

2.2 Review of the Current Urban Planning and Land Use Issues

2.2.1 Legal and Regulatory Framework

(1) Constitution

The State Constitution of the Republic of the Union of Myanmar was ratified and promulgated by the National Referendum held in May 2011. Some of the provisions in the State Constitution as related to the urban planning and land management shall be reviewed below¹:

- The Union is the ultimate owner of all lands and natural resources in the area. (Section 37)
- Citizens are given the right for private property. (Section 37)
- The Union guarantees the right to ownership and the use of property. (Section 372)
- Every citizen has the duty to assist the Union in preserving and safeguarding the cultural heritage, conserving the environment, striving for the development of human resources, and protecting and preserving the public property. (Section 390)
- The Region, or State Hluttaw (Congress) shall have the right to enact laws for the entire or any part of the Region or State related to matters prescribed in Schedule Two of the Region or State Hluttaw Legislative List. (Section 188)
- The above schedule includes, among others, such management sector issues as development matters and town and housing development. (Schedule Two of the Region or State Hluttaw Legislative List)

(2) City of Yangon Development Law

This law was enacted in 1990 and ordered the formation of the YCDC in order to carry out the development works of the city of Yangon, and stipulated YCDC shall lay down the policy, give guidance and implement the following duties and responsibilities (Section 7):

- Preparation of civil projects and new towns;
- Administration of lands;
- Determination only of the population which should be allowed to settle properly;
- Construction, repair and demolition of buildings, squatter buildings, and squatter wards;
- Demolition and re-settlement of squatter huts, squatter buildings, and squatter wards;
- Construction of roads, bridges, and maintenance thereof;
- Stipulation of conditions for traffic, parking of vehicles, and slow moving vehicles;
- Construction of gardens, parks, playgrounds, and recreation centers, and maintenance thereof;

¹ It can be observed from the above that while the citizens are permitted right of private property, they are at the same time obliged to assist the Union in protection and preservation of public property, which may include good urban environment.: Yangon Region Government shall have the right to enact laws regarding development matters and town and housing development, and can therefore implement the laws to this end.

- Carrying out works for the lighting of roads;
- Carrying out works for water supply;
- Construction of reservoirs and pipelines, and maintenance thereof;
- Carrying out works for sanitation;
- Carrying out works for public health;
- Construction, maintenance, and administration of markets;
- Stipulation of conditions for road side stalls; and
- Carrying out precautionary measures against fires.

The law also gives YCDC the following powers (Section 9):

- Demarcating and re-demarcating the territorial limit of the City of Yangon Municipality;
- The right to operate works independently with funds owned by the committee;
- Prescribing, reviving, assessing, and collecting duties and taxes with their rates relating to development works, in accordance with the existing laws;
- The right to apply the foreign currency derived from the lease of building, lease of lands or by other means, for development works;
- The right to carry out works contributing to city development by making contracts with local and foreign organizations and with local and foreign individuals;
- The right to take loans and grants from the government or from foreign organizations, and being responsible for its payment;
- The right to carry out works by forming sub-committees work-wise;
- Arranging modern methods and systems in order to carry out the development works effectively;
- Exercising the powers conferred under the City of Yangon Municipal Act, rules, and bylaws;
- Exercising the powers conferred from time to time by the chairman of the State Peace and Development Council;

It is noteworthy that YCDC can demarcate and re-demarcate the territorial limit of its own, prescribe and collect duties and taxes of its own within the existing laws, and has the power to engage in development projects under a contract and take loans/grants for the development of the city.

Also, Section 10 of the Law stipulates that notwithstanding anything contained in the existing City of Yangon Municipal Act State Housing and Town, Country Development Board Act, and other existing laws, powers relating to the formulation and implementation of civil projects, and establishment of new towns and administration of town lands within the limits of the City of Yangon Municipality, shall vest in the committee.

(3) Laws Related to Urban Planning and Land Management

With the adoption of the new constitution in 2008, relevant laws and regulations need to be enacted or modified, but this process is far from being quick in move. Consequently, some of the old British era laws and regulations are still in use for matters of urban planning, land management, and housing.

1) Land Acquisition Act (1894)

This British era act is still referred to at present due to the lack of any new legislation on the theme. This act stipulates that a land could be acquired by the government if it was deemed to be in the interest of the public. Religious lands such as pagodas, stupas, shrines, and cemeteries were not subject for acquisition.

2) Rangoon Development Trust Act (1920)

In 1920, the Rangoon Development Trust Act was enacted under the British rule. This resulted in the establishment of Rangoon Development Trust in 1921, with powers that include the following²:

- Purchase/acquisition of immovable property;
- Project development planning and land management;
- Levy of revenue taxes and lease fees of land
- Purchase, lease, and transfer of land and management through other methods; and
- Establishment of laws, regulations, and instructions as necessary.

The Rangoon Development Trust, based on the Act, conducted long-term and short-term leases of land, and thus allowed use of land, and conducted issuance of land lease licenses, permits and abrogates for construction, industrialization, agriculture, and other special purposes.

3) State's Housing Rehabilitation and Town and Villages Development Board Act (1951)

In 1951, three years after the independence, the State's Housing Rehabilitation and Town and Villages Development Board Act was promulgated in order to solve the shelter problem occurring at the time as people were moving in to Rangoon from rural areas in large numbers³. The act stipulated that the provision of shelter would be performed through town and village development projects and public housing rehabilitation projects along with systematic management process. This act stipulated land management in the following manner.

- Any land (or building, if it exists on the land) could be acquired through the Land Acquisition Act (1894)
- This act enabled town and village development, supervision of public housing rehabilitation, management and improvement of land management, and others on the nationwide basis.

4) Urban Rent Control Act (1952, amended in 1960)

Shortly after the World War II, a large number of people headed for the cities and the issue of housing became serious and acute. This Act regulated the rents in the urban areas to a low and affordable level. This Act is still in effect, keeping the housing rents in the urban areas to a considerably low level so that proper maintenance of rented properties has become economically unbearable for most property owners.

² Unpublished documents of Land Survey Division, Ministry of Construction (MOC)

³ Unpublished documents of Land Revenue Div., MOC

5) Farmland Law (2012)

This is a new law that came into effect on 31 August 2012 under the new constitution of 2008. This law is to be accompanied by Farmlands Bylaws and Vacant, Fallow, and Virgin Lands Management Bylaws to be approved by the Union Government. The Farmland Law enables all farmers across the country to enjoy land use rights, in which the farmer can register⁴.

6) Other Related Laws and Regulations

The legislative system inherited from the colonial period is highly comprehensive. The following laws and rules are listed according to specific concerns to the human settlement sector⁵. Their applied area, such as region of country into upper and lower areas, is not clear at this moment. Furthermore, their contents and application should be confirmed.

- Towns Act, 1870;
- Lower Burma Towns and Village Act, 1894;
- Municipal Act, 1898;
- Land Revenue Manual, 1907;
- Land Rules, 1922;
- City of Rangoon Municipal Act, 1924 ;
- Underground Water Rules, 1941;
- Requisitioning (Emergency Provisions), 1947;
- Land Nationalization Act, 1953;
- Town Planning Act (Draft Proposal), 1961;
- City of Yangon Development Law (SLORC Law No. 11/90), 1990;

(4) Bylaws of YCDC

The Study Team confirmed that there are 24 bylaws in effect in YCDC which have been enacted between 1995 and 2001. The contents of the bylaws cover all spheres of the city's administration front, varying from management, urban planning to infrastructure, and commercial registration. Among them, there are four bylaws that are directly related to the urban planning by YCDC. Generally, the bylaws define the basic procedures to be followed, but do not provide details of which such procedures are to be carried out. The latter is mostly given in the form of regulations as detailed in item (5).

⁴ New Light of Myanmar newspaper article, 8th September 2012

⁵ HUMAN SETTLEMENTS SECTOR REVIEW UNION OF MYANMAR, The United Nations Center for Human Settlements (Habitat), 1991

Table 2.2.1: Bylaws of YCDC Related to Urban Planning

Name	Main Stipulation
Bylaw on Town Planning and Land Use (No.3/2001)	<ul style="list-style-type: none"> ● Land management ● Formulation of city development plans ● Land use in accordance with the city development project/ plan ● Issuance of lease, license and permits, renewal and cancellation ● Assessment of tax, revenue, collection, exemption, and subsidization of tax for land ● Land confiscation, and buy and transfer of land ● Management of non-moveable/ fixed infrastructure ● Records, prescribe forms, maintenance of records, and duplication ● Land survey ● Removal of squatters and trespassers ● Appeal
Bylaw on Building and Construction (No.9/1999)	<ul style="list-style-type: none"> ● Permission and application for construction ● Issuance of license ● Buildings owned by the committee ● Buildings inappropriate or dangerous for residences ● Trespassing tax ● Sign boards and advertisement ads ● Prohibitions
Bylaw for Commerce and Markets	<ul style="list-style-type: none"> ● Supervision of the development affairs ● Restrictions
Bylaw for Garden and Recreation	<ul style="list-style-type: none"> ● Gardens ● Playgrounds ● Prohibitions

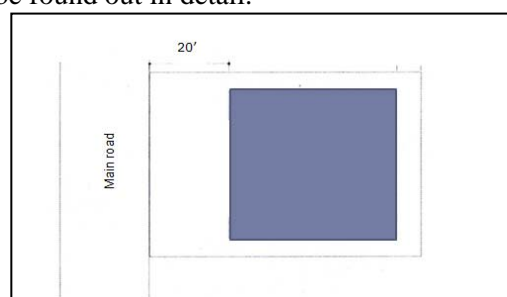
Source: YCDC

(5) Regulations of YCDC Relevant to Urban Planning⁶

The YCDC manages the new buildings at the time of application for contraction based on a set of regulations. The legal nature of these regulations is yet to be found out in detail.

1) Setback from Main Roads

When a building is to be built along any of the main roads, it must have a setback area of 20 feet (6.0m) for clearance to any structure. This regulation applies to the main roads, such as Pyay Road, Kaba Aye Road, University Avenue Road, and U Wisara Road.

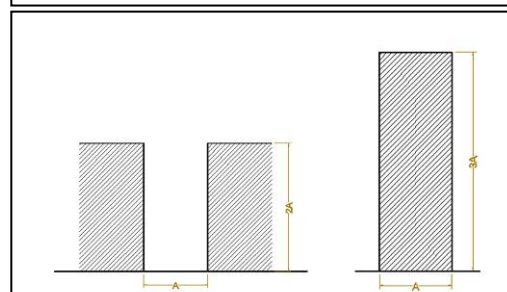


Source: YCDC

Figure 2.2.1: Set-back to Main Road

2) Height of Buildings

There are two types of limits to the height of buildings. One is in relation to the frontage road, in which the height of the building cannot exceed twice the width of the frontage road. It is to be noted that there are a number of existing old buildings, particularly along narrow streets in CBD, which are in violation of this regulation, although there is a provision to mitigate this



Source: YCDC

Figure 2.2.2: Height of Building

⁶ Unpublished document, Tin Tin Kyi (Assistant Department Chief), Engineering Department (Buildings), YCDC, Rules/ Regulations concerning urban development and building of Yangon City, zonal restrictions and present status of Yangon CBD



limit. The other type of limit relates to the shape of the building itself, in which the height of the building cannot exceed thrice the length of the building. Up to what extent these principles have been applied in providing building permission, is yet to be found out.

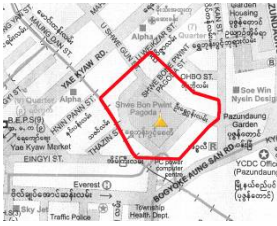

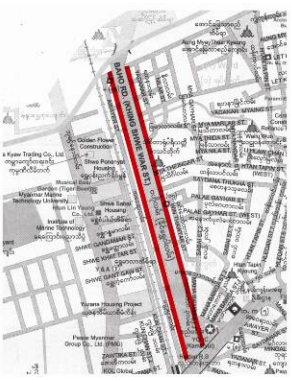
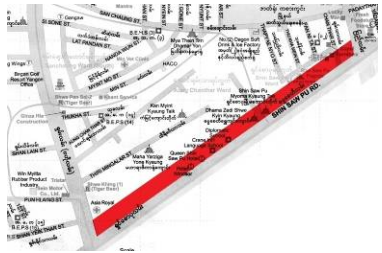
3) Zonal and Roadside Regulations

There are three locations where YCDC has zonal regulations for building control. Basically, in the reserved area around Shwe Dagon Pagoda, buildings with more than six stories are prohibited. The regulation says that anybody who would like to go beyond this must apply to the Union Government for permission. In the reserved area around Shwe Bone Pwng Pagoda, buildings with more than three stories are not permitted.

There are two regulations pertaining to new buildings along specific roads. One of them is for the Khint Shwe Wa Road in Kamayut Township, which provides specifications for drainage and retaining walls. The other one is for Shin Saw Pu Road in San Chaung Township, where the former National Congress Building (which is registered as the National Heritage) is located, which set the maximum building height as five stories. For the details of the zonal and street-side regulations, refer to Table 2.2.2.

Table 2.2.2: Zonal Regulations of YCDC

	<p>Reserved Areas for Shwe Dagon Pagoda</p> <ul style="list-style-type: none"> ● Construction of more than six-story buildings is never allowed. If someone wants to construct buildings with six or more stories, he needs to apply to the State Government of the Republic of Union of Myanmar. ● Reserved area boundaries are: <u>East</u> - Alanpya Pagoda Road, Zoological Garden Road, Kan Road, Factory Road, Nat Mauk Road, and Kaba Aye Road; <u>North</u> - Dama Saedi Road; <u>West</u> - Pyay Road; and <u>South</u> - Min Ye Kyaw Swa Road, Circular Railways Tracks, Yaw Min Gyi, and U Phoe Hlaing from Shwe Dagon Pagoda Junction.
	<p>Effect of Zonal Regulation of Shwe Dagon Pagoda</p> <ul style="list-style-type: none"> ● For the regulation related to Shwe Dagon Pagoda, the height of building is limited. Also TRADERS HOTEL and SAKURA TOWER were limited to built lower than Shwe Dagon Pagoda in spite of their location. (unregulated area) ● The regulation is based on SL (Sea Level). This is a point that should be noted.

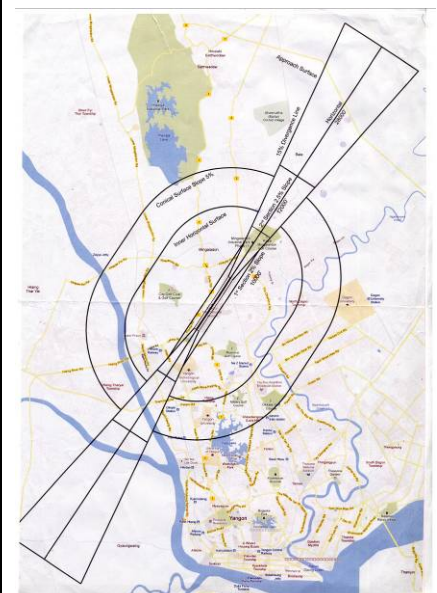
	<p>Reserved Areas for Shwe Bone Pwint Pagoda</p> <ul style="list-style-type: none"> ● Construction of more than three-story buildings is prohibited in the Shwe Bone Pwint Pagoda reserved area.
	<p>Buildings in Tamwe/ Myittar Nyunt Townships</p> <ul style="list-style-type: none"> ● Ground floor height - 12 ft; other floor heights - 9 ft ● Six-story buildings must be constructed with pitch roof.
	<p>Khint Shwe Wa Road, Kamayut Township</p> <ul style="list-style-type: none"> ● The front portion of the ground floor must have a setback of 5 ft, and the upper floors can be constructed advancing 4 ft towards the front with a net setback of 1 ft from the road. ● For drainage, a building has to have a 5 ft setback, i.e., to provide an allowance for the septic tank at the back, and for durability of the buildings and the septic tank. A retaining wall must also be constructed for support. ● Ground floor height – 12 ft; other floors height – 9 ft ● Six-story buildings must be constructed with pitch roof.
	<p>Shin Saw Pu Road, San Chaung Township</p> <ul style="list-style-type: none"> ● Located beside Pyitu Hluttaw (National Congress/ National Heritage Building), the buildings to be constructed on the north side of Shin Saw Pu Road (from Pyay Junction to Baho Road Junction) must not exceed the following: ground floor height - 14 ft; other floors height - 10 ft; and construction of only up to five-story building is allowed.

Source: YCDC

(6) Regulation Related to Airport

In relation to the Yangon International Airport, there are regulations on the building's height based on the international practice for the safety of aircrafts.

Table 2.2.3: Regulations Related to Airport

	<p>Height Limit of Building Based on ICAO ANNEX 14.</p> <ul style="list-style-type: none"> ● There is a height limit for building considering airspace for flight at Yangon International Airport located in the northern part of Yangon City. ● For construction activities in the vicinity of Yangon International Airport, and are regulated by ICAO ANNEX 14.
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Source: YCDC

(7) Flow of Application for Development Permission

From a similar point from the current system of development permission to the urban planning system, there is no clear area that is the scope of the City Planning Law in Myanmar. However, in Myanmar, there is a land that is restricted for development. Developing a group of agricultural lands is limited. Regarding the permit application for farmlands in Myanmar, permit holders depend on the crops that have been planted and the size of the agricultural land to be converted. Land developers have to submit their application to the Central Board for Farmland Management headed by the Union Minister of MOAI.

(8) Legal Framework in Preparation

Notwithstanding Item (1) above, neither the State nor the Region has enacted the Town Planning Law or any law to the same effect. According to the Department of Human Settlement and Housing Development (DHSHD) of the Ministry of Construction (MOC), they are preparing the Town Planning Law to be submitted to the Congress in a few years, although the progress of the preparation is not evident to date.

In line with the discussion above, the MOC is said to be preparing what will be called the Uniform Building Code, which will supplement the architectural control from the safety and urban planning aspects. The preparation of a draft has been entrusted to the Association of Myanmar Architects and Myanmar Engineering Society. A part of the draft has been reportedly completed, but the schedule of launching is still unclear.

(9) Policy on Urban Planning

With regard to the processes of reforms for the development of the state, President of the Republic of the Union of Myanmar U Thein Sein delivered an address in a meeting with union level organization members, region/ state chief ministers, chairmen of self-administered divisions/ zones, deputy ministers, and departmental heads at the meeting hall of the president's office on 19th June 2012. The following items depict some of the highlights of the President's speech related to urban planning and development⁷.

The President urged the Union ministries to draw sector-wise development plans, while the region/ state governments are instructed to draft regional development plans, urban development plans, and rural development plans in detail.

The President said that the state will carry out the task of reviewing and drawing the 30-year plan. Furthermore, the President emphasized that it should keep on drawing the National Development Plan until it becomes a Comprehensive Development Plan through the following plans:

- Rural development and poverty alleviation plan,
- Human resources development plan,
- Investment plan,
- Trade sector development plan,
- Industrial development plan,
- Financial and currency sector development plan,
- Regional plan, and
- Sector-wise plans.

Regarding land management, the President said that land use and land speculation are among the difficulties that may be encountered in the implementation of housing development and investment projects. The President also informed that the government has established the Land Allocation and Utilization Security Committee for urban development projects and investment projects so as to formulate land utilization policy in line with the laws and rules and regulations. Thus, the President said that the Union ministers and region/ state governments will have to submit the proposals for land allotment and utilization for their urban development and other development projects.

Specific policies on how these instructions could be addressed are yet to be set by the government, but the necessity of formulating the sectoral and regional development plans are clearly instructed to the government.

(10) Key Findings and Main Issues to be Addressed for the Legal and Regulatory Framework

In the course of reviewing the legal and regulatory framework for the urban planning of Yangon, the following key findings could be made:

- 1) As the urban planning could touch upon the individual's property right (which is a basic right stipulated in the new Constitution), there must be a law on urban planning to regulate the means by which individuals pursue his/her property right considering the overall benefit of the nation. For this purpose, Town Planning Law or any other basic law with another name should be enacted in the Union of Republic of Myanmar. As this matter relates to the national framework for urban planning, it should be undertaken by MOC. Donors or international development partners should assist the implementation of this new law.

