



Yangon 2040

The Peaceful and Beloved Yangon

—A City of Green and Gold—

The Strategic Urban Development Plan of the Greater Yangon

March 2013

Yangon Region Government

Yangon City Development Committee (YCDC)

Japan International Cooperation Agency (JICA)

JICA Study Team / 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



1. Introduction

Background

Yangon City, the largest economic center of Myanmar, has about 5.14 million population at present and is experiencing rapid urbanization and accelerated development as the nation moves toward democracy. The current rapid urbanization is putting more pressure on the city's existing old infrastructures and concerns for the deterioration of its urban environment are growing. Currently, insufficient data and lack of an integrated future plan limit its ability to respond to various urban issues.

Under such circumstances, the Yangon Region Government and JICA agreed to prepare a well-thought future vision and strategic urban development master plan from August 2012, and the plan was formulated in March 2013.

Objectives

The primary objectives of the plan are as follows:

- To present a comprehensive medium- and long-term development vision for Greater Yangon by 2040;
- To formulate an urban development master plan of Greater Yangon for the realization of the development vision;
- To formulate the strategy of urban infrastructure development; and
- To present the strategy for institutional improvement and enhancement of administrative capacity in the field of urban development and management.

Target Area

The target area is Greater Yangon, including Yangon City (784 km²) and parts of the six periphery townships of Kyauktan, Thanlyin, Hlegu, Hmawbi, Htantabin, and Twantay, which have a total area of approximately 1500 km².

Contents of the Plan

- 1) Current Conditions
- 2) Household Interview Survey (10,000 households)
- 3) Updated Topographic Data and Created GIS Data
- 4) Development Visions and Structure Plan
- 5) Urban Development Master Plan
- 6) Urban Infrastructure Development Strategy
- 7) Urban Development and Management Programs
- 8) Conclusions and Recommendations

2. Current Urban Conditions

Socioeconomic Environment

Socioeconomy

The Yangon Region has approximately 12% share in the national population and approximately 22% share in the country's gross domestic product (GDP). For this reason, Yangon is referred to as "the Economic Center of Myanmar".

Yangon City has experienced rapid population growth in the past decade from 2.47 million in 1998 to 5.14 million in 2011. The average annual population growth rate in Yangon City between 1998 and 2011 is 2.58%. The average population growth rates of the central business district (CBD) and center area are almost zero or negative, while the suburbs have high growth rates of 6-7%. As of 2011, the ratio of the labor population to the total population in Yangon City was 50.8% (2.61 million). The labor population in the suburbs has been growing rapidly in recent years. Additionally, nearly 70% of the working population (1.78 million) is engaged in tertiary industries.

Industrial Activities

The industrial structure in Yangon Region consists of the processing and manufacturing sector (37%); trade sector (25%); and services sector (24%). There are 24 industrial zones, including those developed and under development in Greater Yangon. Total development area is more than 6,600 ha including the industrial zone planned in Thilawa Special Economic Zone (SEZ).

Manufacturing Sector: More than 2,800 manufacturing establishments are in operation. Major industrial categories are food and fabricated metal products.

Commerce Sector: There are 169 traditional markets of varying sizes and 56 modern commercial establishments.

Services Sector: There are 73 banks, 166 hotels and guest houses, 177 restaurants, and 46 amusement centers.

