the Phase II

5.5.1 Contents of the Workshop

The 1st Workshop was held on 26th August. Discussion in this workshop included summary of SEA conducted in the Study including explanation of the process in establishing development visions, preliminary stakeholders meeting through interviews with related townships, selection of environmental impact items, and evaluation using the matrix.

The 2nd Workshop was held on 2nd September, 2013. Discussion in this workshop included explanation on the experiences of environmental and social considerations in Myanmar by the local consulting company.

The 3rd Workshop was held on 9th September, 2013. Discussion in this workshop included explanation of EIA regulation by the local consulting company.

The 4th Workshop was held on 16th September, 2013. Discussion in this workshop included brainstorming on the environmental and social issues in Yangon among participants.

Table 5.2: The Contents of the Four Workshops

Date	Theme
26 August (Mon) 13:00-14:30	Summary of SEA conducted in the Study including explanation of the process in establishing development visions, preliminary stakeholders meeting through interviews with related townships, selection of environmental impact items, and evaluation using the matrix.
2 September (Mon) 13:00-14:30	Explanation on the experiences of environmental and social considerations in Myanmar by the local consulting company.
9 September (Mon) 13:00-14:30	Explanation of EIA regulation by the local consulting company.
16 September (Mon) 13:00-14:30	Brainstorming on the environmental and social issues in Yangon among participants.

Source: JICA Study Team

5.4.2 Conclusion

- ✧ The workshop was conducted successfully with the participant's high level of attention on the presentations done by the JICA Study Team. Although the participants have inadequate experiences and academic background, they showed keen interest on the presentation topics. The EIA regulations which were under the approving process at the parliament might be one of the reasons for their keen interests.
- ✧ Presentation by the local consultants who have been conducting the EIA study in Myanmar contributed in helping the attendants to greatly understand them.
- ✧ At the moment, the role of the Urban Planning Unit of YCDC in a development project is not clear. However, it is expected that the level of understanding on the environmental and social considerations among staff of the Urban Planning Unit would be increased as a result of the workshop.

5.5.3 Photos from the Workshop



Presentation by YCDC



Discussion by participants

Comment from a participant



Presentation by YCDC



Presentation by a JST Expert



Presentation by a Local Consultant

Subsequent Works (Phase II) of the Strategic Urban Development Plan of Grater Yangon

1 Conclusion

This project has been carried out in two phases. Phase 1 was the main part of this project, in which the analysis of present conditions was made, and consequently the vision for the future of the Greater Yangon area, as well as the strategies for land use and urban infrastructure, among others, was presented. The conclusion and recommendation for Phase 1 were already presented in Phase 1 Final Report for the reference of this report.

Phase II of the project focused on the capacity development to assist the implementation of the plans and strategies recommended in Phase I report. The capacity development focused on 5 fields of urban planning and other related field.

The first theme was the CBD (Central Business District) development. This focus on actual formulation of detail land use plan in consultation with related organizations such as Department of Human Settlement and Housing Development (DHSHD) of MOC, Yangon Heritage Trust which carries out activities in relation to preserving heritage within the city, and the JICA Study Team. In order to take countermeasures against existing problems such as traffic jam, environmental pollution, rising land values, deterioration or damage to cultural heritage, and others, detailed CBD development plans were carried out.

The second theme was North-East Region development. This region is a fast growing suburb of Yangon. The planning was carried out in collaboration with Urban Planning Division of YCDC, JICA Study Team and relevant Township Offices.

The third theme was an exercise towards what is called Transit-Oriented Development, which essentially tries to harmonize urban development and public transport system. In this Project, commuter service on the existing railway line, such as the Circular Line, was proposed as one of the priority project for implementation. Case studies were carried out in some of the main stations along the Circular Railway Line in such a way as to provide smooth exchange from the railway to other transport modes such as busses and/or private cars.

The fourth theme was the capacity development plan. The Strategic Urban Development Plan is for future development in the Greater Yangon area. In order to realize the plan, it is necessary to establish an urban planning system for larger regions and a detailed plan for smaller area.

The fifth them was the Strategic Environmental Assessment. In the Phase II, the workshop on environmental and social considerations which is necessary for future development programs in Yangon was conducted by the JICA Study Team in the course of technical transfer for the implementation of case studies.

By December 2013, all the activities in Myanmar have been completed on all the five themes mentioned above. This report, Final Report for Phase II of the Project describes the outcome of the activities mentioned above.

2 Recommendation

Through the course of the activities of Phase II, the Study Team worked with UPD of YCDC and other related organizations to complete the case studies on the five themes. The followings are the recommendations based on Phase II activities.

- In CBD development, a draft zoning scheme was formulated in consultation with YCDC, JICA Study Team, MOC and YHT. In order for this draft plan to be effective, YCDC needs to carry out a series of public consultation to obtain feedbacks from the citizens of Yangon. Also a legal framework for the implementation of the zoning scheme will also have to be thought through, and consequently the notification to the public has to be made. These are the procedure necessary to make this draft zoning plan to be applied in effect to the control and management of development in the CBD zone of Yangon.
- Besides the above, in order for the protection of historical heritages, the proposed two zones, i.e. Central Area Heritage Zone and Secretariat Area Heritage Zone, have to be designated by By-Law of Yangon for conservation, together with stipulation of the prohibition and alteration of buildings and regulation of redevelopment.
- In order to advise on the preservation of historical landscape in CBD, an organization named a landscape council is recommended to be formed made up of YCDC, YHT, Association of Myanmar Architects (AMA) and other professionals with extensive knowledge and experience.
- For the planning of new development in the suburbs of Yangon, the duties and responsibility of YCDC needs to be clearly defined. Formerly, MOC has been initiating new development in the suburban area, but in the course of devolution, this function may as well be transferred to local entities. This matter has to be discussed thoroughly within the central government and if the function is transferred to local entities, the capacity development has to be done for the Region/State Government as well as three City Development Committees including YCDC. Budgetary allocation has to be also thought of in line with the transfer of function and responsibility.
- Transit-Oriented Development is an important concept for Yangon, as it will have to depend more on the public transport in future. For an effective implementation of TOD, cooperation with Myanmar Railway will be essential. To facilitate TOD, one successful example will be helpful for other cases to follow. YCDC needs to act as a focal point to coordinate relevant organizations to follow through a TOD model. A TOD model of Yangon Central Station and Insein Stations will be crucial.
- YCDC needs to continue to carry out the capacity development for the sustainable control of urban development in Yangon. Currently, a few donor organizations are extending capacity development programs. YCDC shall need to coordinate the programs of various donors.
- Strategic Environmental Assessment, or SEA, is an effective tool for urban growth management and planning, and YCDC should continue to train its staff as facilitators of SEA in various fields of planning and management. It should be noted that SEA is not only a method for environmental management, but also a tool for participatory planning involving the citizens for feedback.