⁷ New Light of Myanmar, 20 June 2012

- 2) In the national level, in addition to the enactment of what may be called the Town Planning Law, national policy for urban planning should be considered. The national policy may consider basic guidelines on land use. Moreover, architectural regulations are to be contemplated at each local government level providing guidance on how to implement such regulations, etc.
- 3) On the local government level, Yangon is privileged in the sense that the YCDC Law had already been enacted, and a number of bylaws are now in effect. While the laws and bylaws provide the general framework for the urban planning to be implemented locally, the actual regulations are neither well-established nor well-publicized to the general public. The regulations for building control and permissions should be clearly established and widely publicized for the general citizens to follow.

2.2.2 History of Urban Planning

(1) Pre-Urbanization Period⁸

The history of Yangon can be traced back to a few centuries B.C. according to archeological analysis of the ruins found from Shwe Dagon Pagoda and Sule Pagoda. During the pre-urbanization period, the present day Yangon is a mere small village called Dagon, which was limited to the Shwe Dagon (Golden Dagon) Pagoda and the housing units gathering around it.

When King Alaungphaya unified the lower Myanmar in 1752, he renovated the city of Dagon and renamed it as Yangon, meaning the end of strife. The new city was built east of Sule Pagoda, inside an area of 0.125 mile² (0.32 km²).

(2) Pre-Colonial Period

In 1824, British warships appeared before Yangon, and the first Anglo-Burmese War broke out. Afterwards, Yangon was occupied by the British. Figure 2.2.3 shows the map of Yangon in 1824. A wide straight road and a narrow road alongside connected the living quarters on the south and the Shwe Dagon Pagoda on the north.

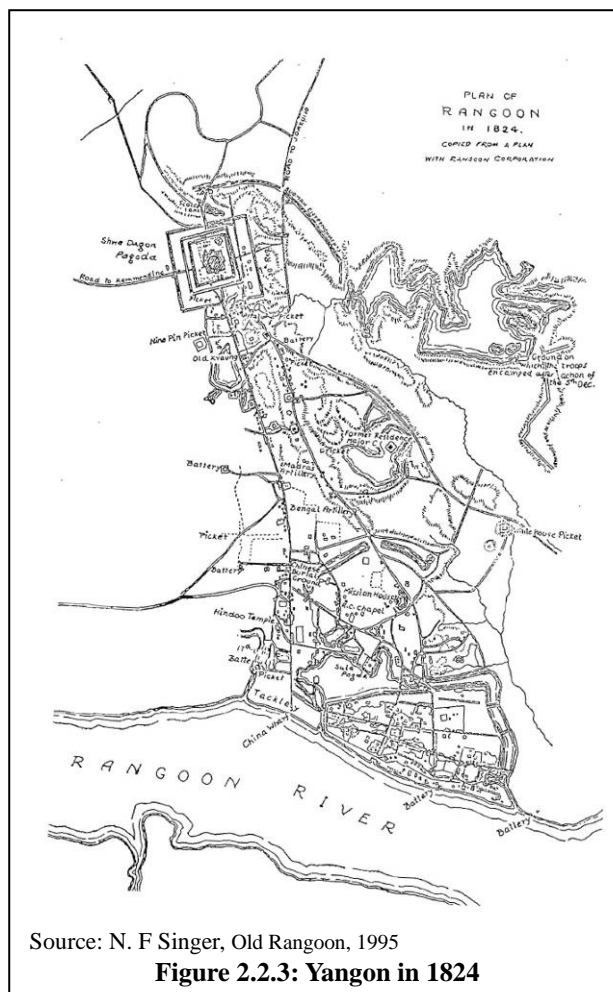


Figure 2.2.3: Yangon in 1824

The central part of the Alaungphaya's Yangon is depicted in Figure 2.2.4, in which it could be seen that Sule Pagoda was surrounded by what looked like a side lagoon connected with the Yangon River by canals, and the entire town is surrounded by water. There were two indications of wharfs, i.e., one is the King's Wharf near the present day's eastern part of the Yangon Port, and the other one is the China Wharf on the west.

The First Anglo-Burmese War happened in 1824-1826. The British used the seaport along the Rangoon River as the logistics base for the British army fighting against the Burmese army. The British occupation ended briefly that time. There were a number of ships from various nations across the world that called at Yangon to conduct business.

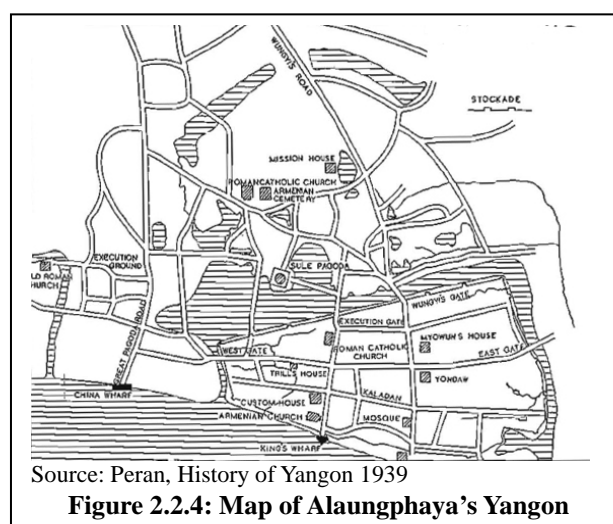


Figure 2.2.4: Map of Alaungphaya's Yangon

⁸ Hlain Maw Oo and Maw Oo Hock, Heritage Conservation in Transforming Yangon into a Sustainable Megacity, in Megacity Yangon, 2006.

A few decades later, King Thryawaddy, who came to Shwe Dagon Pagoda for pilgrimage in 1841, favored Yangon. Having heard that the British occupied the city with ease, he decided to build his administrative centers further inland in the west and south of the Shwe Dagon Pagoda, and named it *Aung-myai-aung-hnin*, which means victorious city. In the map of 1852, the quarters were seen adjoining the Shwe Dagon Pagoda extending to the west and south. The administrative city is locally called Okklapa, a legendary kingdom which was claimed to have existed in that area.



Source: N. F Singer, Old Rangoon, 1995

Figure 2.2.5: Yangon in 1852

(3) Colonial Period⁹

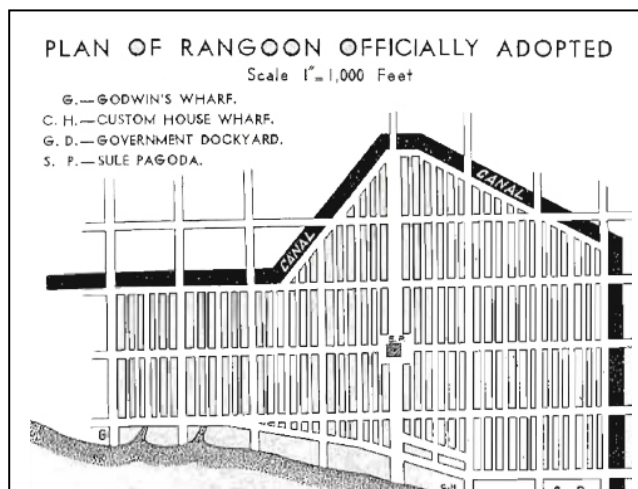
In 1852, the lower Myanmar, including Yangon, was re-occupied by the British after the second Anglo-Burmese War. In Yangon, the commerce grew and the city prospered. Yangon became a multi-ethnic city with Chinese, Indian, English, and many more nationals, and was renamed by the British as Rangoon. Shortly afterwards, plans for a new city were worked out quite rapidly. The new city was envisioned to be built on a strip of land 4 mile (6.4 km) long along the river, of which the eastern half had been the city center from the previous period. Dr. Montgomerie, who had worked to build Singapore offered to work for the planning committee of Rangoon.

Montgomerie submitted his ideas for the new commercial city of Rangoon in 1852 which included the following features below:

- A “checker-board,” or a grid pattern, of roads to be introduced;
- Ample open space or strand to be secured along the river side;
- Streets to be 50 ft (15m) wide, with a well at every 100 ft (30m) distance;
- Drains and a sewerage system to be introduced; and
- Trees to be planted for shades.

The responsibility for implementing the plan of Rangoon was given to Lieutenant Alexander Fraser, a young Scot from Bengal Engineers, which was a common name for the remnants of British Indian Army's Bengal Army at that time.

As the central part of Rangoon was low-lying before, a large volume of earth was carried in by carts to fill up the ground. Fraser once decided to build a canal system encircling the city area, although this idea was later abandoned being found to be not viable.



Source: Peran, History of Yangon, 1939

Figure 2.2.6: Official Plan of Rangoon by Fraser

The Fraser Plan, which was depicted in Figure 2.2.6, as the official plan of Rangoon by Fraser, was said to have anticipated a population of 36,000¹⁰. The main features of the Fraser Plan are as follows:

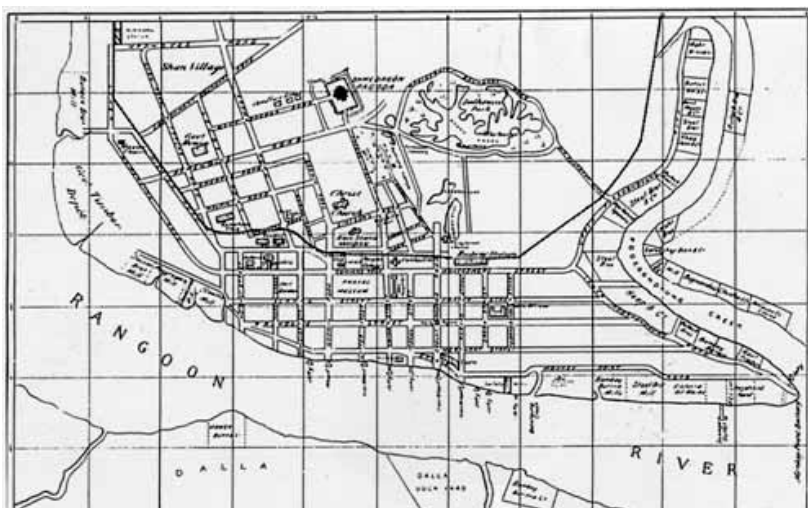
⁹ Noel F. Singer, Old Rangoon, 1995.

¹⁰ Association of Myanmar Architects, 30 Heritage Buildings of Yangon, Serendia Publications, Chicago, 2012.

- Creation of a strand (open space) and a walkway 16 ft (5m) wide along the river bank, and keeping the area between the strand and the river bank a broad grassy area filled with palms and flowering shrubs to absorb the water;
- A network of drains to forestall flooding;
- Expansion of the road encircling the octagonal Sule Pagoda maintaining symmetry;
- Make roads radiate from Sule Pagoda in four directions to make it the center of Rangoon; and
- Make streets intersect at right angles, and with (mostly) uniform plot measuring 40 ft (12m) x 150 ft (46m).

The city of Rangoon built under this plan was to be seen in the map of Rangoon in 1897 as shown in Figure 2.2.7.

The city grew constantly afterwards, and the population reached 60,000 within less than a decade. Various companies were established in Rangoon and different activities flourished. The central part of the city became overcrowded to the extent that soils at night had to be carried away regularly. In 1877, the much awaited state railway was commissioned, which resulted in further increase in trade and business. Another war, i.e., the 3rd Anglo-Myanmar War erupted in 1885, which resulted in the British annexation of the whole country to the British Empire in 1886. In the last decade of the 19th century, a steam-powered tram line started operating in Rangoon, and a water reservoir was commissioned to serve the increasing population. A number of impressively tailored buildings were built, some for administrative purposes and others for businesses, in what were later described as “the colonial architecture style”. Due to the beauty of the city, Rangoon was also called the “Pearl of the Orient.”



Source: N. F. Singer, *Old Rangoon*, 1995

Figure 2.2.7: Map of Rangoon, 1897

(4) After the Independence

Despite the extensive damage caused by World War II, many of the colonial architectural buildings in Yangon are still intact. After the independence in 1948, massive influx of migration to the capital city of Yangon occurred in the 1950s, overcrowding the too small central city area, which resulted in the formation of squatter settlements in and around the city center area. Consequently, three new settlements were developed to resettle the squatters with a total population of about 300,000¹¹.

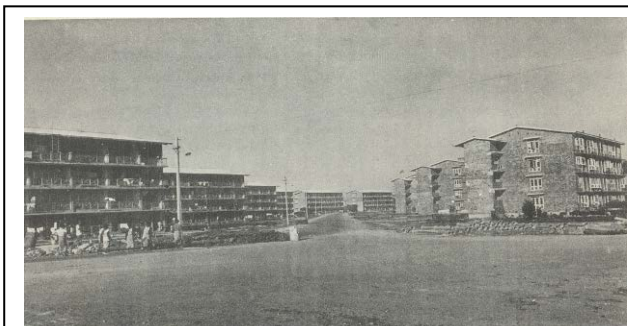
¹¹ Mie Mie Tin, et. al. DHSDD-MOC, Sustainable Housing Needs and Urban Land Management (unpublished power point material), 2011.

Moreover, the government provided public and rental housings in Yangon. There are two types of public housing schemes, i.e., one for the government employees, and the other for the public. In the 1960s, about 1000 units were constructed every year, which decreased to about 100 or so in the early 1980s. All in all, the government has about 20,000 public housing units, of which about 68% are located in the Yangon area¹².

The government branch that first took the leading role in the urban planning and housing development in the post-war period was Rangoon Development Trust (RDT), which had been formed under the law in 1920 (refer to Section 2.2.1). In the early 1970s, RDT was renamed as the Housing Board, then Housing Corporation, and afterwards Housing Department in 1973. It is now the current DHSHD of MOC.

In parallel with the public and rental housing program above, the government advocated the joint housing scheme since mid-1960s. The basic idea is to help people with limited means to buy houses. When purchasing a housing unit, the owner-to-be shall make a 50% down payment of the total cost on his own, while the government pays the remaining 50%. Later, the owner would repay the debt including 5% interest in installments. As the material cost skyrocketed and inflation accelerated, the scheme was finally abandoned in 1988.

In 1974, DHSHD started the program for Single Family Housing scheme, which focused on the people who already had residential lands. It turned out that the scheme benefited only a handful of people. Later, the program was transferred to the Public Works Department where the program targeted mainly government officials. Recently, the department is trying to revitalize this program to cater to lower income people with smaller houses on currently developed plots.



Source: DHSHD

Figure 2.2.8: Yangon Housing Estate in mid-1970s



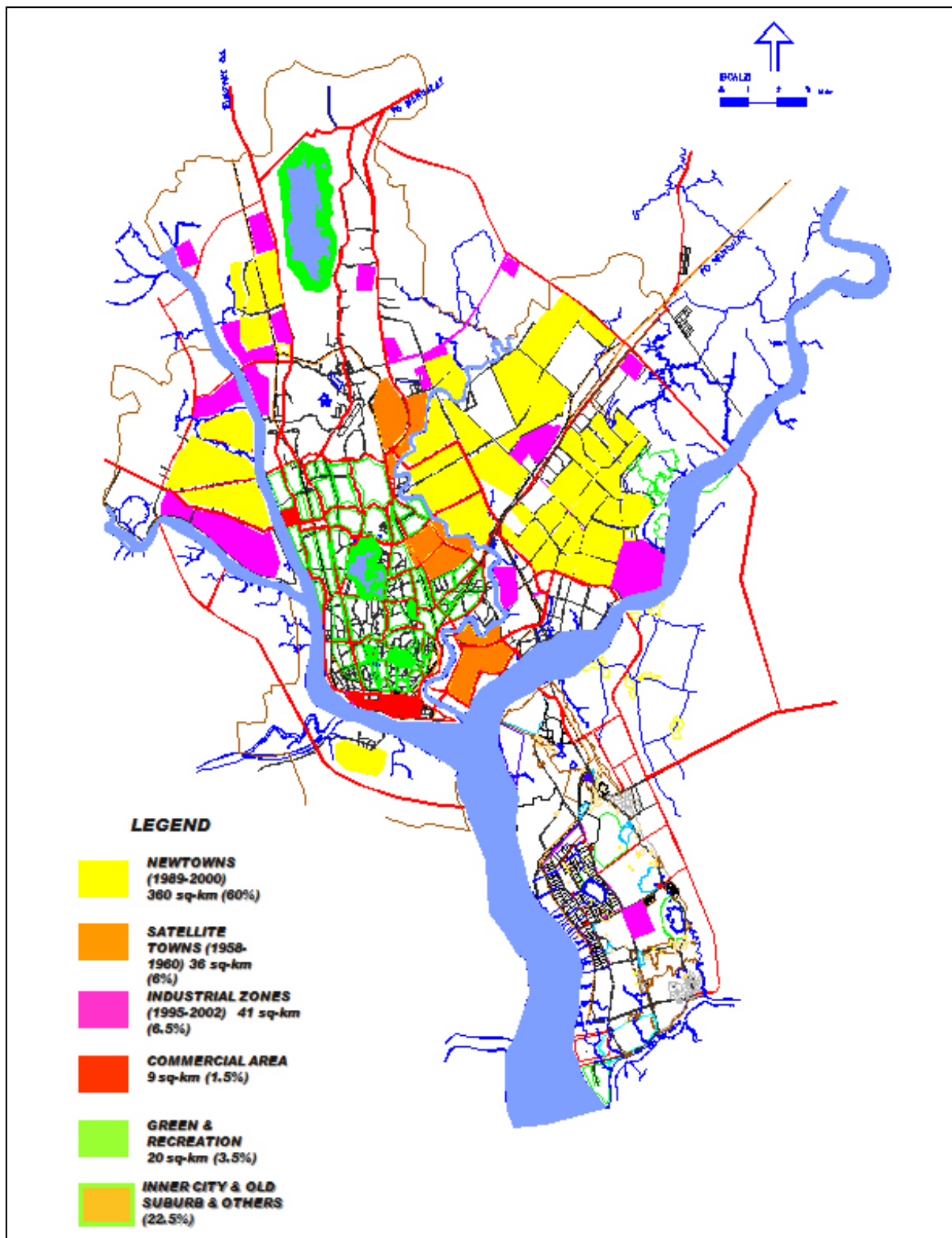
Source: DHSHD

Figure 2.2.9: Khyayepin Yeik Mon Housing Project

In the period between the independence through 1980s, the city has expanded from the original small living quarter along the Yangon River towards the north, making an elongated urban area. In the late 1980s, the city of Yangon has gone through an extensive land use change, as the government started new town developments in the east and west, i.e., Dagon North and Dagon South in the east and Hlalin Tharyar and Shwe Pyi Thar in the west. In 1989-1994, DHSHD developed 160,000 plots for about 400,000 persons in three new towns in Yangon.

The government provided services in these new towns as well as in some of the slums. It has also supported the resettlement of fire victims and several upgrading projects. The services include roads, drains, electricity, and community tube wells. The cost for infrastructure, according to DHSHD was subsidized by the government. Furthermore, lending a hand to the squatters (slum to apartment program) was also advocated by DHSHD, in which a population of 200,000 squatters was provided with leased plots of land with basic infrastructure.

¹² Mie Mie Tin, *New Opportunities in Yangon Megacity*, Megacity Yangon, 2006.



Source: DHSHD

Figure 2.2.10: New Towns, Satellite Towns, and Industrial Zones in Yangon

(5) Since 1990

In 1990, the Yangon City Development Law was enacted, and YCDC was established. As the law gave YCDC the power to construct, repair, and demolish buildings/establishments such as squatter buildings and squatter wards, and carry out their resettlement, some of the functions of YCDC obviously overlapped with those of DHSHD. Generally, the demarcation between the two organizations was set as follows:

- In Yangon City, the urban land is managed by YCDC and DHSHD; and
- YCDC is responsible for the administration of private land, whereas DHSHD caters to the need of government land.

(6) Move of Capital City to Nay Pyi Taw

On 6th November 2005, the capital city of Myanmar was officially moved to Nay Pyi Taw, which is a green field that is approximately 320 km (200 mile) north of Yangon. The capital city's official name was announced on 27th March 2006, and this planned city is expected to be completed by around 2012. Since the announcement, most of the central government offices relocated to Nay Pyi Taw, leaving behind the ex-ministerial buildings empty or under-utilized. A large part of the ex-ministerial buildings are registered as heritage buildings that need to be conserved.