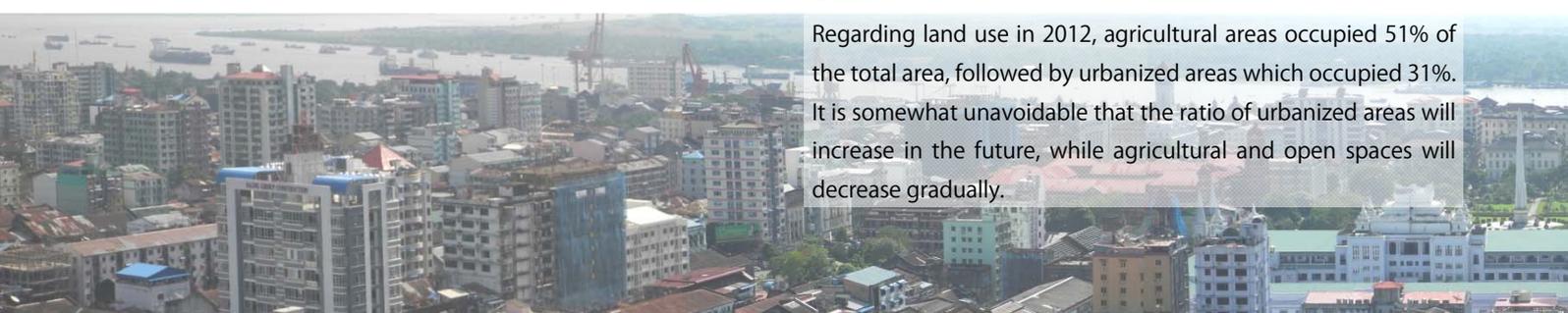
Urban Planning and Land Use Conditions

Urban Planning

The State Constitution was ratified and promulgated in May 2011. With the adoption of the new constitution, relevant laws and regulations need to be enacted or modified. However, this process often takes a long time.

Land Use

Regarding land use in 2012, agricultural areas occupied 51% of the total area, followed by urbanized areas which occupied 31%. It is somewhat unavoidable that the ratio of urbanized areas will increase in the future, while agricultural and open spaces will decrease gradually.



Urban Infrastructure Conditions

Urban Transport

Public transport in Yangon City accounts for over 90% of the total modal share. The most used public transport is bus (over 80%); however, the aged buses with crowded and unsafe operations are challenges. The circular railway (3%) is not functioning well as a public transport.

Road Network

As the Greater Yangon area is divided by the Yangon River, Bago River, Hlaing River, and others, the development of the transport network is important to connect the separated areas. Due to the recent rapid increase in the number of cars, serious traffic jams have been observed especially during peak hours at main intersections and road sections. Road widening, construction of flyovers, reconfiguration of intersections, and advanced signal systems are therefore required.

Railway

The current railway network in Greater Yangon is composed of 8 lines, which include 3 main lines and 5 branch lines (total of 148.3 km, 80 stations). It is absolutely insufficient considering the present population and urban structure in the future. Thus, it is required to construct new railway lines, Urban Mass Rapid Transit, and feeder transports such as monorails and Light Railway Transit.

Ports and Logistics

To meet the recent rapid increase in cargo-handling volume, the expansion and modernization of the existing port facilities are necessary. Also, truck centers have become congested due to the rapid increase of cargo and truck sizes.

Water Supply

Service coverage of the water supply system is about 30%. People with no service obtain water from other water sources like wells, ponds, and rain. Developing additional water sources, reduction of non-revenue water rate, and rehabilitation of aged pump stations in reservoirs and main transmission pipes are required.

Sewerage and Drainage

Service coverage of the existing sewerage system is merely less than 10%. Also, 120 years have passed after the construction of the existing sewerage collection system. As flood occurs every rainy season in some areas, countermeasures should be done.

Power Supply

It is a very important and urgent issue to solve the shortage of power supply capacity with consideration of the increasing electricity demands in the future. The rehabilitation of existing and deteriorated power stations, and the development of new

hydropower and gas turbine power stations, shall be the main solutions for such shortage.

Solid Waste Management

As the current method of waste collection is heavily dependent on human workforce and time, efficient waste collection system is necessary. Also, as the vehicles for waste collection and transportation are very old, their replacement is required.

Telecommunication

Penetration of telephone (fixed and mobile) of the current situation is a very low level of less than 10%. In order to respond to the massive use of the internet, countermeasures such as development of optic fiber cable (OFC) line should be done.

Conduct of Household Interview Survey

A household interview survey was conducted to collect information from 10,000 households, which comprise 1.0% of the total households in Greater Yangon. The survey items included: 1) socioeconomic information, 2) living environment, 3) daily transport activities, 4) landscape and historical areas, 5) parks/green spaces, 6) access to water, 7) access to sanitation, 8) drainage, 9) solid waste collection, 10) electricity, 11) vulnerability to disasters, 12) overall assessment, and 13) vision of future Yangon City. The main results are shown below.

Main Results of Household Interview Survey (Extract)

Household Information	Average Number/Household :	4.3	
	Education Level	University and Over :	17%
		Primary School and Under	43%
Total Monthly Household Income (MMK/Month)	Under 100,000 :	18%	
	100,000-150,000 :	21%	
	150,000-200,000 :	19%	
	200,000-300,000 :	19%	
	Over 300,000 :	23%	
Living Environment	Type of House	Detached House :	79%
		Collective Housing :	17%
	Ownership	Housing Ownership :	84%
		Land Ownership :	66%
Average Floor Space (per house):		66.9m ²	
Connectivity to Urban Services	Electricity :	88%	
	Water Supply :	40%	
	Sewerage:	44%	
	Telephone (Fixed) :	26%	
	Solid Waste Collection :	72%	
	Flush Toilet :	88%	
	Sewerage System for Black Water :	9%	
	Sewerage System for Gray Water :	13%	

*As the answers are understanding of the respondents, it does not match the facility coverage rate.