(7) Key Findings and Main Issues to be Addressed for the History of Urban Planning

In the course of reviewing the history of urban planning of Yangon, the following key findings could be made:

- 1) For the historical process of Yangon's transformation, the presence of the Shwe Dagon Pagoda has always been the anchor of the city, and this anchorage has to be maintained in the future;
- 2) As typically seen in Alaungphaya's Yangon, in which Sule Pagoda was surrounded by an impounded water body, the water surface has been providing key townscape function to Yangon, which will be strengthened in the future;
- 3) The CBD follows the planning disciplines of Montgomerie-Fraser with grid pattern road network and plenty of greenery. Although one of the main ideas of Montgomerie-Fraser was to allow a wide open space along the Yangon River strand, the open space in the strand had dissipated due to the port development along the river. At least, part of the open space along the Yangon River strand has to be recovered;
- 4) In the post-war period, Yangon's urban expansion has been supported by the new town development and services by the public sector (mostly MOC). As MOC is shifting towards being a regulatory body, in essence, the public sector urban development function has to be continuously carried through, for which proper capacity development and budgetary allocation have to be proposed; and
- 5) Since the movement of the capital city to Nay Pyi Taw in 2005, many of the ex-ministerial buildings, of which most are registered heritage buildings, were left empty or under-utilized. These buildings should be used positively for their appropriate purposes while being conserved, and they should be preserved in good condition.

2.2.3 Administrative Organization Framework

(1) General Framework

For Yangon City, the Yangon Region and Yangon City Development Committee (YCDC) are the related administrative organizations.

The Constitution of Myanmar defines the delineation and constitution of the country by seven regions, seven states, and the Union territories (Section 49).

States and divisions are composed of districts. These districts consist of townships that include towns, village-tracts, and wards. Village-tracts are groups of adjacent villages (Section 51).

The above mentioned governmental organizations, which are defined in the Constitution, are under the control of the Union government.

Each state or region has a region or state government consisting of a chief minister, other ministers, and an advocate general. Legislative authority would reside with the State or Regional *Hluttaw* (region assembly) made up of elected civilians and representatives of the armed forces.

The region or state government prepares a budget bill and applies at end of June. Parts of the collected tax are distributed for the regions or states.

On the other hand, YCDC was established as prescribed by the City of Yangon Development Law. The committee is not clearly defined in the Constitution, and its legal status is different from that of the regions and states.

There are three cities in Myanmar which also have development committees. Nay Pyi Taw is under the direct administration of the President and the Constitution clearly prescribes Nay Pyi Taw Council as a responsible organization for its administration. The City of Mandalay Development Law (2002) defines the Mandalay City Development Committee (MCDC) as the responsible organization to carry out the development works and functions within the city of Mandalay. Its functions and duties are a little bit different from that of YCDC.

(2) Hierarchy of Administrative Organizations in Yangon City

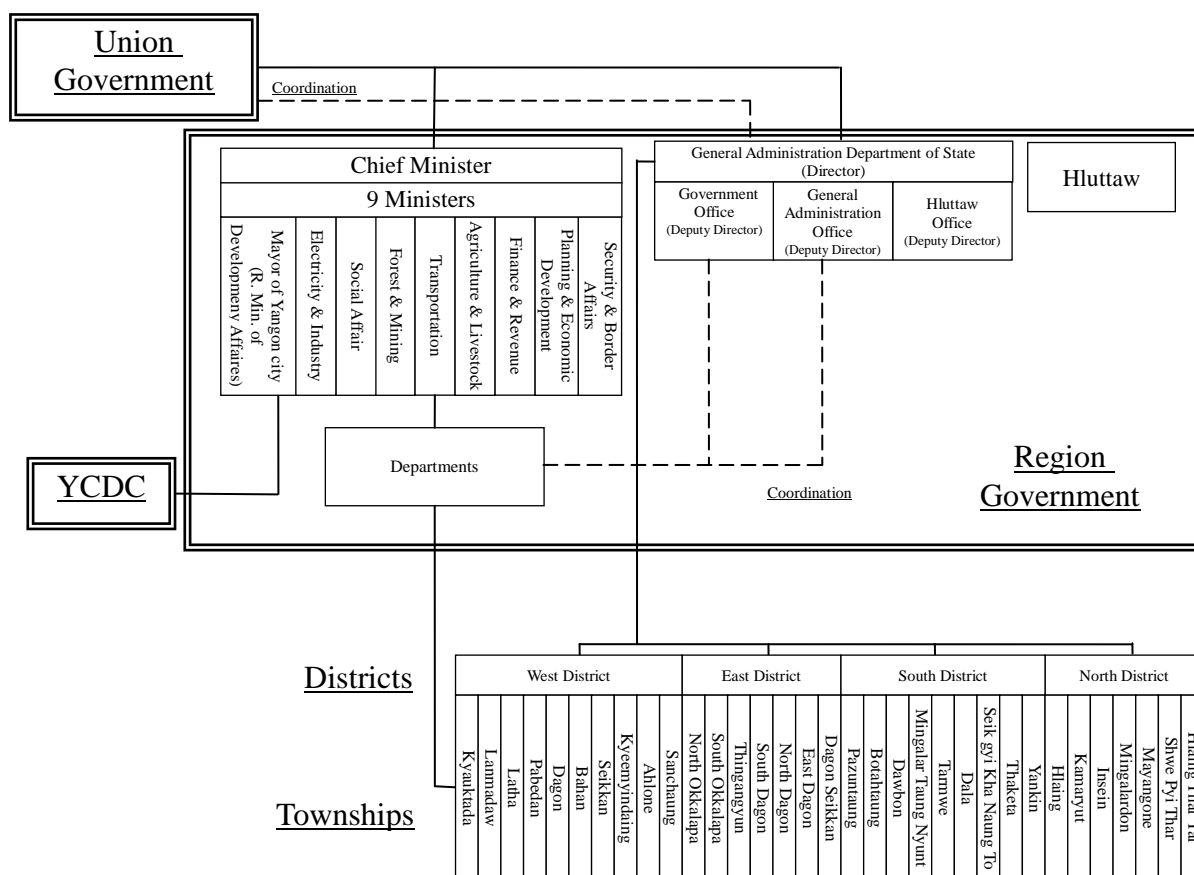
The Yangon region government, district offices, township offices and YCDC are the local administrative organizations in Yangon City. Relationships between these organizations are shown as Figure 2.2.11. The region government is responsible for reporting, planning, supervising projects, and providing public services based on the order of the Union government. District and township offices are executing organizations under the region government and its departments. YCDC is an execution agency for public services. The Mayor of Yangon City serves concurrently as the region minister of development affairs.

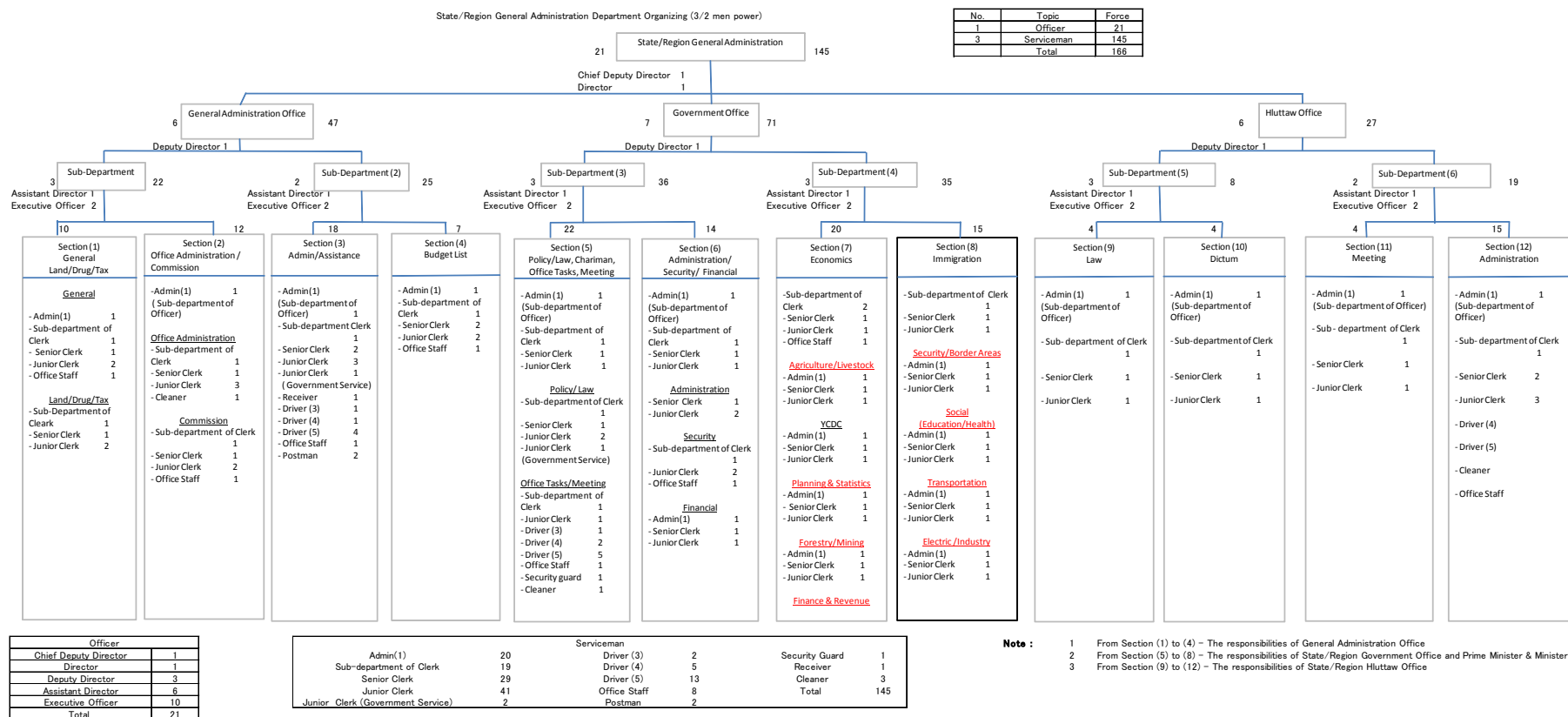
1) Union Government and Ministries

The ministries of Myanmar were reshuffled on the 4th September 2012. The Union government currently consists of 30 ministries and six ministers under the Office of the President.

2) Region Government

Yangon Region is mostly governed by its capital, Yangon City, which is also the former national capital and largest city in the country. Yangon Region consists of 44 townships, with the 33 townships under Yangon City.





Source: General Administrative Office of Yangon Region Government

Figure 2.2.12: Organization of General Administrative Office of Yangon Region Government

3) District Office

A district is an administrative unit, which is defined in the Constitution as an aggregate of townships. Furthermore, districts form regions and states.

There are four district offices in Yangon City, each governing 7-10 townships.

The Western District office has 20 staff engaged in administrative works. The duties and responsibilities of district works are as follows:

- Execution of administrative services at the district level according to orders by the Union government and region government,
- Coordination of townships in the district, and
- Collection of taxes (district office is responsible for personal income taxes per year).

District offices have no right to participate in region projects, which is under the management of the region government.

District offices only have the right to manage the budget for operating expenses such as office facilities, office staff salaries, and other official expenditures. District planning committee has to organize for the development of respective sectors, but there is no budget allocated for such.

Table 2.2.4: Personal Arrangement of Western District of Yangon Region

No.	District/ Township	Allowance Resource	Current Resource	Current Resource		Total	Vacant Resource
				M	F		
1.	Western District	27	20	8	12	20	7

Source: Western District Office

4) Township

The GAO of each township is under the Ministry of Home Affairs. Their major responsibilities are as follows:

- Surveying data around Bahan Township;
- Intervening social welfare, religious ceremonies, schools, and hospitals;
- Developing its township;
- Pursuing justice, peace, stability, and development; and
- Public security.

For the abovementioned duties, the Bahan Township office in the Western District established 21 departments and offices. Also, since township offices cannot sufficiently provide public services, eight NGOs have collaborated to offer public services and aid the township offices.

- Titles of Departments in the Bahan Township**
1. General Administration Office
 2. Department of Immigration
 3. Department of Education
 4. Department of Information and Public Relations
 5. Township Municipal Department
 6. Township Health Office
 7. Township Police Station
 8. Township Planning Department
 9. Township Justice Court
 10. Township Judicial Office
 11. Township Audit Office
 12. Township Revenue Office
 13. Township Post and Communication Office
 14. Township Labor Office
 15. Township Cooperative Office (Microfinance)
 16. Township Electricity Supply Office
 17. Township Fire Station
 18. Township Telecommunication Exchange Office
 19. Township Sports Station
 20. Township Information Office of New Light of Myanmar
 21. Township Traditional Hospital
- Lists of NGOs registered in the Bahan Township**
1. Myanmar Anti-Narcotics Association
 2. Red Cross Society
 3. Maternal and Child Welfare Association
 4. Women Federation
 5. Township Film Association
 6. Township Music Association
 7. Traditional Myanmar Dance
 8. Office of Ex-servicemen

Source: Interview with the Bahan Township office

For these functions, 37 staff members are allocated in the office (Table 2.2.5).

Table 2.2.5: Organization of Bahan District

No.	Position/Grade	Allowance Resource	Current Resource		Total	Vacant Resource
			M	F		
1.	Township Administrator	1	1	-	1	-
2.	Deputy Executive Officer	3	3	-	3	-
3.	Sub-Department Senior Clerk	1	-	1	1	-
4.	Accountant (3)	1	-	1	1	-
5.	Senior Clerk	3	-	2	2	1
6.	Senior Typewriter	1	-	-	-	1
7.	Accountant (4)	1	-	1	1	-
8.	Junior Clerk	5	-	4	4	1
9.	Junior Typewriter	2	-	-	-	2
10.	Clerk (Government Service)	0	-	0	0	-
11.	Driver	1	-	-	-	1
12.	Office Staff	2	1	-	1	1
13.	Postman	2	-	-	-	2
14.	Cleaner	1	-	-	-	1
15.	Security Guard	1	1	-	0	-
16.	Clerk (Ward/Village)	22	12	10	22	-
	Total	47	18	19		10

Source: Bahan District Office

Similar to district offices, township offices have no right to manage the budget. Township offices manage the budget for office facilities, office staff salaries, and other official expenditures. The chairman of the district planning committee has to organize for the development of respective sectors, although there is no budget allocated for development.

Township offices have duties and rights to collect beverage tax in the township. In the case of Bahan Township, about MMK 100 million of beverage taxes are levied. These taxes are then sent to the Union government.

Apart from the abovementioned township office, the township development committee offices are arranged by YCDC. These offices are not related with the township offices under the Ministry of Home Affairs. Township development offices manage public services, such as:

- Waste collection,
- Road maintenance, and
- Supervision of building (confirmation of legality, demolition of dangerous buildings, and renovation of religious buildings).

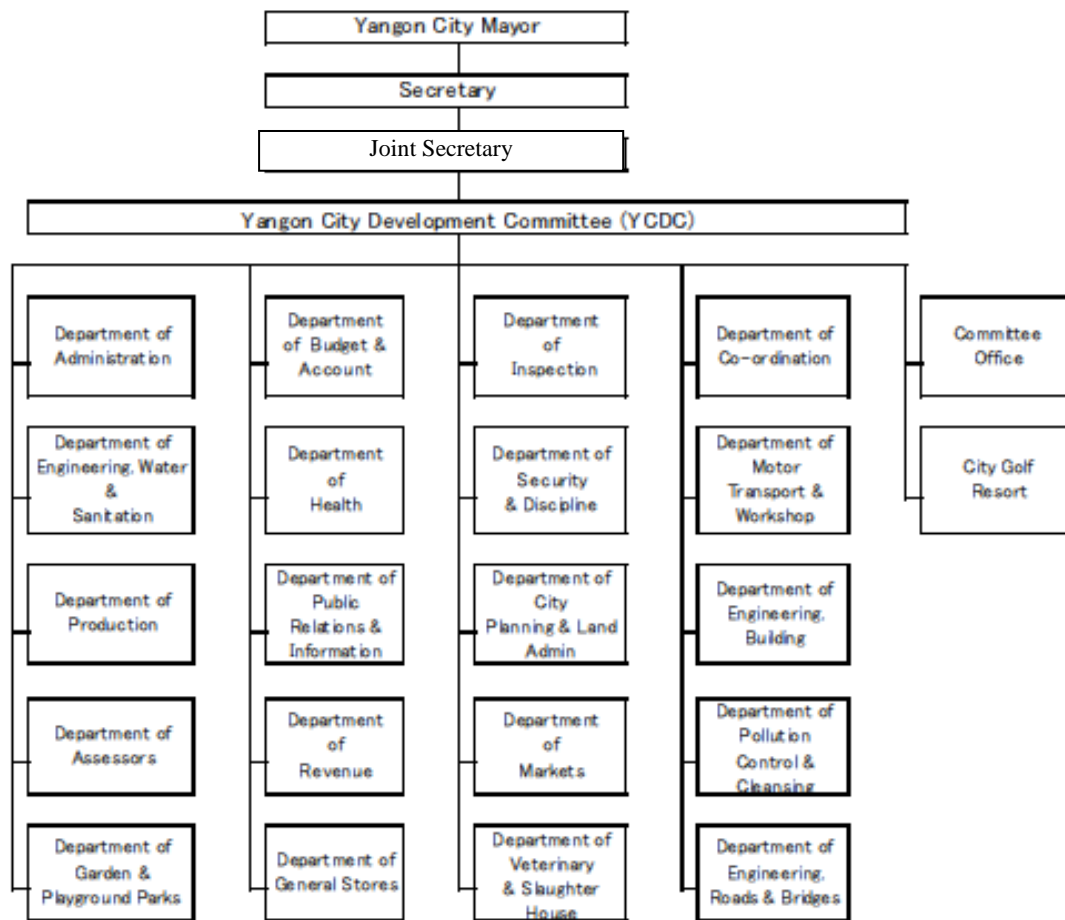
5) Yangon City Development Committee (YCDC)

Yangon is under the administration of YCDC, which also facilitates urban planning. The city is divided into four districts. All districts combined have a total of 33 townships. Each township is administered by an executive officer of the General Administration Department, who decides on city beautification and infrastructure. YCDC consists of 20 departments, and the chairman is also the city mayor. YCDC is under governance of the mayor, secretary, and joint secretary (Figure 2.2.13).

The YCDC is technically independent from the government, and raises its own revenues through tax collection, fees, licenses and property development. The municipal body is expected to have a deficit of MMK 5 billion in 2011-2012 because of its high spending on road construction and purchase of garbage collection vehicles.

There are two kinds of budget allocation for YCDC.

Funds for the operation of work-site operations and general administrative management are provided by the Union government as grant budget. However, expenses for development and projects, which are managed by YCDC, are provided by the Union government as loan budget. Although it is scarcely applied, loan budget scheme makes it difficult for YCDC to promote and implement development.



Source: YCDC

Figure 2.2.13: Organizational Chart of Yangon City Development Council

(3) Demarcation of Legislation

The Constitution defines matters to be related to the Union and Region/State as shown in Table 2.2.6 (as referred to Section 96, 188). Also in Table 2.2.6, matters related to urban development and infrastructure are underlined.

In the areas in Yangon City (or YCDC service area), some of these duties are duplicated and under the responsibility of two organizations. Their demarcations are still unclear.

Project on public works are basically implemented by governmental organizations, and central ministries carry out individual projects corresponding to request by region, state or other local administrative organizations.

The budget of the government is distributed throughout the Yangon Region. However, source of funds of YCDC is limited to its own revenues through tax collection, fees, licenses, and property development. Lack of coordination between the central ministries, region, and YCDC on the issues of budget makes their demarcation unclear. Moreover, some of the announced projects are difficult to be implemented.

Table 2.2.6: Union and Region/State Legislative List in the Constitution

Union Legislative List (Refer to Section 96)	Region or State Legislative List (Refer to Section 188)
1. Union Defense and Security Sector	(N/A)
2. Foreign Affairs Sector	(N/A)
3. Finance and Planning Sector: (a) The Union Budget; (b) The Union Fund; (c) Currency and coinage; (d) The Central Bank of Myanmar and other financial institutions; (e) Foreign exchange control; (f) Capital and money markets; (g) Insurance; (h) Income tax; (i) Commercial tax; (j) Stamp duty; (k) Customs duty; (l) Union lottery; (m) Tax appeal; (n) Services of the Union; <u>(o) Sale, lease, and other means of execution of property by the Union;</u> (p) Disbursement of loans from the Union Funds; <u>(q) Investment using the Union Funds;</u> (r) Domestic and foreign loans; <u>(s) Acquisition of property for the Union;</u> and (t) Foreign aid and financial assistance.	1. Finance and Planning Sector (a) The Region or State budget; (b) The Region or State fund; <u>(c) Land revenue;</u> (d) Excise duty (excluding narcotic drugs and psychotropic substances); <u>(e) Municipal taxes such as taxes on buildings, lands, water, street lightings, and wheels;</u> (f) Services of the Region or State; (g) Sale, lease, and other means of execution of property by the Region or State; (h) Disbursement of loans in the country from the Region or State Funds; <u>(i) Investment in the country from the Region or State Funds;</u> (j) <u>Local plan;</u> and (k) Small loan business.
4. Economic Sector	2. Economic Sector
5. Agriculture and Livestock Breeding Sector (a) <u>Land administration;</u> (b) <u>Reclamation of vacant, fallow, and virgin lands;</u> (c) <u>Settlement and land records;</u> (d) Land survey; (e) Dams, embankments, and irrigation works managed by the Union; (f) Meteorology, hydrology, and seismic survey; (g) Registration of documents; (h) Mechanized agriculture; (i) Agricultural research; (j) Production of chemical fertilizers and insecticides; (k) Marine fisheries; and (l) Livestock proliferation, prevention, and treatment of diseases and research works.	3. Agriculture and Livestock Breeding Sector (a) Agriculture; (b) <u>Protection against and control of plants and crop pests and diseases;</u> (c) Systematic use of chemical fertilizers and systematic production and use of natural fertilizers; (d) Agricultural loans and savings; <u>(e) Dams, embankments, lakes, drains, and irrigation works having the right to be managed by the Region or State;</u> (f) Freshwater fisheries; and (g) Livestock breeding and systematic herding in accordance with the laws enacted by the Union.
6. Energy, Electricity, Mining, and Forestry Sectors	4. Energy, Electricity, Mining, and Forestry Sectors
7. Industrial Sector (a) Industries to be undertaken by the Union level; <u>(b) Industrial zones;</u> (c) Basic standardization and specification for manufactured products; (d) Science and technology and research thereon; (e) Standardization of weights and measures; and (f) Intellectual properties such as copyrights, patents, trademarks, and industrial designs.	5. Industrial Sector <u>(a) Industries other than those prescribed to be undertaken by the Union level;</u> and (b) Cottage industries.
8. Transport, Communication and Construction Sector (a) <u>Inland water transport;</u> (b) <u>Maintenance of waterways;</u> <u>(c) Development of water resources and rivers and streams;</u> (d) Carriage by sea; <u>(e) Major ports;</u> (f) Lighthouses, lightships, and lighting plans; <u>(g) Ship building, repair, and maintenance;</u> <u>(h) Air transport;</u> <u>(i) Air navigation and control, and airfield construction;</u> <u>(j) Land transport;</u> <u>(k) Railways;</u> <u>(l) Major highways and bridges managed by the Union;</u> (m) Posts, telegraphs, telephones, fax, e-mail, internet, intranet, and similar means of communication; and (n) Television, satellite communication, transmission and reception, and similar means of communication, and housing and buildings.	6. Transport, Communication and Construction Sector (a) <u>Ports, jetties and pontoons having the right to be managed by the Region or State;</u> (b) <u>Roads and bridges having the right to be managed by the Region or State;</u> and (c) Systematic movement of private-owned vehicles within the Region or State.

Union Legislative List (Refer to Section 96)	Region or State Legislative List (Refer to Section 188)
<p>9. Social Sector</p> <p>(a) Educational curricula, syllabus, teaching methodology, research, plans, projects, and standards; (b) Universities, degree colleges, institutes, and other institutions on higher education; (c) Examinations prescribed by the Union; (d) Private schools and training; (e) National sports; (f) National health; (g) Development of traditional medicinal science and medicines; (h) Charitable and private hospitals and clinics; (i) Maternal and child welfare; (j) Red Cross Society; (k) Prevention from adulteration, manufacture and sale of food, drugs, medicines, and cosmetics; (l) Welfare of children, youth, women, disabled, senior citizens, and homeless; (m) Relief and rehabilitation; (n) Fire Brigade; (o) Working hours, resting hours, holidays, and occupational safety; (p) Trade disputes; (q) Social security; (r) Labor organizations; (s) Management by the Union on the following: (i) Ancient culture or historical sites, buildings, monuments, records, stone inscriptions, ink inscriptions on stucco, palm-leaf parabaiks, handwritings, handiworks, inanimate objects, and archaeological works; and (ii) museums and libraries; (t) Literature, dramatic arts, music, traditional arts and crafts, cinematographic films and videos; and (u) Registration of births and deaths.</p>	<p>7. Social Sector</p> <p>(a) Matters on traditional medicine not contrary to traditional medicine policies prescribed by the Union; (b) Social welfare works within the Region or State; <u>(c) Preventive and precautionary measures against fire and natural disasters;</u> (d) Stevedoring; (e) Proper management by the Region or State on the following: <u>(i) preservation of cultural heritage and (ii) museums and libraries;</u> (f) Theatres, cinemas, and video houses; and (g) Art exhibitions such as photographs, paintings, and sculptures.</p>
<p>10. Management Sector</p> <p>(a) General administration; (b) Administration of town and village land; (c) Tenants; (d) Narcotic drugs and psychotropic substances; (e) Union secrets; (f) Associations; (g) Prisons; (h) Development of border areas; (i) Census; (j) Citizenship, naturalization, termination and revocation of citizenship, citizenship scrutiny, and registration; and (k) Titles and honors.</p>	<p>8. Management Sector</p> <p><u>(a) Development matters; (b) Town and housing development;</u> and (c) Honorary certificates and awards.</p>
11. Judicial Sector	(N/A)

Source: Constitution of the Republic of the Union of Myanmar

(4) Demarcation of Related Organizations to Urban Planning and Development Matters

- 1) Duties and responsibilities of related organizations to comprehensive urban planning and other development matters

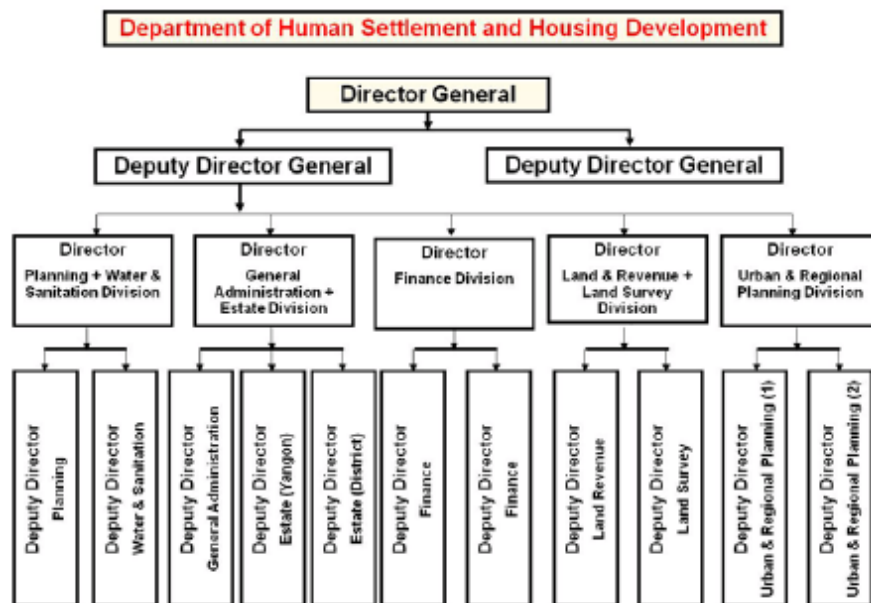
The following three organizations and committees are related to urban planning and other development matters in Yangon City:

(1) *Department of Human Settlement and Housing Development (DHSHD), Ministry of Construction (MOC)*

The Department of Public Works and DHSHD of MOC are involved in urban planning and development in Myanmar. DHSHD is mostly concerned with urban planning matters.

DHSHD and its predecessor have been carrying out the development of houses, urban areas, satellite towns, and new towns in Yangon throughout the pre-war and post-war periods.

Figure 2.2.14 shows the organizational chart of DHSHD. The Urban and Regional Planning Division is in charge of urban development and planning matters.



Source: Department of Human Settlement and Housing Development

Figure 2.2.14: Organization of DHSHD, Ministry of Construction

The responsibilities of DHSHD are as follows:

- Planning and implementation of urban development project,
- New town development,
- Management and development of properties of the Union government,
- Industrial park development, and
- Investment activities through joint venture scheme.

One director, two deputy directors, eight assistant directors, and 16 planners (27 members in total) belong to the Urban and Regional Planning Division. Most of the members obtained their degrees on urban planning from universities abroad.

DHSHD has collaborated with private companies in implementing urban and industrial development projects, and most of these projects are located in the city of Yangon. After the establishment of YCDC in 1990 in accordance with the “City of Yangon Development Law”, there has been a conflict between the two organizations regarding the responsibility on urban development in Yangon City.

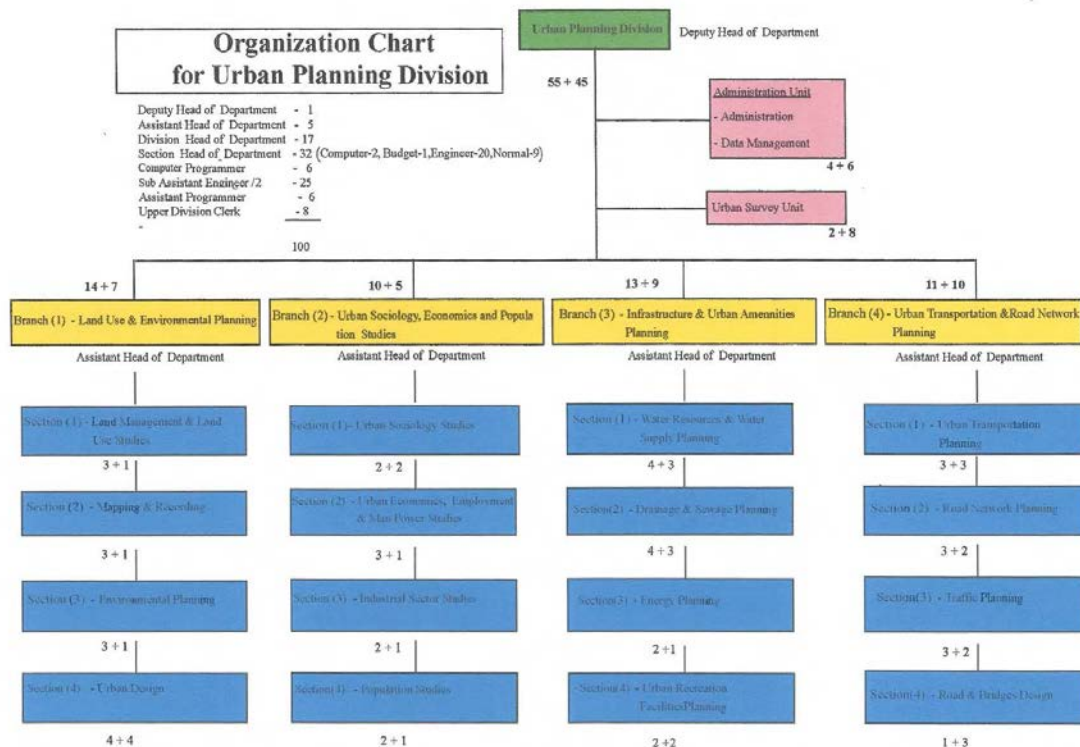
In recent years, the functions and responsibilities of DHSHD are intended to shift from being a provider of houses towards being a facilitator, enabler, and regulator of urban development.

(2) *Department of City Planning and Land Administration, Yangon City Hall*

The Department of Planning and Land Administration is responsible for urban planning matters in YCDC. However, after 1990, the department is mostly involved in land administration issues, and less on urban planning matters. In order to strengthen the urban planning capacity of the department, the Urban Planning Division (UPD) was established under the department.

The urban planning unit is composed of following five technical sections as follows (please refer to Figure 2.2.15):

- Land Use and Environmental Planning,
- Urban Sociology, Economics and Population Studies,
- Infrastructure and Urban Amenities Planning, and
- Urban Transportation and Road Network Planning.



Source: YCDC

Figure 2.2.15: Organization of YCDC Urban Planning Division

(3) Planning Implementation Committee

In order to formulate the National Comprehensive Development Plan (NCDP) 2012-2031, the Ministry of National Planning and Economic Development requested the region and state governments, district offices, and township offices to organize a planning implementation committee (PIC) in each administrative level. The NCDP intends to clarify the plans on economic development, social development, and environmental development.

These administrative organizations, individual departments of ministries, and international donors were requested to offer their necessary information to discuss their vision, evaluate the related plans, and give their opinions and suggestions.

The NCDP was planned to be formulated in December 2012, and expected to be disclosed in January 2013. From 2013, the budget for each development project is planned to be allocated in accordance with the plan. Therefore, the plan might show the general direction of development in the Union by sector through budget allocation.

In Yangon City, committees in the region, district, and township levels were established and meetings were held. In Hlaing Township, there are 15 members of the committee who hold meetings monthly. The committee consists of 13 township officers, one YCDC officer (appointed by the Union government), and one non-official person in the district. The non-official person is expected to financially support the execution of projects.

Some townships (such as the Hlaing Township office) held frequent discussions with YCDC in order to collect necessary information. Meanwhile, other townships (such as the Bahan Township) have not contacted YCDC about this matter.

(4) *Other coordination between related organizations*

For urban planning matters and development projects, coordination between related ministries and related administrative organizations is indispensable. To recognize this necessity, a coordination meeting has been held with the Ministry of Construction, Ministry of Agriculture and Irrigation, and other related ministries in August 2012 in the central government level.

As for the region and city level, Mandalay City has established a coordination system with central ministries and region offices regarding urban planning and development matters.

2) **Duties and Responsibilities of Related Organization to Sector Planning, Development and Public Service Matters**

This section describes the outline of duties and responsibilities of administrative organizations related to urban planning, development, and infrastructure. Related information is based on the results of interviews with the departments of administrative organizations for different levels, agencies, and other public service organizations. The result is classified according to responsible organization for planning and decision-making, and for implementation and operation.

(1) *Planning by Union, Implementation by Union*

Planning, budget preparation, implementation, and operation of educational facilities and health service facilities are under the responsibilities of the Union government ministries. Parts of related works are executed by the lower administrative offices such as townships, but are based on the orders of the Union government.

Also, electrical power transmission is fully planned and managed by the Union ministry.

Table 2.2.7: Duties and Responsibilities of Related Sector Organizations (1)

Related Sector, Development, and Public Service Matters	Planning, Budget Planning, and Decision Making		Implementation, Operation, and Maintenance	
	Organization Category	Responsible Organization/ Department	Organization Category	Responsible Organization/ Department
[Educational facilities] Establishment and operation of basic educational facilities	Union	Ministry of Education, Department of Basic Education	Union	Ministry of Education, Department of Basic Education
Establishment and operation of higher educational facilities	Union	Ministry of Education, and 12 other Union ministries	Union	Ministry of Education, and 12 other Union ministries
[Health service facilities] Establishment and operation of large-scale hospitals Providing permits for small-scale hospitals	Union	Ministry of Health	Union (Region and Township)	Ministry of Health
[Electricity] Power transmission	Union	Ministry of Electric Power, Department of Electric Power	Union	Ministry of Electric Power, Department of Electric Power

Source: JICA Study Team

(2) *Planning by Public Organization, Implementation by Public Organization*

Some regional public transportation services and electrical power distribution service (shown in Table 2.2.8) are planned and provided by public organizations.

Table 2.2.8: Duties and Responsibilities of Related Sector Organizations (2)

Related Sector, Development and Public Service Matters	Planning, Budget Planning, and Decision Making		Implementation, Operation, and Maintenance	
	Organization Category	Responsible Organization/ Department	Organization Category	Responsible Organization/ Department
[Public transport and relating facility] To ensure convenience in the movement of transport modes.	Board	Yangon Road Division and Inland Water Transport Board	Board	Yangon Road Division and Inland Water Transport Board
Operation and management of inland waterway transportation	Public Company	Inland Waterway Transport	Public Company	Inland Waterway Transport
Operation and management of shipyard	Public Company	Myanmar Shipyard	Public Company	Myanmar Shipyard
Issuance of permits for construction of ports and port	Authority	Yangon Port Authority (Ministry of Transport)	Authority	Yangon Port Authority (Ministry of Transport)
[Electricity] Power distribution	Public Organization	Yangon City Electricity Supply Board	Public Organization	Yangon City Electricity Supply Board

Source: JICA Study Team

(3) *Planning by Region, Implementation by Public Organization*

The region government is involved in planning of some regional public transportation services. Its operation is mainly executed by the administrative committee and Union-owned company.

Table 2.2.9: Duties and Responsibilities of Related Sector Organizations (3)

Related sector, development and public service matters	Planning, Budget Planning, and Decision Making		Implementation, Operation, and Maintenance	
	Organization Category	Responsible Organization/ Department	Organization Category	Responsible Organization/ Department
[Public transport] Examination of transport policies for the region	Region	Ministry of Transport, Ministry of Communication and Information Technology, and Ministry of Sports	N/A	N/A
	Region	Transport Department	N/A	N/A
	Committee (Region level)	Yangon Division Security and Smooth Transport Supervisory Committee	N/A	N/A
Supervision of individual bus line associations and private bus companies	N/A	N/A	Committee (chaired by region)	Yangon Division Central Supervisory Committee for Motor Vehicles and Vessels
Mobilization of road, inland water, and coastal transport	N/A	N/A	Union-owned company	Inland Water Transport Board
Operation of rail transport	N/A	N/A	Union-owned company	Myanmar Railway

Source: JICA Study Team

(4) *Implementation by Public Organization*

Operation of some reservoirs is under the responsibility of the region ministry. Other reservoirs, which are used for water supply in Yangon City, are operated by YCDC as discussed in Item 5).

Table 2.2.10: Duties and Responsibilities of Related Sector Organization (4)

Related sector, development and public service matters	Planning, Budget Planning, and Decision Making		Implementation, Operation, and Maintenance	
	Organization Category	Responsible Organization/ Department	Organization Category	Responsible Organization/ Department
[Water supply] Operation of some reservoirs	N/A	N/A	Region	Ministry of Agriculture and Irrigation

Source: JICA Study Team

(5) *Planning by YCDC, Implementation by YCDC*

Duties shown in Table 2.2.11 are planned and executed by YCDC. These public services are related to work-site operations.

Study on effective use of lands owned by Yangon City is under the responsibility of the Department of Engineering, Buildings. It is expected to be realized in collaboration with private companies.

Table 2.2.11: Duties and Responsibilities of Related Sector Organization (5)

Related Sector, Development, and Public Service Matters	Planning, Budget Planning, and Decision Making		Implementation, Operation, and Maintenance	
	Organization Category	Responsible Organization/ Department	Organization Category	Responsible Organization/ Department
[Water supply] Water source development and water supply management	YCDC	Department of Engineering, Water and Sanitation	YCDC	Department of Engineering, Water and Sanitation
Reservoir ownership and operation, and future construction planning	YCDC	Department of Engineering, Water and Sanitation	YCDC	Department of Engineering, Water and Sanitation
			Region	(Ministry of Agriculture and Irrigation)
[Waste collection] Waste collection and future equipment planning	YCDC	Pollution Control and Cleansing Department	YCDC	Pollution Control and Cleansing Department
[Land utilization plan] Land utilization planning for city-owned land	YCDC	Department of Engineering, Buildings	N/A	N/A

Source: JICA Study Team

(6) *Planning by Region, Implementation by YCDC*

For road maintenance, the Department of Engineering, Roads and Bridges of YCDC is responsible for survey on current road conditions and reporting to the region government. A maintenance plan will be formulated by the Union and region governments based on the collected road information, and then the budget will be allocated.

In this case, the planning responsibility is taken by region (Union) government, while construction works are done by YCDC Department of Engineering.