Updating of Topographic Data and Creation of GIS Data

Topographic maps and geographic information data sets were updated from the 1:10,000 and 1:50,000 scales for urban planning using the latest high-resolution satellite images.

3. Urban Development Master Plan

Development Vision for 2040

In consideration of the discussions among YCDC, the Ministry of Construction and other relevant organizations, the slogan “Yangon 2040, The Peaceful and Beloved Yangon, A City of Green and Gold” was set, aiming to achieve peace through Myanmar democratization and making the city beloved by all its citizens. The slogan also consists of rich green images of natural environment and gold lighting of Shwedagon Pagoda. Based on the slogan, the four pillars of development vision are summarized as follows:

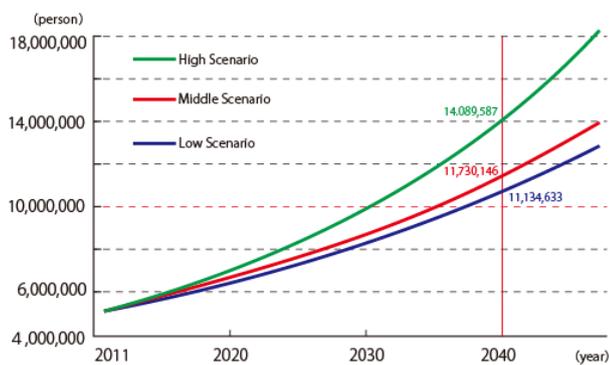


Socio-economic Framework

Population: The future population of Greater Yangon was estimated to be 11.73 million in 2040, considering the past average growth rate of 2.6% (same level as the past trend of the Bangkok Metropolitan Area).

Labor Force: The labor participation rate will improve gradually from 50.8% in 2011 to 55.0% in 2040. At this rate, the future labor force was estimated to be 6.45 million people based on the population projection.

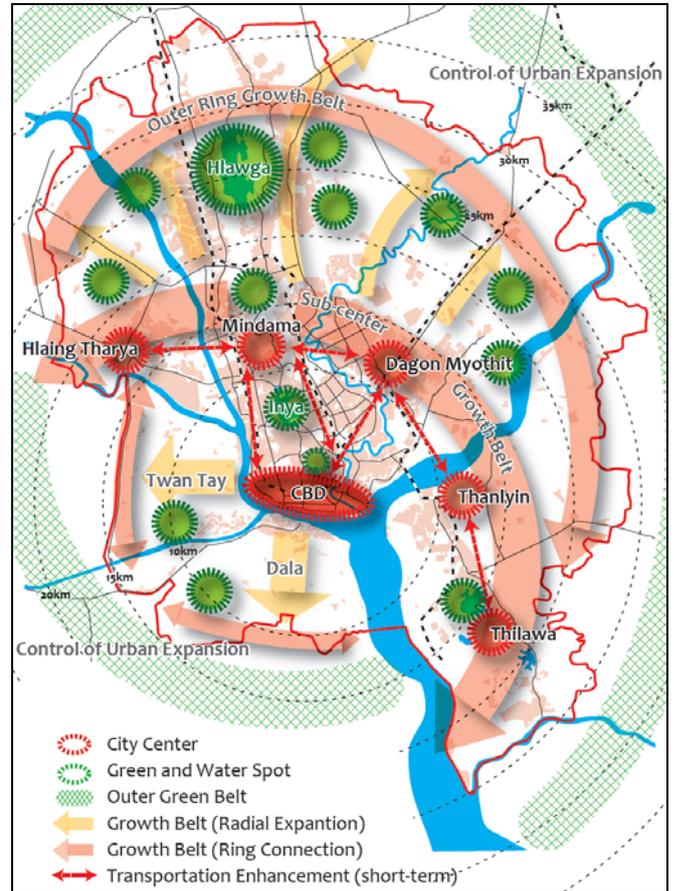
Economy: The GRDP of Greater Yangon was estimated to be USD 111,436 million in the low scenario, USD 122,330 million in middle scenario, and USD 141,004 million in high scenario.



Future Population Forecast

Urban Structure

“Sub-center and Green Isle System” was selected among the three alternatives as the future urban structure of Greater Yangon.