Table 2.2.12: Duties and Responsibilities of Related Sector Organization (6)

Related Sector, Development and Public Service Matters	Planning, Budget Planning, and Decision Making		Implementation, Operation, and Maintenance	
	Organization Category	Responsible Organization/ Department	Organization Category	Responsible Organization/ Department
[Road and bridge maintenance] Road and bridge maintenance	Region (YCDC)	Department of Engineering, Roads and Bridges	YCDC	Department of Engineering, Roads and Bridges

Source: JICA Study Team

(7) *Sector Mostly Concerning Maintenance Activity*

The following public services are operation and maintenance works on existing infrastructure facilities. These facilities were constructed before independence, thus, these responsible departments do not have capacities for planning and implementation of new facilities.

Table 2.2.13: Duties and Responsibilities of Related Sector Organization (7)

Related Sector, Development and Public Service Matters	Planning, Budget Planning, and Decision Making		Implementation, Operation, and Maintenance	
	Organization Category	Responsible Organization/ Department	Organization Category	Responsible Organization/ Department
[Drainage] Maintenance and improvement of drainage streams	N/A	N/A	YCDC	Department of Engineering, Roads and Bridges
[Sewage] Maintenance and improvement of sewage facilities	N/A	N/A	YCDC	Department of Engineering, Water and Sanitation
[Park management] Management of parks	N/A	N/A	YCDC	Department of Garden and Playground Parks

Source: JICA Study Team

(8) *Conclusion*

The following summarizes and concludes the abovementioned matters:

- Public service of work-site operations such as water supply, sewerage, and waste collection are planned and executed by related departments of YCDC;
- Maintenance of road and transport infrastructure is executed by YCDC. However, planning and budget allocation are done by region and Union ministries;
- Responsibility on urban planning and its execution has not yet been clearly defined. Considering that YCDC's responsibility on building permission is only limited for small-scale buildings, it is thought that future responsibility will be also limited within a certain scale of development or construction; and
- Core infrastructure facilities and public facilities are planned and operated by the Union, region government, and related agencies. District and township offices execute necessary works according to orders by the Union and region government, if necessary.

(5) Responsibilities and Duties of Departments of YCDC

YCDC consists of 20 departments. Duties and responsibilities of each department of YCDC are described in the permanent order for staff to follow (Yangon City Development Committee, 04/2004).

Some duties are not being executed even though described in the document, because some are being executed by other administrative organizations such as the Union, region, district, and township offices. The following describe the duties of each department related to urban planning and development matters:

1) Department of Land Administration and Urban Planning

The Department of Land Administration and Urban Planning is responsible for the implementation of urban planning and development matters. Its responsibility includes the execution of implementation and development as stated in the document, but its realization is quite difficult due to lack of budget.

Duties and Responsibilities of the Department

- 1) Conducting researches, social survey, and housing survey to gauge the housing requirements of the citizens in the city.
- 2) Proposing and finance funding for planning of housing projects not through the government funds but by other private funds based upon the housing requirements, living standards and income levels of the public, availability of the citizens to pay house rents and housing demands, availability of construction materials, and locations.
- 3) Reporting the proposed planning for housing projects to concerned departments and implementing the projects as necessary in the Yangon City area.
- 4) Developing infrastructure and other necessary buildings for the constructed housing projects.
- 5) Proposing yearly projects and implementing new township exploration and new quarter development.
- 6) Recording the lists of completed projects and constructed buildings.
- 7) Inspecting construction sites and progress to be in accordance with the rules, procedures and regulations, and to be completed in a given period of time.
- 8) Publishing and advertising knowledge and information on land administration matters and urban planning to the public for accessibility.
- 9) Recording and archiving land plots according to land types in list of lands, recording the area of a land plot in the City map, and computerizing data for the history of maps to be appropriate with the current situation.
- 10) Drawing and planning urban development projects for the changing process of the City's businesses and socio-economic sectors.
- 11) Drawing and planning infrastructures and land plot of urban development projects in Yangon City.
- 12) Drawing financial or budget plans for the planned projects.
- 13) Drawing and implementing detailed plans on the upgrading projects of the city assigned by the Committee.
- 14) In performing such duties and responsibilities, implementing in accordance with the current rules and regulations of the YCDC laws and bylaws.
- 15) Performing land administration matters like issuing land grant, altering the name of a land, upgrading grant period, and issuing history of maps in accordance with the current procedures and given time frame.
- 16) If the applicants for matters described in the above 15 phrases, with affirmative property reports and no remarks on the city land lists, no objections, no denials and no other complications, the department shall take action within the given time frames:
- 17) Proposing and drawing plans for the procedures and policies which require amendments, and managing or supervising in accordance with the current procedures of land administration

Source: "Permanent Order for Staff to Follow", YCDC, 04/2004

2) Department of Engineering, Building

Responsibility of the Department of Engineering, Building is mainly inspecting existing buildings and issuing permits for new buildings to be constructed. Its responsibility includes preparation of budget plan and execution plan. For these duties, the department studies development projects that are concerned with the effective use of land owned by Yangon City, collaborating with private companies. However, YCDC is having difficulties conducting development projects because there is no allocated budget for this activity.

Duties and Responsibilities of the Department

- 1) Drafting the short- and long-term budget plans for the construction sector for the whole YCDC.
- 2) Participating in drafting urban planning projects
- 3) Participating in national ceremonies and festivals
- 4) Inspecting and prosecuting the squatters in cooperation with concerned departments, managing the land and properties of the Committee, recording and maintaining the properties of the Committee, and supervising the staff quarters of the Committee.
- 5) Inspecting, permitting, suspending, and cancelling construction projects in accordance with the laws and bylaws in Yangon City.
- 6) Directing, inspecting, and supervising the construction projects to cope with the characteristics of Yangon City.
- 7) Specifying of populations and floor area for each room or each building of all construction in the city.
- 8) Inspecting, demolishing and prosecuting projects which are found constructing without permission and violating the permitted structures.
- 9) Inspecting and permitting residences upon the completion of permitted construction projects in the Yangon City area.
- 10) Inspecting, directing to rebuild, demolishing, and reconstructing old and dangerous structures in the city.
- 11) Issuing, upgrading, suspending, prosecuting, withdrawing, and cancelling of licenses for contractors and engineers.
- 12) Inspecting, levying, and demolishing structures occupying the property of the Committee; inspecting and levying upon the accumulation of construction materials within the property of the Committee; and levying, withdrawing, and prosecuting commercial advertisements.
- 13) Demolishing structures within the squatters compound and relocating of squatters.

Source: "Permanent Order for Staff to Follow", YCDC, 04/2004

3) Department of Engineering, Roads and Bridges

The responsibilities of the Department of Engineering, Roads and Bridges are mainly road construction and maintenance. The department collects information on actual conditions of roads and reports the necessity of maintenance to the region government. Planning on budget allocation is done by the Union and region government. Based on their decision, the YCDC Department of Engineering executes construction works using city-owned machines and vehicles. Road planning at the urban planning level is under responsibility of the Union or region government.

Duties and Responsibilities of the Department

- 1) Maintaining main roads and bridges in the city development area.
- 2) Constructing new roads and expansion of roads
- 3) Constructing, expanding, and maintaining pavements, platforms, ditches and gutters.
- 4) Setting, maintaining, and repairing traffic signal lights to prevent accidents and heavy traffic at junctions.
- 5) Implementing part-time parking spaces to avoid heavy traffic in certain locations.
- 6) Setting and maintaining sign boards and other boards mentioning the rules and regulations on roads and traffic.
- 7) Drawing indicator lines on roads.
- 8) Planning and developing new bus routes and bus stops.
- 9) Assigning some roads as one-way, if necessary.
- 10) Identifying no-entry zones and parking lots for trucks and passengers buses.
- 11) Providing street lights along roads for better road conditions.
- 12) Constructing pedestrian bridges and road dividers or fences for public safety.
- 13) Planning to prevent heavy traffic in the city area from tricycles, trishaws, bicycles and other slow moving vehicles.
- 14) Importing, ordering, storing, and manufacturing required materials and parts.
- 15) Manufacturing asphalt, concrete, rock-crackers, and stone blocks.
- 16) Maintaining asphalt and concrete mixers and rock-crackers.
- 17) Conducting budget plans for the department.
- 18) Constructing and maintaining cross-over and creek-over bridges.
- 19) Coordinating with other departments in setting up telephones in the required work places.
- 20) Repairing and renewing lamp posts and light bulbs.
- 21) Planning the expansion of roads, construction of new roads, exploring potential parking lots, terminals, and no-parking zones for better road and traffic conditions.
- 22) Maintaining roads, bridges, gutters, and ditches for drainage in the city.
- 23) Preparing records and recording of the constructed plans and budget plans for each fiscal year.

Source: "Permanent Order for Staff to Follow", YCDC, 04/2004

4) Department of Engineering, Water and Sanitation

Below are the duties and responsibilities of the Department of Engineering, Water and Sanitation. The department covers necessary duties including planning, budgeting, construction, and operation within the department.

Duties and Responsibilities of the Department (extract)

- 1) Developing plans and projects on water supply for the citizens, and declaring the required laws and orders in accordance with the procedures.
- 14) Operating and maintaining the Hlawka water pump station, Phuu Gyi water pump station, Nga Moe Yeik water pump station and other additional water pump stations.
- 22) Conducting construction, maintenance and repairs concerned with sewerage and sanitation systems.
- 23) Drawing plans and projects on water supply, searching potential water resources and drainage, and extending drainage lines, and then applying for approval from the Committee and performing the required procedures.
- 25) Drawing and preparing short- and long-term plans for projects, budget plans, and income reports for better development and progress.

Source: "Permanent Order for Staff to Follow", YCDC, 04/2004

5) Department of Pollution Control and Cleaning

Below are the duties and responsibilities of the Department of Engineering, Pollution Control and Cleaning. The department is concerned with work-site operations and planning.

Duties and Responsibilities of the Department (extract)

- 4) Commanding other departments and office locations which are not levied by the Committee for waste management to dispose their wastes to final disposal sites recommended by the Committee.
- 5) Developing plans for the disposal of collected wastes.
- 8) Exploring cemeteries systematically for better burial and cremation processes.

Source: "Permanent Order for Staff to Follow", YCDC, 04/2004

6) Department of Garden and Playground Parks

Below are the duties and responsibilities of the Department of Garden and Playground Parks. Its duties are mainly concerned with construction and maintenance works.

Duties and Responsibilities of the Department (extract)

- 7) Developing and maintaining scenic spots, green spaces in required locations, flowers and plants, and flowers along the traffic island.
- 11) Developing and planting shady and forestry trees in vacant spaces to improve the environment conditions in the Yangon City areas.
- 14) Implementation of green projects in the Yangon City areas.

Source: "Permanent Order for Staff to Follow", YCDC, 04/2004

7) Other Departments

The following departments play limited roles related to urban planning and development:

- Department of Health: This department is involved in monitoring food qualities. This department examines sanitary conditions and food qualities of restaurants and food stores.
- Department of Markets: This department operates the YCDC markets (publicly-owned shopping markets) in Yangon City.
- Department of General Stores: This department collects information about shops. This department creates databases about the categories and locations of shops. The department also offers information on the current situation of shops in the area to new shop owners in order to avoid business competition.

(6) Planning Implementation Committee

Aiming to revise and replace the "National Plan 2011-2016" and to prepare the "National Comprehensive Development Plan 2012-2031", the Union Ministry of National Planning and Development requested the Union ministries, region and state governments, and district and township offices to create committees to report i) current issues, ii) decisions on future development policy, and iii) priority and necessity of candidate subjects.

The subject of committee closely relates to urban development and implementation of projects. Future budget plan of development and construction of infrastructure is expected to be formulated based on this plan.

Related information from the local government (region, state, district, and township) was requested to be submitted until December 2012, as the plan was expected to be formulated in early January 2013.

As soon as the draft plan has been formulated, it was planned to be disclosed to relevant organizations, including international donors. The results at present are unconfirmed.

For the PIC, the following activities were undertaken:

(i) Regional government

Current problems on sector issues and regional matters were discussed, and candidate projects were proposed. The details on the result have not been disclosed at present.

(ii) District and township offices

The committee was organized by the district and township officers and representatives of the residents. Current problems and development policies were discussed and reported to higher administrative organizations. Issues discussed include spatial improvement and urban development matters.

The JICA Study Team and counterpart officers of YCDC requested further information from several relevant district and township offices, but it has not been disclosed at present.

(iii) YCDC

YCDC was not requested to be involved with PIC by the Union and region governments. Some of the departments of YCDC were requested to offer information on the current situation of infrastructure facilities.

(7) Key Findings and Main Issues to be Addressed for Administrative Organization Framework

Key findings in the course of reviewing the organizational setting of YCDC and related agencies are as follows:

- 1) On the national sphere, the MOC has a department in charge of urban planning, namely DSHSD, which has long been conducting urban planning and development within Myanmar. DSHSD is changing its role to become a national regulator while leaving the responsibilities of formulating and implementing urban plans to the region government.
- 2) The responsibilities of the Union, region and designated cities like Yangon are not clearly defined, thus there is some room for duplication and coordination.
- 3) YCDC is the implementing agency for urban planning over its governed area administered by the YCDC law. On top of YCDC is the Yangon Region, which is one of the 14 Regions established under the new constitution.
- 4) YCDC has established its Urban Planning Division (UPD) within its administrative branch. The division is staffed by young officials who may not have enough specialized training in urban planning. Thus, capacity development is highly required.
- 5) There seem to be some conflicts on the functions between YCDC and DSHSD that may need to be adjusted and settled. As the national regulator and primary implementing agency for urban planning under the new constitution of Myanmar, these two organizations must coordinate well with mutual trust.

With regard to the functions and roles of the counterpart organization, the UPD of YCDC, the following issues are conceived:

- 6) UPD, as it is a newly formed organization, still seems to lack skills on implementation of urban planning matters. Planning and research capabilities are expected to be improved through

on-the-job training and lectures, which will be offered in part by UN-Habitat and the JICA Study Team. Implementation for the following aspects should be considered:

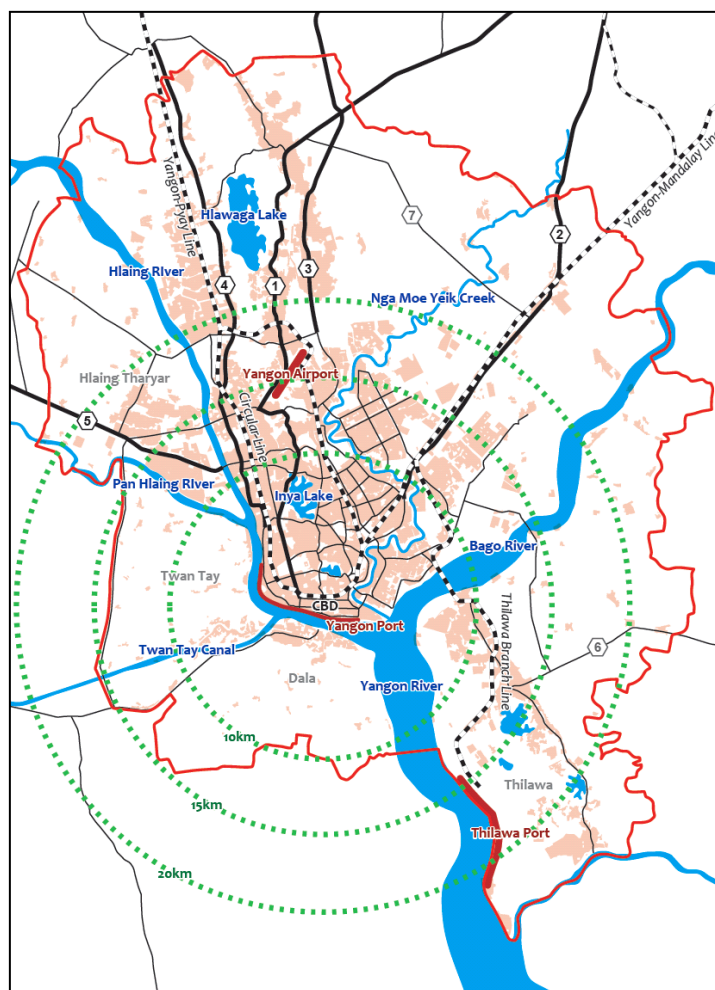
- Formalization of the plan as official planning document
 - Legalization as law, bylaws, or related regulations, and
 - Controlling procedures
- 7) Construction approval by the Department of Engineering (Buildings) is a means for controlling the future urban space according to the urban master plan. However, the control on applications mostly covers individual buildings, and may not be effective on large-scale urban development (e.g. construction of future public facilities such as roads, parks, schools, hospitals, and large-scale infrastructure).
- 8) Building relationships with the related departments of YCDC, region ministries, and Union ministries are necessary to secure sustainability in formulating plans and the corresponding implementation. The current situation is considered insufficient to execute the abovementioned matters. Also, close relationships with ministries are indispensable to the implementation of the proposed projects and preparation of necessary budget.
- 9) Unclear status of counterpart organization: Responsibility and duties of the Department of City Planning and Land Administration is described in the “City of Yangon Development Law (1990)” and other official documents of YCDC. In these documents, city planning and its implementation are duties of the said department. But the legal status of YCDC was not mentioned in the Constitution (2008), and the demarcation between the Union ministries, region ministries, and Yangon City is unclear.

2.2.4 Present Land Use

(1) Urban Structure Overview

The future urban area of Greater Yangon consists of a total of 39 townships, 33 townships of which are under YCDC's jurisdiction and some parts of six periphery townships, are set as the Planning Area. The total Planning Area is approximately 1,500 km² as shown in Figure 2.2.16. In 2002, Greater Yangon has an urbanized area which expands with an area of approximately 505 km² (see the next page for detail). The urbanized area was originally developed around Shwe Dagon Pagoda and along the Yangon River areas which still perform as the city center of Yangon today, namely the Central Business District (CBD) with high density of houses and shops. Urban central functions including administration, banking, business and commerce are located in the CBD and it is likely that this current status does and will cause serious urban issues such as traffic jams, despite some urban functions, especially shopping centers, tend to be transferred from CBD to outwards the city area.

Looking at the overall spatial structure of Greater Yangon as shown in Figure 2.2.16, its urbanization tends to have expanded northwards and eastwards rather than southwards and westwards. Currently, approximately the area in the radius of 15-20 km from the CBD has been urbanized, except in the south and west. The areas along the major roads have expanded beyond the radius of 20 km, especially along the main roads such as No.4, No.1, and No.3 Main Roads.