This urban structure aims at the decentralization of the urban center. A number of sub-centers will be created in areas within the 10-15 km radius from the existing CBD. An outer ring road will be provided in the next stage.

Urban Center Function: New areas should play their roles as urban centers in the future, namely: “Secondary CBD”, “Sub-centers” and “New Town Core”, to promote business, commercial, and industrial activities. New towns with large-scale residential areas will be necessary to accommodate the rapidly growing population of Greater Yangon.

Industrial Function: A total of 24 industrial zones are under operation with a total area of 5,105 ha, which includes unused lands within their premises. It is recommended to create new industrial zones to accommodate 554,000 laborers to be engaged in the secondary sector.

Green and Water Functions: Green and water areas should be conserved mainly on the low hills, which are long and narrow spurs in the central area, so as to make the so-called “Yangon North-South Green Axis”. The riverside spaces along the Yangon River are intended to allow a wide open space.

Urban Development Strategy

Urban Development and Management

Realization of Sustainable Urban Development and Management in Consideration of Comfort, Efficiency and Environment-Friendly

- 1) Realization of a peaceful and beloved city with vitalization and renewal of the CBD and enhancement of rich green and water
- 2) Realization of a comfortable living and effective working environment for all citizens as an advanced model city for Myanmar (TOD and Smart-City Policy)
- 3) Decentralization of the urban center’s functions through the creation of new “Secondary CBD” and “Sub-centers” to avoid overconcentration in the existing CBD
- 4) Consolidation of urban structures for promoting economic growth coupled with intensive land use and efficient logistics system to be an international hub city
- 5) Mitigation of disaster risks based on disaster risk analysis, assessment, and management
- 6) Realization of good governance through the improvement of management system in the field of urban development and management

Living Environment

Realization of a Living Environment that All Citizens can Enjoy: Comfortable, Healthy, and Modern Living

- 1) Supply of houses to accommodate the population in 2040.
- 2) Arrangement of residential areas to facilitate public transport accessibility (around railway station and bus terminal).
- 3) Preventing the spread of urbanization in the residential area through a massive unused land within the built-up area.

Social Service

Provision of Equal and Inclusive Social Services for All Citizens

- 1) Provision of mobility and accessibility for all.
- 2) Provision of equal opportunity in education for all.
- 3) Provision of equal opportunity in employment for all.
- 4) Provision of healthy and secure living environment for all.

Urban Landscape and Heritages

Realization of Attractive Urban Landscape Suitable for an International City through Conservation and Utilization of Historic Buildings

- 1) Recording of historical and cultural heritage.
- 2) Establishment of guidelines including zoning plan for urban regeneration plan utilizing heritage buildings.
- 3) Establishment of management plan for the implementation of conservation.
- 4) Cultivation of human resources/experts for heritage-related construction.
- 5) Implementation of heritage buildings renovation and urban landscape.

Public Parks and Greenery

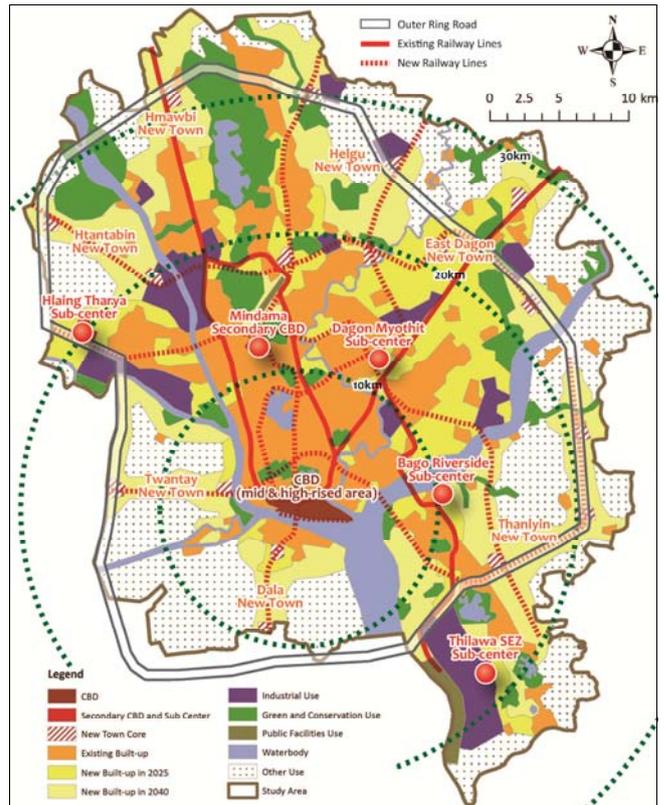
Creation of Green Amenity Spaces through the Construction of Public Parks and Improvement of Greenery to Realize Comfortable and Healthy Urban Life and Urban Development with Less Environmental Impacts

- 1) Improvement of green and water network in Greater Yangon.
- 2) Construction of new public parks and open spaces.
- 3) Renovation of existing public parks to meet citizen’s needs and satisfaction.
- 4) Promotion of comfortable greenery in urban areas.