Source: JICA Study Team

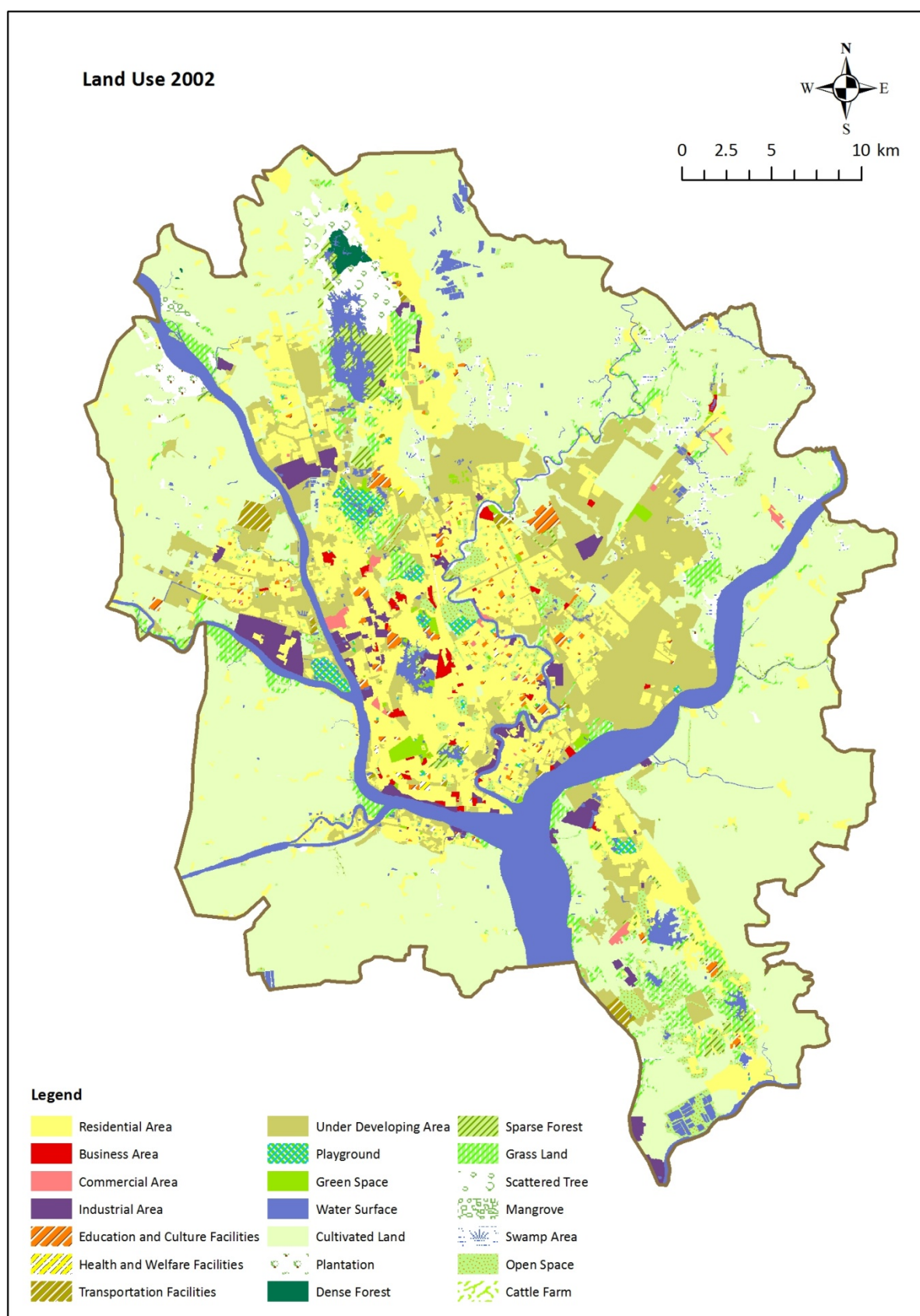
Figure 2.2.16: Current Spatial Structure of Greater Yangon

Considering the current trend of urbanization, the existence of the rivers must be the focal constraints for buffering, and bridge crossing shall play more or less a trigger for urbanization. In Yangon, there are six main rivers or creeks which affect the trend of urbanization, namely the Yangon River, Twante Canal, Pan Hlaing River, Hlaing River, Nga Moeyeik Creek, and Bago River, (clockwise order). The urbanized area of Dala Township (South) and Twantay Township (West) are still small sized in spite of its proximity from the city center, because there is only one bridge respectively to go those townships from the city center with a circular way via northwest, Hlaing Tharyar Township.

The urban transport network of Greater Yangon is developed mainly to form radius roads. The radius roads are No.5 Main Road (to the west), No.4 Main Road (to the north), No.1 Main Road (to the north), No.3 Main Road (to the north), and No.2 Main Road (to the northeast), while the ring road system tends to be formed by an outer ring road (No.7 Main Road). Additionally, a circular railway line exists.

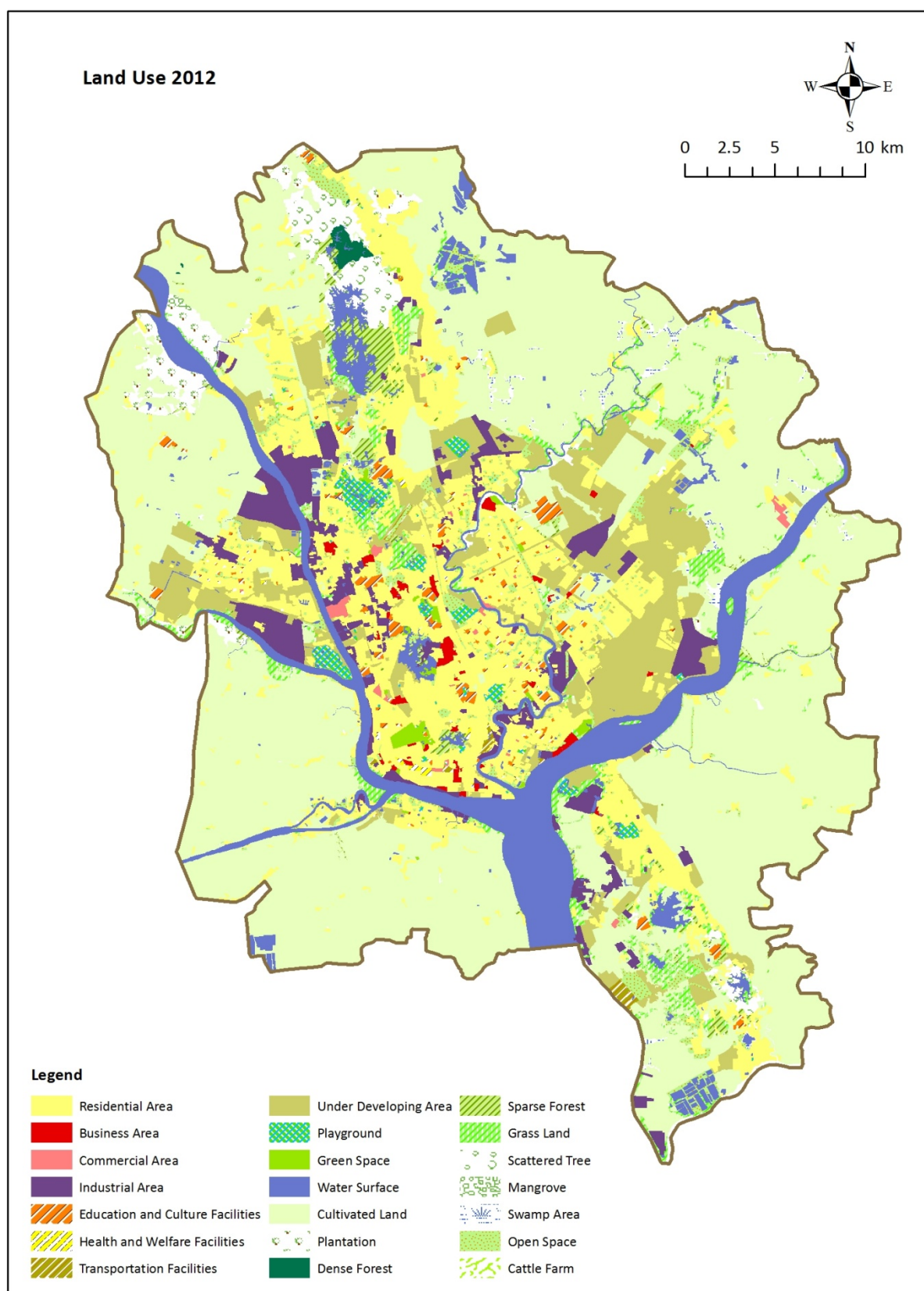
(2) Present Land Use in 2012

A land use pattern in 2012 was developed based on the analysis of satellite imagery with detailed land use categories in the same manner as the land use in 2002 as shown in Figure 2.2.17 and 2.2.18.



Source: GIS database (1:50,000) developed by JICA Study Team with a basis of 2002 Satellite Image Analysis

Figure 2.2.17: Land Use Map of 2002



Source: GIS database (1:50,000) developed by JICA Study Team with a basis of 2012 Satellite Image Analysis

Figure 2.2.18: Land Use Map of 2012

Looking at the land use in 2012 as summarized in Table 2.2.14 and Figure 2.2.19, the dominant land use type was agricultural area, which occupies about 51% of total area, followed by 31% of urbanized areas, which consists of 22% of the built-up area and 9% of under-developing area. Under-developing area is defined as the area that is devised with fundamental works, or is secured for new developments.

Table 2.2.14: Land Use of 2012

Land Use Category	Area (km ²)	%
Built-up Area	360.7	22%
Under Developing Area	139.7	9%
Agricultural Area	815.8	51%
Playground	11.5	1%
Open Space	36.4	2%
Water Surface	139.9	9%
Green Area	96.3	6%
Total	1,600.3	100%

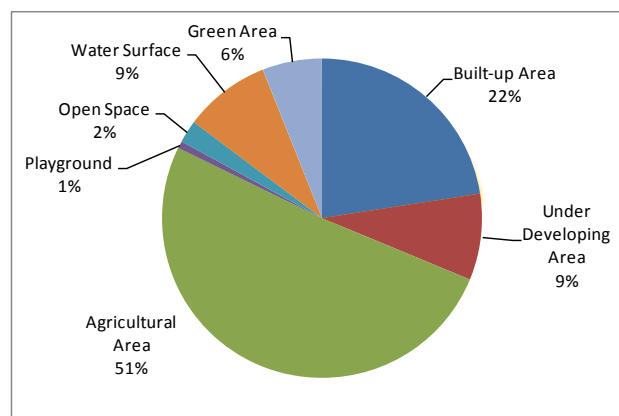


Figure 2.2.19: Land Use of 2012

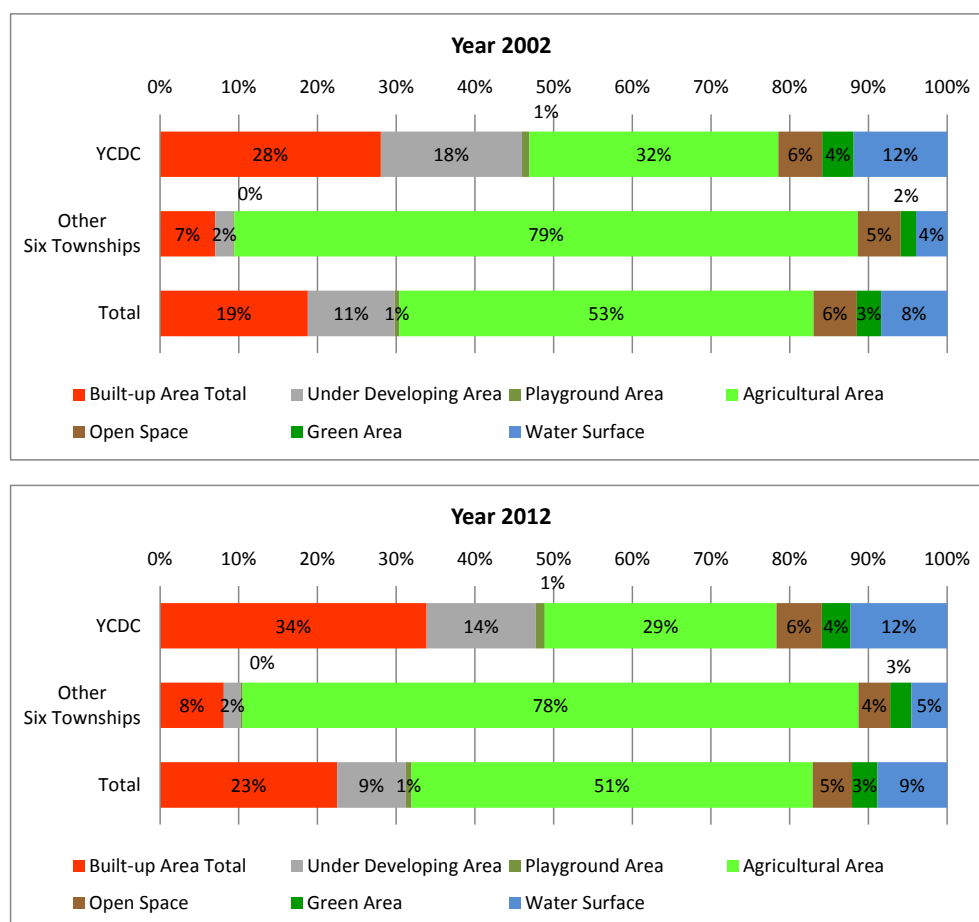
Source: GIS database (1:50,000) developed by JICA Study Team with a basis of 2012 Satellite Image Analysis

Next, looking at the land use in 2002 and 2012 as summarized in Table 2.2.15 and Figure 2.2.20. Compared with the area of YCDC and the peripheral six townships, the proportion of land use was different. In 2012, the dominant land use type in YCDC was urbanized area, which consists of 34% of built-up area and 14% of under developing area. Under developing area is defined as the area that is devised with fundamental works, or is secured for new developments. The urbanization area in YCDC tends to increase in the last decade. More potential of urban development seems to be found in YCDC. Meanwhile, the periphery townships surrounding YCDC are occupied by agricultural areas which made up 78% of the total land. In the past decade, major changes of land use composition have not been identified.

Table 2.2.15: Land Use of 2002 and 2012 (ha)

	Built-up Area Total	Under Developing Area	Playground Area	Agricultural Area	Open Space	Green Area	Water Surface	Total
2002	30,000	17,700	900	84,200	8,800	4,900	13,400	160,000
YCDC	25,100	16,000	900	28,300	5,000	3,600	10,600	89,500
Periphery Townships	5,000	1,600	100	55,900	3,800	1,400	2,800	70,600
2012	36,000	13,900	1,200	81,600	8,000	5,200	14,200	160,000
YCDC	30,300	12,400	1,000	26,300	5,100	3,300	11,000	89,500
Periphery Townships	5,700	1,500	100	55,200	2,800	1,900	3,200	70,600

Source: GIS database (1:50,000) developed by JICA Study Team on the basis of the 2012 Satellite Image Analysis



Source: GIS Database (1:50,000) developed by JICA Study Team with a basis of 2012 Satellite Image Analysis

Figure 2.2.20: Land Use of 2002 and 2012

With regard to the detailed land use ratio for built-up area, residential areas dominate with 17.0% of total area, followed by 3.8% of industrial area, while agricultural area occupies 51.0%. On the other hand, from a viewpoint by townships as shown in Table 2.2.16, 18 townships from among the total 39 townships have residential area by 50% or more in land use share, while only eight townships have dominantly agricultural area by 50% or more.

Table 2.2.16: Detailed Land Use Ratio of 2012 by Townships

No	Township Name	Area (sqkm)	Built-up Area						Under Developing Area	Playground Area	Agricultural Area	Open Space	Green Area	Water Surface
			<i>Residential Area</i>	<i>Business Area</i>	<i>Commercial Area</i>	<i>Industrial Area</i>	<i>Public Facilities Area</i>	Built-up Area Total						
1	Latha	0.60	55%	0%	0%	0%	45%	100%	0%	0%	0%	0%	0%	0%
2	Lanmadaw	1.31	65%	10%	0%	0%	25%	100%	0%	0%	0%	0%	0%	0%
3	Pabedan	0.62	76%	4%	19%	0%	1%	100%	0%	0%	0%	0%	0%	0%
4	Kyauktada	0.70	88%	11%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%
5	Botahtaung	2.60	64%	15%	0%	8%	2%	88%	9%	0%	0%	1%	0%	0%
6	Pazundaung	1.07	78%	3%	0%	8%	0%	89%	10%	0%	0%	0%	0%	1%
7	Ahlone	3.38	62%	5%	0%	20%	3%	90%	0%	0%	0%	9%	0%	1%
8	Kyee Myin Daing	4.57	44%	0%	0%	4%	3%	51%	0%	0%	45%	2%	0%	1%
9	Sanchaung	2.40	92%	0%	0%	0%	7%	99%	0%	0%	0%	1%	0%	0%
10	Dagon	4.89	48%	4%	0%	0%	3%	54%	0%	2%	0%	41%	3%	0%
11	Bahan	8.47	79%	1%	0%	1%	1%	82%	1%	0%	0%	6%	5%	6%
12	Tarmwe	4.99	71%	0%	0%	0%	17%	88%	0%	4%	1%	3%	2%	1%
13	Mingalar Taung Nyunt	4.94	53%	2%	1%	13%	14%	83%	1%	3%	0%	2%	8%	3%
14	Seikkan	1.17	3%	9%	0%	50%	0%	61%	9%	0%	0%	0%	0%	30%
15	Dawbon	3.11	66%	1%	1%	10%	1%	79%	0%	0%	0%	16%	0%	5%
16	Kamaryut	6.47	50%	5%	4%	5%	4%	67%	30%	0%	0%	1%	0%	1%
17	Hlaing	9.82	48%	1%	0%	22%	8%	80%	10%	1%	0%	2%	0%	6%
18	Yankin	4.79	74%	24%	1%	0%	0%	98%	1%	0%	0%	0%	0%	0%
19	Thingangyun	13.12	61%	1%	0%	4%	7%	73%	1%	5%	2%	10%	1%	7%
20	Mayangone	25.83	42%	3%	3%	5%	4%	58%	6%	8%	1%	14%	1%	12%
21	Insein	31.40	39%	2%	1%	26%	3%	71%	2%	5%	4%	9%	0%	8%
22	Mingalardon	127.94	28%	0%	0%	2%	1%	31%	7%	2%	25%	7%	18%	9%
23	North Okkalapa	27.76	45%	1%	0%	13%	2%	61%	20%	0%	3%	11%	0%	4%
24	South Okkalapa	8.22	74%	0%	2%	3%	5%	84%	0%	1%	0%	12%	0%	3%
25	Thaketa	13.45	55%	5%	0%	8%	3%	72%	11%	1%	0%	9%	1%	7%
26	Dala	98.40	8%	0%	0%	0%	0%	8%	1%	0%	87%	1%	0%	2%
27	Seikgyikhanaungto	12.10	21%	0%	0%	2%	0%	23%	2%	0%	47%	14%	0%	15%
28	Shwe Pyi Thar	52.71	37%	0%	0%	6%	1%	44%	18%	0%	22%	8%	3%	4%
29	Hlaing Tharyar	77.61	22%	0%	0%	19%	1%	43%	24%	2%	19%	3%	1%	8%
30	North Dagon	24.18	56%	3%	1%	0%	3%	63%	17%	0%	5%	10%	0%	4%
31	South Dagon	37.51	41%	0%	0%	8%	1%	51%	34%	0%	7%	5%	0%	2%
32	East Dagon	170.87	9%	0%	0%	2%	1%	12%	17%	0%	59%	5%	2%	4%
33	Dagon Seikkan	42.04	9%	0%	0%	11%	0%	20%	59%	0%	11%	5%	2%	1%
34	Kyauktan*	76.12	10%	0%	0%	2%	2%	14%	5%	0%	54%	11%	6%	9%
35	Thanlyin*	254.85	10%	0%	0%	3%	0%	13%	4%	1%	74%	5%	1%	2%
36	Hlegu*	101.00	2%	0%	0%	0%	0%	2%	2%	0%	89%	2%	2%	4%
37	Hmawbi*	84.23	6%	0%	0%	1%	0%	7%	0%	0%	74%	3%	9%	6%
38	Htantabin*	81.77	4%	0%	0%	0%	1%	4%	0%	0%	87%	1%	0%	8%
39	Twantay*	107.86	3%	0%	0%	0%	0%	3%	0%	0%	92%	2%	0%	3%

Note: Land Use Categories are defined as follows: 1) Public Facilities Area includes "Educational and Cultural Facilities Area", "Health and Welfare Facilities Area", and "Transportation Facility Area", 2) Agricultural Area includes "Cultivated Area" and "Cattle Farm", and "Plantation", 3) Open Space includes "Open Space", "Green Space", and "Glass Land" and 4) Green Area includes "Dense Forest", "Sparse Forest", "Scattered Tree", "Mangrove" and "Swamp Area"

Area of six (6) Townships including Kyauktan, Thanlyin, Hlegu, Hmawbi, Htantabin and Twantay is only shown the Planning Area.

Source: GIS Database (1:50,000) developed by JICA Study Team on the basis of the 2012 Satellite Image Analysis

(3) Trend of Land Use Pattern

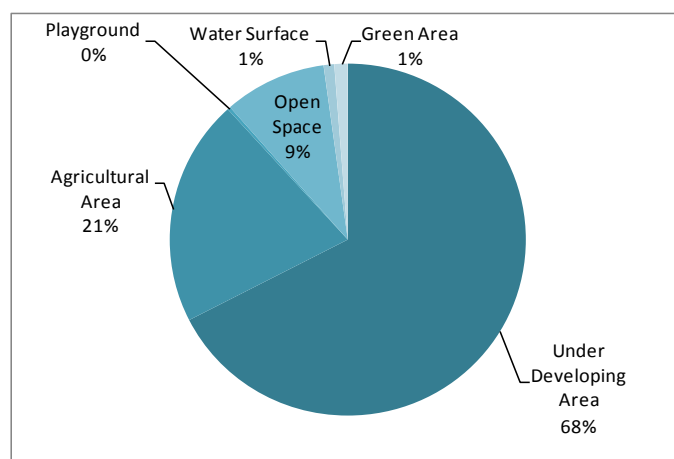
In order to grasp the dynamics of land use changes in the Planning Area, comparative analyses of land use between years 2002 and 2012 were carried out. The differences in size of each land use category are shown in Table 2.2.17. Looking at the increases and decreases, the most significant changes were found in the “Built-up Area” which increased 20% from the 2002 level. The increase in area reached approximately 60 km² in total. The rapid population increase in YCDC is considered as the main trigger for the expansion of the built-up area.

Table 2.2.17: Comparison of Land Use between 2002 and 2012

Land Use Category	Year 2002 (km ²)	Year 2012 (km ²)	Increase Decrease Ratio
Built-up Area	300.4	360.7	20%
Under Developing Area	176.8	139.7	-21%
Agricultural Area	841.8	815.8	-3%
Playground	9.5	11.5	22%
Open Space	35.5	36.4	2%
Water Surface	137.2	139.9	2%
Green Area	102.1	96.3	-6%

Source: GIS Database (1:50,000) developed by JICA Study Team on the basis of the 2002 and 2012 Satellite Image Analysis

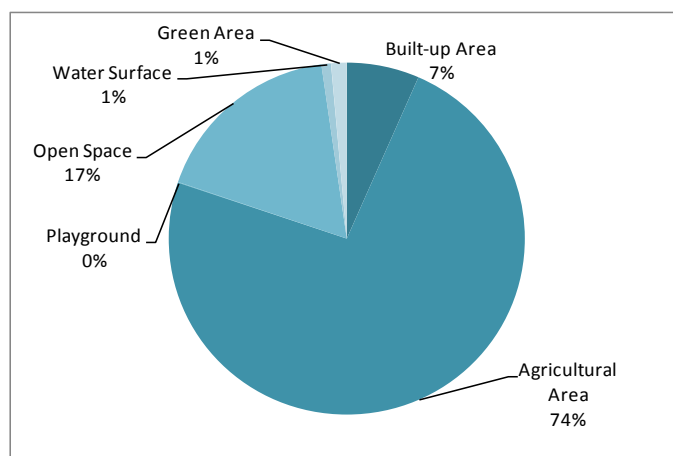
According to the detailed comparison data, most of the increased built-up area was originally counted as “Under Developing Area” and “Agricultural Area” including cultivated land, plantation and cattle farms. The composition of original land use of the new development area during years 2002 and 2012 is illustrated in the next figure.



Source: GIS database (1:50,000) developed by JICA Study Team with a basis of 2002 and 2012 Satellite Image Analysis

Figure 2.2.21: Original Land Use of Built-up Area Developed during Years 2002 and 2012

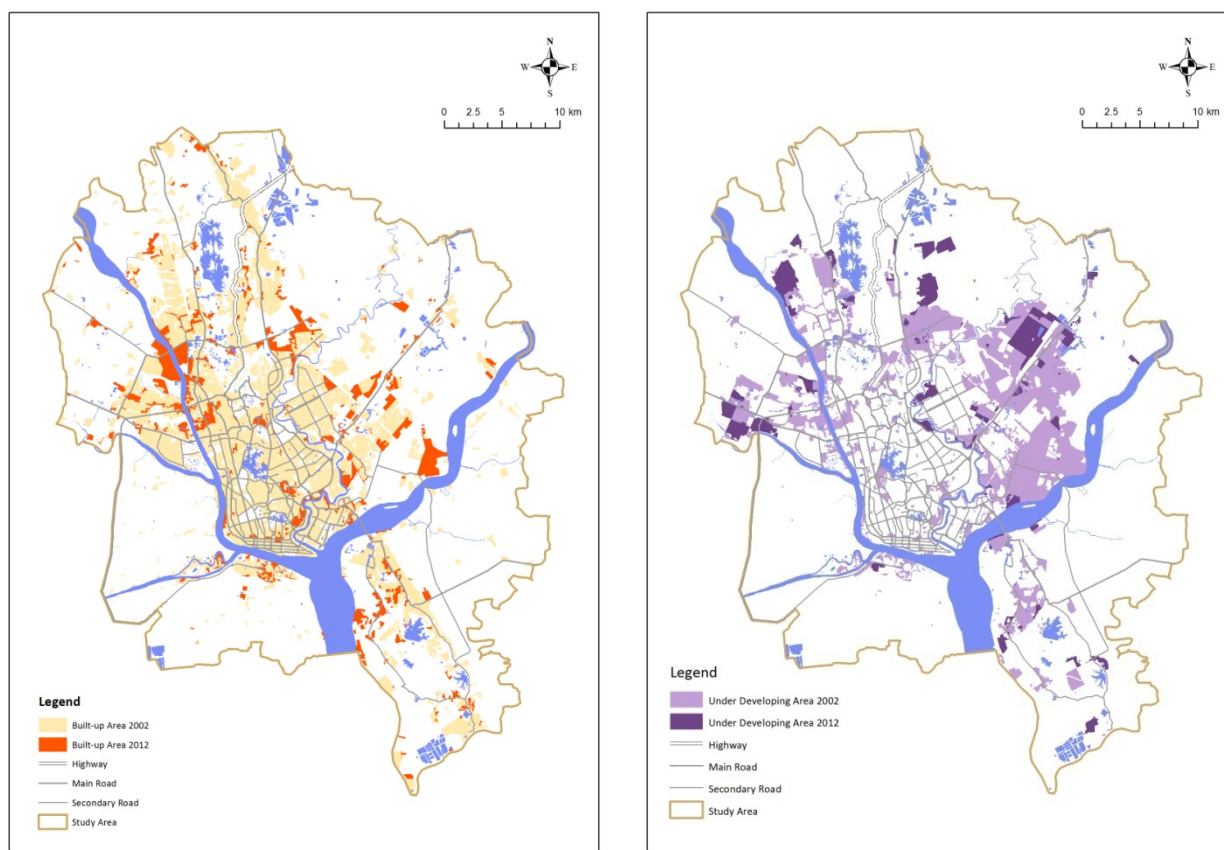
Meanwhile, the area of “Under Developing Area” decreased from 176.8 to 139.7 km² in the same decade. The urbanization speed seems to be quicker than the preparation and expansion of under developing area. Based upon the comparison data of land use, large agricultural lands were shifted to under developing area from years 2002 to 2012. The composition of original land use of newly developed area as “Under Developing Area” in that decade is illustrated in the next figure. Therefore, agricultural areas and open spaces are likely to be subject for change into built-up area.



Source: GIS Database (1:50,000) developed by JICA Study Team with a basis of Years 2002 and 2012 Satellite Image Analysis

Figure 2.2.22: Original Land Use of Built-up Area Developed during Years 2002 and 2012

With regard to the spatial direction of development in YCDC, urbanization tends to stretch out in the northern part of the Planning Area rather than the southern part. A number of newly developed areas are seen in around 15-20 km distance from the city center. As the following figures illustrate, the dark orange and purple colors show currently developed built-up areas and “under developing areas” during years 2002 and 2012. These areas can be found around the fringes of the existing urbanized area.



Built-up Area 2002 and 2012

Under Developing Area 2002 and 2012

Source: GIS Database (1:50,000) developed by JICA Study Team on the basis of 2002 and 2012 Satellite Image Analysis

Figure 2.2.23: Built-up and Under Development Areas in Years 2002 and 2012

(4) Population Distribution Pattern

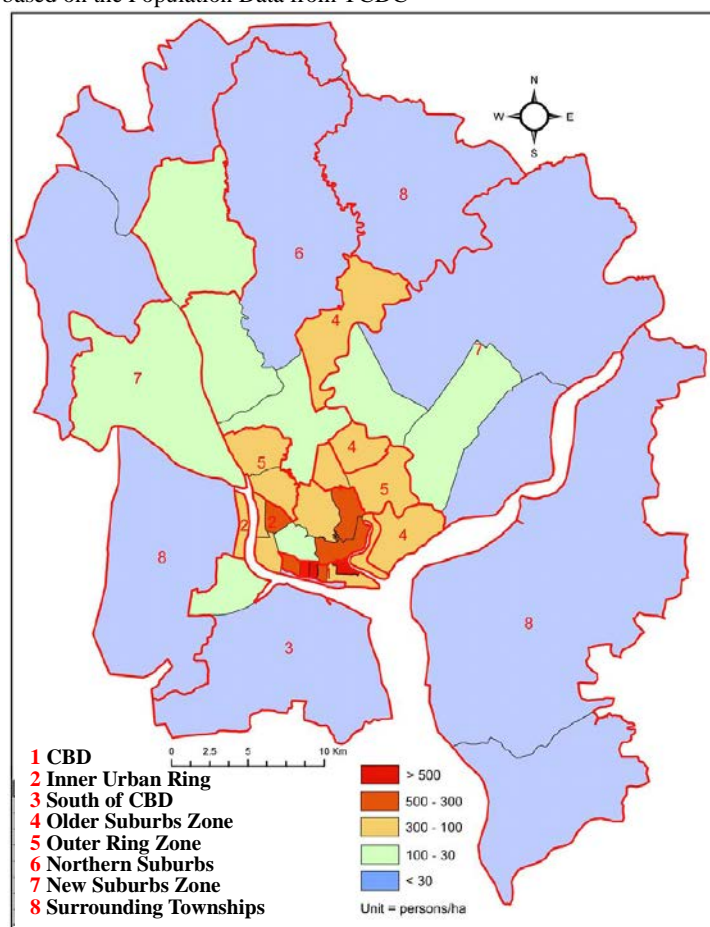
Greater Yangon had a population of approximately 6,214 thousand persons in year 2011 with the population density of 40.5 persons/ha. Out of this total, Yangon City had 5,142 thousands persons with the density of 62.0 persons/ha. The population growth rate in the CBD was very small, -0.10% during 1998-2011, since there was limited room for new development, while the entire area had relatively high population growth rate on an average of 2.58% in the same period, since plenty of spaces were available for further urbanization. As mentioned above, the population density of the entire Planning Area was 40.5 person/ha on average, whilst that of the CBD was a strikingly high value of 365.5 persons/ha.

Table 2.2.18: Population Data by Districts

District	Area(ha)	Population (1,000)		Annual Growth Rate (%)	Density (persons/ha)
		1998	2011		
CBD	691	256	252	-0.10	365.5
Inner Urban Ring	3,794	664	848	1.90	223.6
Outer Ring	3,421	598	596	-0.03	174.4
Northern Suburbs	18,530	595	805	2.36	43.5
Older Suburbs	4,954	689	778	0.94	157.1
South of CBD	11,050	103	220	6.01	19.9
New Suburbs	40,468	687	1,642	6.93	40.6
Periphery Area	70,582	(no data)	1,072	(no data)	15.2
Total	153,488	3,692*	6,214 5,142*	2.58*	40.5

* Number of population and growth rate without counting the surrounding townships.

Source: JICA Study Team based on the Population Data from YCDC



Source: JICA Study Team based on the Population Data from YCDC

Figure 2.2.24: Population Density of 2011

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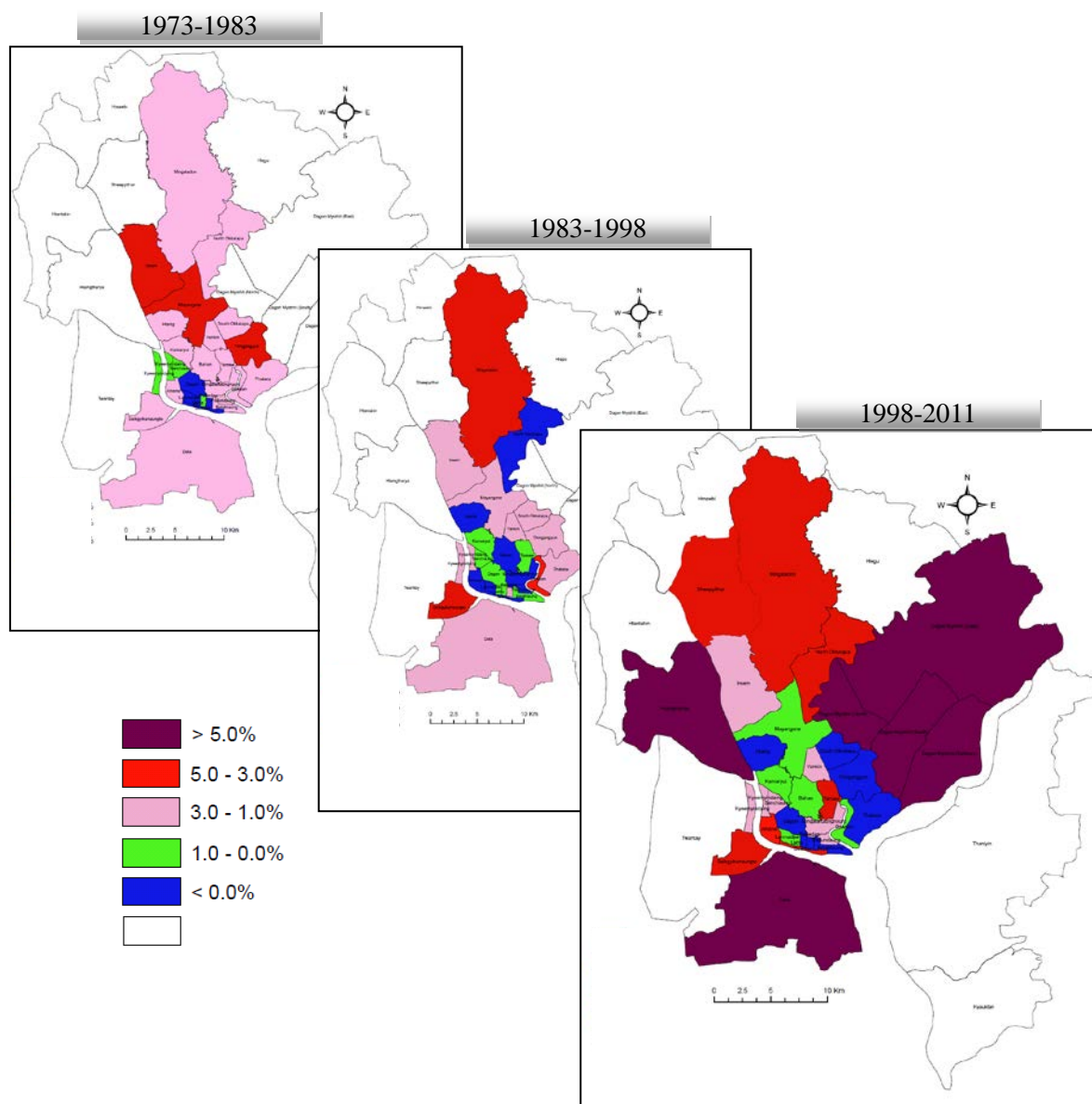
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ASIA AIR SURVEY CO., LTD., and ALMEC CORPORATION

(5) Urbanization Trend

Urbanization in Greater Yangon occurred mainly along the main roads leading from the city center northward, such as No.4, No.1, and No.3 Main Roads. As shown in Figure 2.2.25, the frontage of urbanization is going outwards gradually, while the population growth rate of the CBD started to decrease due to limited expansion space, suburban districts show high population growth rates. In particular, between 1998 and 2011, rapid urbanization occurred in the northern and southern areas such as Mingalardon Township and Dala Township.

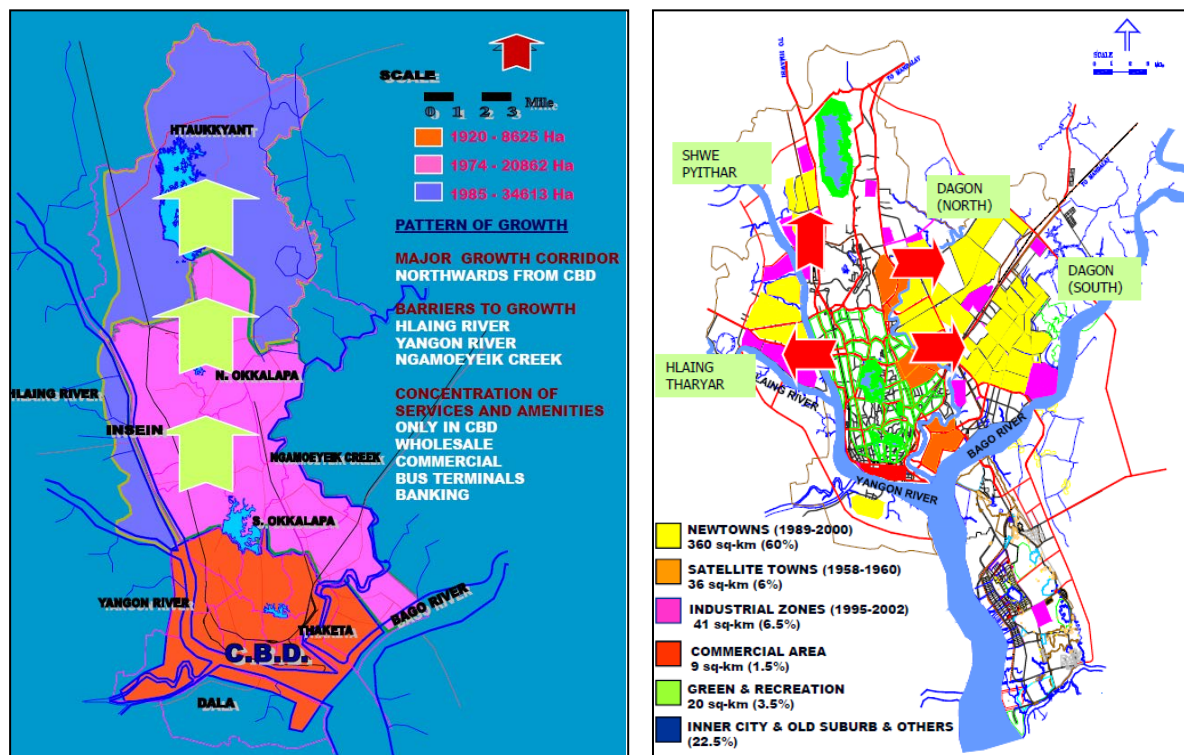
This observation becomes clearer if looking into the population growth by distance from the center. During the years 1973 and 1983, the townships which have very limited population increase with an annual population growth rate of less than 1.0% were located around or within 5 km radius. Next, the townships which have same conditions expanded to around or within 10 km radius during the years 1983 and 1998 and to around or within 15 km radius during the years 1998 and 2011.



Source: JICA Study Team based on the Population Data from YCDC

Figure 2.2.25: Population Growth Rate Transition by Townships

According to data from DHSHD, Ministry of Construction as shown in Figure 2.2.26, between 1960's and 1980's, urban areas have expanded mainly northwards from CBD due to two natural barriers, Hlaing River and Pazundaung Creek. After the year 1988, DHSHD intended to expand urban areas eastwards and westwards to counter balance elongated growth northwards, triggered by large scale housing projects which were planned by DHSHD with 160,000 housing plots for about 400,000 persons in surrounding townships, such as North Dagon, South Dagon, Shwe Pyi Thar and Hlaing Tharyar Townships.





Source: "Better City Better Living", Ministry of Construction

Figure 2.2.26: Urban Expansion Trends and Housing Development Plans

(6) Typical Land Use Pattern

To outline the land use patterns of Greater Yangon in visual format, typical land use patterns are selected as samples from some districts based on the satellite image of year 2012.

Table 2.2.19: Typical Land Use Pattern of 2012

<p>CBD</p> <p>CBD has been densely built-up with medium height buildings for houses and shops with regularly-structured urban grid pattern made in British colonial period. In general, there is hardly any vacant space which is available for any new development except in some of the ex-government buildings.</p>	
<p>Inner Urban</p> <p>Currently, the inner urban areas have also been built-up with medium height shops and houses along roads and relatively low detached houses inside the city block. Green spaces seem to remain much more than one in the CBD. Population density of these areas is also lower than that of the CBD.</p>	
<p>Suburbs</p> <p>Currently, suburbs are the frontage of urbanization, where a number of housing developments are occurring to accommodate high population growth. The entire area may be summed up as mixed development where some areas are developed while others are still undeveloped. Population density is not yet so high in the suburbs.</p>	

Source: JICA Study Team based on Geo Eye Satellite Image of 2012

(7) Key Findings and Main Issues to be Addressed for Present Land Use

In the course of reviewing the present land use, the following key findings could be made.