Land Use Plan

Land Use Plan

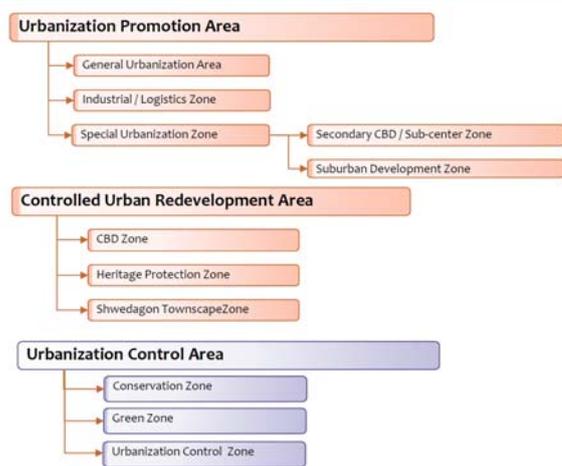
In the master plan, the future land uses in the medium term (2025) and long term (2040) were envisaged and formulated on the basis of land suitability analysis using GIS data.



Future Urban Structure and Land Use of Greater Yangon

Proposed Land Use Zoning Scheme

In order to prepare for the formulation of a comprehensive land use zoning plan, the whole area of Greater Yangon is proposed to be classified into three types of zones, as follows:



Proposed Land Use Zoning Scheme

4. Urban Infrastructure Development Strategy

Urban Transport • Road Network • Railways

High Mobility and Reliable Transportation System Led by Modernized Urban Railway, and Contribution to Promote Planned New Urban Development

- 1) Development of a functional road network as urban backbone.
- 2) Effective public transport system led by urban mass rapid transit.
- 3) A safe, environment-friendly, and comfortable transport system.
- 4) Development of appropriate traffic demand management system.
- 5) Organizations/institutions and capacity building for creating and maintaining a comprehensive transport system in Greater Yangon.



In order to respond to the road traffic demand arising from a population of more than 10 million people in the future, a functional road network serving as urban backbone including an outer ring road is planned. Although the network relies on bus (more than 80% in modal share) at present, the traffic policy will be expanded with a target of 30% share for the railway in the future.



As intersections are operated by unsystematic old signals, the introduction of an advanced traffic control system based on the Area Traffic Control System (ATCS) is planned.



In setting the target modal share of railways at 30% (only 3% at present), the improvement of existing lines including circular railway and construction of urban railway will be promoted. A 350-km railway network with 8 lines, including 5 new lines, is planned for 2040.

Ports and Logistics

High Safety, Mobility, and Reliable Waterway Transport System Led by Modernized Port, Ship, Dockyard and Navigation Aid, Logistics Facilities, and Contribution to Promote the Planned New Urban Development

- 1) In response to increasing cargo volume, establishment of an efficient port terminal operating system, and reallocation of port terminals are planned in order to alleviate the traffic congestion.
- 2) Establishment of safe, punctual, and speedy waterway commuting services.
- 3) Development of a relaxing and scenic waterfront area.
- 4) Development of an environment-friendly inland waterway transport system.
- 5) Improvement of the waterway transport for rural development.
- 6) Capacity building in port and waterway management.
- 7) Establishment of efficient trucking and logistics facilities.
- 8) Rehabilitation of the railway cargo stations.



Container throughput will be doubled by 2015 from the current 350,000 TEU level (in 2011). After 2015, the throughput will be doubled further every five years or so. In anticipation of the development of Thilawa SEZ, the Yangon Main Port and Thilawa Area Port will be developed to meet the future demand.

Water Supply

Provision of Potable Water to All Citizens with Appropriate Volume, Pressure, and Price, and Realization of Sustainable Management

- 1) Development of a well-planned water supply facility.
- 2) Improvement of water supply coverage in all stages.
- 3) Realization of an equitable distribution system through appropriate management with proper distribution zones.
- 4) Effective water supply system by controlling non-revenue water.
- 5) Improvement of water quality and supply of potable water.
- 6) Cultivation of both human resources and institution/organization for effective water supply system.



Setting a target water service population of 8.1 million (water supply coverage: 69%), the development of new water sources, capacity expansion of water treatment plants, and establishment of an efficient drainage system are planned.

Sewerage and Drainage

Creation of a Clean Water Environment and Realization of a Safe City without Flood Damages

- 1) Implementation of collection and treatment of sewage including both human waste and gray water.
- 2) Resolving flood damages with an appropriate drainage system.
- 3) Realization of safe, clean environment and good amenity.
- 4) Cultivation of human resources and organizations/institutions for both integrated sewage treatment system and rain water drainage system.



To provide sewerage service to 36 % of the future Greater Yangon population (4.2 million) and to treat 1.4 million m³/day of wastewater, six new wastewater treatment plants are planned. Drains will be improved based on storm-water runoff analysis.

Power Supply

Realization of a Stable Electric Power Supply of High Quality and Sufficient Quantity for Securing Advanced Urban Functions

- 1) Reduction of power loss.
- 2) Decrease in fluctuations of voltage.
- 3) Construction of grid networks for transmission/distribution line in Greater Yangon.
- 4) Organizations/institutions and capacity building for creating and maintaining the electrical power system.
- 5) Save limited exhaustible resources and reduce greenhouse gas emissions.



Electricity demand in 2040 is expected to be 12,976 MW. As an initial target, sufficient electrical power supply for all consumers in Greater Yangon is planned. In the next step, a secure reserved margin in generation capacity for peak demand even during dry season of more than 15% is planned.

Solid Waste Management

Creating a City with a Sound Material Cycle through 3Rs Policy and Its Execution

- 1) A controlled and sound solid waste stream disposed in a sanitary manner.
- 2) Restraint of waste generation and 3Rs (waste reduction, waste reuse, and waste recycling).
- 3) Application of feasible methods of waste management in terms of environment, society, economy, and technical aspects.



The collected amount of municipal waste from the living environment of all residents and businesses will become 14,000 tons/day in 2040. In addition to promoting the development of final disposal sites, the 3R policies for waste generation control will be advanced.

Telecommunication

Creation of an Advanced Information and Communication Society

- 1) High-speed and high-reliance telecom network
- 2) Offer various services
- 3) Convenience telecommunications
- 4) Introduction of advanced technologies



Focusing on development and innovation of telecommunication network, next generation network will be developed in whole area of Greater Yangon.



5. Urban Development and Management Programs

Capacity Development Plan

Development of Professional Knowledge and Experiences to Create New Urban Environment for Future Citizens

A capacity development plan for urban planning and development is formulated in consideration of the current capacity of relevant organizations and their need for capacity development corresponding to the following work categories: 1) Coordination, 2) Survey and research, 3) Planning, 4) Establishing a legal system, 5) Control, and 6) Implementation. Additionally, future administrative roles and prospects should be expected as follows: 1) The Union Ministry: formulation of the national plan, preparation of laws/regulations, 2) Region Ministry: formulation and implementation of regional matters related to urban planning and management, and 3) Local Authorities (Districts, Townships, and YCDC): implementation of urban development projects.

Priority Program

For Greater Yangon, a priority program, which consists of 26 projects from the urban development sector and 51 projects from the urban infrastructure development sector, is proposed for 2018. Some examples are mentioned below.

Proposed Projects in the Priority Program (Extracted Projects)

Urban Development Sector Projects	<ul style="list-style-type: none">• Mindama Secondary CBD Development• Thilawa SEZ Development• Vitalization of CBD with Cultural Heritages• Urban Spatial Control Management
Social Infrastructure Sector Projects	<ul style="list-style-type: none">• Installation of Traffic Management System• Reconstruction of Old Bridges• Yangon Circular Railway Modernization• Thilawa Area Port Expansion• Supply of Collection Equipment for Solid Waste• Construction of Next Generation Telecom Network

To achieve these projects, further examination, discussion, and impact assessment will be required.

6. Way Forward

This strategic urban master plan of Greater Yangon is expected to be an upper level plan, which will lead “The Urban Development Program for Greater Yangon” that was agreed between the Yangon Region Government and JICA in May 2012. Following this master plan, the master plans of some sectors such as water and transportation, have been launched, and urgent projects have been prepared for implementation as official development assistance (ODA) projects. It is strongly recommended to promote the priority program proposed in the sustainable urban development sectors.

Version: 22 May 2013

Contact:

JICA Study Team

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

E-mail: sudp-yng_admi@yahoogroups.jp