- 1) Currently, urban central functions including administration, banking, business and commerce are located in the CBD with high density of houses and shops. The population density of CBD is a strikingly high value of 365.5 persons/ha. Due to the highest density of population and urban functions in CBD, problems of transportation and car parking are said to be more serious than other areas.
- 2) Looking at the inner urban area, some lands seem to be not used efficiently from the viewpoint of urban functional use and land use patterns. For example, in the inner area of circular railway, there are 10 public golf courses which are usually open for quite limited persons with a relatively expensive fee. These golf courses are precious spaces in urban area as green and water areas, on the other hand, it is recommendable that some of those shall be redeveloped as public parks which are open for all citizens. In addition to it, it can be said that having limited land uses with large-scale development in the inner urban area, such as airport, depot, large factory, exclusive public facility, is not efficient from the viewpoint of urban functional use. Therefore these land uses and functions should be transferred outward and be shared with others gradually and/or partially in the future when the population of Greater Yangon reaches 10 million.
- 3) Currently, industrial zones seem to disperse throughout Greater Yangon even in the inner urban area, while some of large-scale zones are located along trunk roads in suburban areas. To mitigate environmental impacts on living conditions and to avoid congestive traffic problems by heavy traffic, industrial zones should be also transferred outward, physically close to the logistics hubs (ports or an airport) and the trunk roads in the future.
- 4) Regarding the land use in 2012, agricultural area occupied 51% of the total area, followed by 22% of urbanized areas. With the population growth projection, it is somewhat unavoidable that the ratio of the urbanized area tends to increase in future, while agricultural and open spaces tend to decrease gradually. Notwithstanding, the valuable green areas such as marshes, riversides, and high productive agricultural areas should be protected and utilized for sustainable urban management and comfortable urban life.
- 5) Waterfront areas shall play an important role of supplying nice landscape and comfortable environment. Some lakes, which are located on the low hills running in central Yangon, such as Hlawga Lake, Inya Lake, and Kan Daw Gyi Lake, have been properly safeguarded as protected areas or public parks. On the other hand, most of the riverfront areas are currently not utilized in good conditions for general public because waterfront areas are completely blocked by obstructions such as fences, port facilities, etc. In the future, it is suggested that these riverfront areas be utilized for commercial uses and public open spaces more than the present.

2.2.5 Living Environment

(1) Overview

According to the statistical data of DHSHD of MOC, the population of Myanmar increased by about 25 million in 30 years, and the urban population ratio increased from 24.71% (1983) to 30% (2012), while household size decreased from 5.4 to 4.8, respectively. The main structure of houses, however, stayed the same. Timber and bamboo are the main materials for about 90% of all units in Myanmar, while only 10% is made from pucca and semi-pucca structures.

By 2030, DHSHD aims to increase the ratio of pucca and semi-pucca buildings to 50%. Also, DHSHD plans to construct housing units in 41 cities (urban centers with 100,000-500,000 population) until 2020, and in 61 cities until 2030. Also, the Government of Myanmar expects that the new buildings will be made of pucca and semi-pucca structures. By 2040, as Greater Yangon's population will be over 1 million, a large number of housing units will be available for the citizens.

(2) Timeline of Housing Policies and Strategies

The timeline of housing policies and strategies in Myanmar can be divided into four groups, as shown in Table 2.2.20.

Table 2.2.20: Timeline of Housing Policies and Strategies

Group	Item
British Colonial Period (1885-1947)	Governmental Buildings & Area Development
	• Rangoon Development Trust (1920)
	• Developed Municipal Serviced Plot and Land Sale
	• Town Extension
	• Land leased to squatters
Parliament Government Period (1947-1962)	• Land-related acts on acquisition, revenue, and management in the Upper and Lower Burma
	National Rehabilitation and Town Development Policy
	• RDT transformed into National Housing Board (1951)
	• 1950s-1960s – Public Housing Provision (1000 units/year)
	–Housing Estate Development
	1951 NHB Act
	Caretaker Government (1958-1960)
Socialist Government (Centrally Planned) Period (1962-1988)	• Informal Settler Relocation and New Town Development
	• 1958-Developed three new satellite towns in Yangon City
	• Established new extension in several towns
	• Housing Corporation, Housing Department(1972)
SLRC and SPDC Period (1988-2011)	• Policy : No Profit, No Loss
	• 1967 – Established Thuwuna New Estate Town, (rental, joint housing, and ownership scheme)
	• Public Housing (100 units/year – 1980s)
	Centrally Guided Open Market Policy
	• 1990 - Department of Human Settlement and Housing Development (DHSHD)
	• Land sales for senior public servants
	• Yangon City (1990-2010) -230,000 site and serviced Plot
	• Other Towns (1990-2010)-100,000 plots
	• PPP in housing projects and area development projects
	• DHSHD : Changing the policy from provider to facilitator
	• Yangon City Development Committee (1990), Mandalay City Development Committee (MCDC, 1994), Nay Pyi Taw City Development Committee (NCDC, 2005)

Source: DHSHD Report

(3) Housing development by DHSHD

DHSHD was established in 1990, and has already developed 34 projects in Yangon. Some of these projects are for low-income families and also included improving slums and informal settlements. In the informal settlement of Yangon, 12,671 households were provided with apartments. There were 3000 housing units that were supplied to low-income households in 1997-2000. In addition, DHSHD implemented urban development projects in Yangon, which mostly consisted of individual houses, shops and residential condominiums, as shown in Table 2.2.21.

Table 2.2.21: Urban Development Projects in Yangon by DHSHD

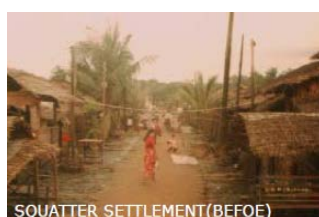
Number	Department Name	Township	Area (ha)	Planned by	Start Operation	Development Type
1	Yuzana Garden	Dagon Seikkan	80.9	DHSHD	1994	-
2	Pearl Condominium	Bahan	2.3	DHSHD	-	Condominium
3	Pan Hlaing Golf Estate	Hlaing Tharyar	264.0	DHSHD	2000	Condominium
4	FMI City Center	Hlaing Tharyar	202.0	DHSHD	1995	Individual
5	Yankin Plam Village	Yankin	2.5	DHSHD	2009	Condominium
6	Yankin Housing Project (1)	Yankin	1.4	DHSHD	2010	Condominium
7	Thar Yar Shwe Pyi	Yankin	-	DHSHD	2000	Condominium
8	Min Ye Kyaw Swar (1)	Tamwe	-	DHSHD	1998	Condominium
9	Min Ye Kyaw Swar (2)	Tamwe	-	DHSHD	1998	Individual
10	Bying Yay Oe Zin	Tamwe	-	DHSHD	2000	Condominium
11	No(87/89) Daw Thain Tin road	Mingalar Taung Nyunt	-	DHSHD	2002	Condominium
12	Shwe Kyar Yan	North Dagon	-	DHSHD	2004	Individual
13	Rose Garden	North Dagon	-	DHSHD	2004	Individual
14	Waizayantar	Thingangyun	-	DHSHD	1995	Condominium, Individual
15	Min Ye Kyaw Swar (3)	Thingangyun	-	DHSHD	1995	Condominium
16	Wai Pon La (1)	North Okkala	-	DHSHD	1997	Condominium
17	Yadanar Thiri Housing	Thingangyun	-	DHSHD	1997	Individual
18	Zarli Taung	Thingangyun	-	DHSHD	1996	Condominium, Individual
19	Thar Du	Thingangyun	-	DHSHD	1997	Condominium
20	Shwe Kaindayi	Thingangyun	-	DHSHD	1997	Condominium
21	Kan Taw Soan	Thingangyun	-	DHSHD	-	Condominium, Shop House
22	Zaw Ti Ka	Thingangyun	-	DHSHD	1996	Condominium
23	Shwe Lin Pan (Commerical Area)	Hlaing Tharyar	-	DHSHD	2011	Shop House
24	Shwe Pyi Thar (Commerical Area)	Shwe Pyi Thar	0.1	DHSHD	2009	Condominium
25	Shwe Ohn Pin	Yankin	0.5	DHSHD	2011	-
26	Kyi Pwar Yay	Thingangyun	1.7	DHSHD	2011	Condominium
27	Wai Pon La (2)	North Okkala	2.0	DHSHD	2011	Condominium
28	Shwe Pin Lon	North Dagon	0.7	DHSHD	2011	Individual
29	Shwe Wint Hmone	North Okkala	1.0	DHSHD	2011	Individual
30	Wai Bar Gi	North Okkala	1.6	DHSHD	2011	Individual
31	Inn Wa	South Dagon	16.9	DHSHD	2011	Condominium, Individual
32	Kwaykyi	Thaketa	1.3	DHSHD	2011	Individual
33	Kamarkyi	Thaketa	4.0	DHSHD	2011	Individual
34	Yankin Housing Project (2)	Yankin	1.7	DHSHD	2011	Condominium

Source: JICA Study Team based on the data of the Department of Human Settlement and Housing Development, Ministry of Construction



Source: JICA Study Team

Figure 2.2.27: Low Cost Housing Development (1997-2000)



Source: JICA Study Team

Figure 2.2.28: Slum and Squatter Upgrading Project

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Source: JICA Study Team

Figure 2.2.29: Location Map of DHSHD Projects in Yangon

(4) Output of Household Interview Survey (HIS)

With regard to the HIS conducted by the JICA Study Team, the items about living environment were included in order to obtain the necessary basic data for formulating a comprehensive residential development program. The result of HIS can be utilized not only as an essential database for acquiring the existing condition of urban development, but also as an important resource for understanding the present evaluations and opinions of people on the existing living environment, which are also key parameters for future land use plan. It is expected that this survey will reveal the following aspects:

1) Questions related to housing environment

During the interview, the topics related to living environment are as shown in Table 2.2.22.

Table 2.2.22: Questions on the Housing Environment (HIS)

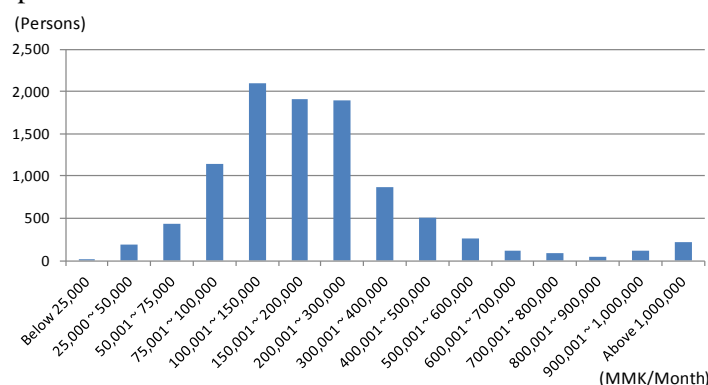
Group. of Question	No. of Question	Topics
Group 3 Household Information	Q-14a	Duration of Living in Present Address
	Q-14b	Living Since Family Establishment
	Q-15	Previous Address
	Q-16	Reason to Move from Previous Address
	Q-17	Total Monthly Household Income (kyat/month)
	Q-18	Average Monthly Expenditure
Group 5 Living Environment	Q-19a	Type of House
	Q-19b	Structure of House
	Q-19c	Maintenance Condition
	Q-19d	Operational Meter for Water
	Q-19e	Housing Ownership
	Q-19f	Rental Fee for House per Month (kyat/month)
	Q-19g	Land Use Right Ownership
	Q-19h	Rental Fee for Land per Month (kyat/month)
	Q-19i	Living Area (ft ²)
	Q-19j	Number of Rooms
	Q-19k	Age of House
	Q-20	Connectivity to Urban Services

Source: JICA Study Team

2) Results of HIS about the living environment

The results of HIS about the living conditions are as follows:

- i) With respect to the distribution of household's income, 18% earns less than MMK 100,000 per month.



Source: JICA Study Team

Figure 2.2.30: The Distribution of Household Income (HIS)

- ii) As shown in Table 2.2.23, the monthly average expenditure of each family in Greater Yangon is about MMK 216,000 excluding rents. About 46 % of the expenses are for food and beverage.

Table 2.2.23: Monthly Average Expenditure of Greater Yangon (HIS)

	Education	Clothing	Food and Beverage Expenses	Healthcare	Telephone Call Charges	Internet Charges	Transportation (Gasoline, Parking, Public Transport Use)
Number of Answers	1,381	915	1,192	1,183	1,324	174	968
Maximum (MMK)	2,000,000	600,000	1,500,000	600,000	600,000	2,000,000	1,000,000
Minimum (MMK)	500	500	500	200	200	200	200
Average (MMK)	58,157	15,509	102,603	22,372	14,317	26,084	24,387

	Source of Lighting			Water		Cleaning Charges	Sludge Removal Service (for one time)	Others	Total
	Electricity	Candle, Battery	Fuel Oil for Private Generator of Electricity	For Domestic Use	For Drinking Water				
Number of Answers	2,345	520	90	1,507	1,448	895	6,654	1,126	9,911
Maximum (MMK)	1,300,000	70,000	150,000	320,000	150,000	120,000	1,000,000	302,000	5,000,000
Minimum (MMK)	200	100	100	150	100	27	50	10	1,000
Average (MMK)	9,874	-	-	5,693	5,982	1,329	19,932	13,671	216,199

Source: JICA Study Team

- iii) As shown in Table 2.2.24, detached houses and apartments cover 79% and 13%, respectively. As for the structure of houses, 40% are wooden houses made of stable wooden frame with leaf roof, while 34% are semi-permanent houses. While the overall percentage of wooden houses in Myanmar is 90%, which reveals that permanent and semi-permanent houses are found in Greater Yangon. This was probably because Greater Yangon is the largest and most active city in Myanmar.

Table 2.2.24: Type and Structure of House (HIS)

Type of House								
	Apartment	High-rise Apartment	Condominium	Detached House	Attached House	Barracks / Combine Room	No Answer	Total
Number of Answers	1,261	471	31	7,927	37	340	2	10,069
Rate	12.5%	4.7%	0.3%	78.7%	0.4%	3.4%	0.0%	100.0%

Structure of House						
	Permanent	Semi-permanent	Stable Wooden Frame with Leaf Roof	Temporary House	No Answer	Total
Number of Answers	2,246	3,476	4,008	338	1	10,069
Rate	22.3%	34.5%	39.8%	3.4%	0.0%	100.0%

Source: JICA Study Team

- iv) As shown in Table 2.2.25, 48% of houses in Greater Yangon cover 251-750 ft² while 15% are below 250 ft². This means that more than half of families in Greater Yangon live in houses smaller than 750 ft² (70 m²). Also, houses with only one room comprises 32% of the total, while those with two rooms cover 43%. This means that more than half of families in Greater Yangon live in houses with two or more rooms.

Table 2.2.25: Living Area and Number of Rooms (HIS)

Living Area (feet ²)											
	Under 250	251 -500	501 -750	751 -1,000	1,001 -1,250	1,251 -1,500	1,501 -1,750	1,751 -2,000	Above 2,000	No Answer	Total
Number of Answers	1,473	2,401	2,523	1,268	1,414	231	91	147	513	8	10,069
Rate	14.6%	23.8%	25.1%	12.6%	14.0%	2.3%	0.9%	1.5%	5.1%	0.1%	100.0%

Number of Rooms								
	1	2	3	4	5	Above 5	No Answer	Total
Number of Answers	3,093	4,231	1,824	658	162	86	15	10,069
Rate (including no answer)	30.7%	42.0%	18.1%	6.5%	1.6%	0.9%	0.1%	100.0%
Rate (excluding no answer)	30.8%	42.1%	18.1%	6.5%	1.6%	0.9%	-	-

Source: JICA Study Team

- v) On connections with public facilities (refer to Table 2.2.26), about 73% of all families in Greater Yangon have electricity. However, 50% of all families do not have access to piped water supply, sewage and sludge removal from septic tank.

Table 2.2.26: Connectivity to Public Facilities (HIS)

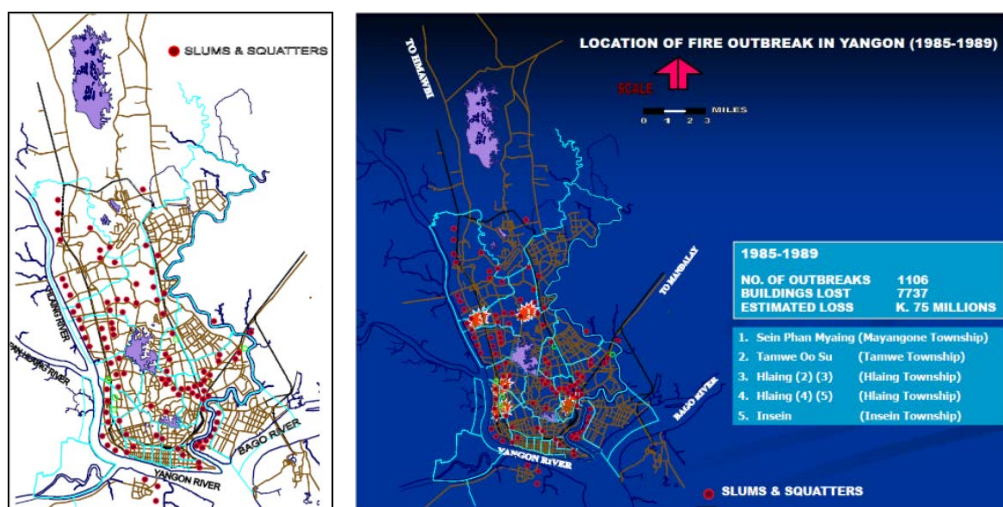
	Electricity				Piped Water Supply				Sewage			
	Yes	No	No Answer	Total	Yes	No	No Answer	Total	Yes	No	No Answer	Total
Number of Answers	8,826	1,242	1	10,069	4,023	6,045	1	10,069	4,463	5,605	1	10,069
Rate	87.7%	12.3%	0.0%	100.0%	40.0%	60.0%	0.0%	100.0%	44.3%	55.7%	0.0%	100.0%

	Sludge Removal from Septic Tank				Telephone (Fixed)				Solid Waste Collection			
	Yes	No	No Answer	Total	Yes	No	No Answer	Total	Yes	No	No Answer	Total
Number of Answers	4,934	5,134	1	10,069	2,603	7,465	1	10,069	7,288	2,780	1	10,069
Rate	49.0%	51.0%	0.0%	100.0%	25.9%	74.1%	0.0%	100.0%	72.4%	27.6%	0.0%	100.0%

Source: JICA Study Team

(5) Slums and Squatters

Current situations of slums and informal settlers are shown in Figure 2.2.31. Slums and squatters are distributed near the Hlaing River, the Pazundaung Creek and the Yangon River. In 1985 to 1989, there were 1106 fire outbreaks that happened in these areas which resulted to the loss of 7737 buildings lost, or an estimated loss of MMK 75 million.



Source: Report of DHSDD

Figure 2.2.31: Current Situation of Slums and Informal Settlers

(6) Plans of Housing by DHSHD

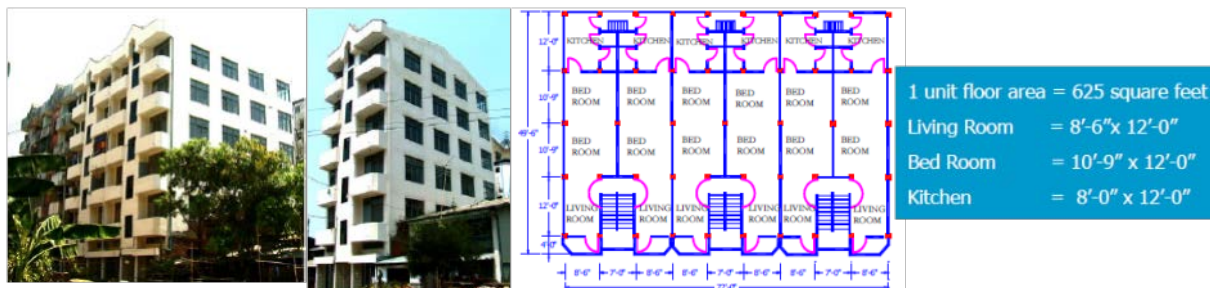
DHSHD worked on the living environment policy for Greater Yangon, and started to construct low-cost housing units by 1997. In 1997 to 2000, there were 3,000 apartment units which constructed in the suburban area of Greater Yangon. Most housing units have two bed rooms, a living room, and a kitchen, The average floor area is 613 ft² with amenities, as shown in Figure 2.2.32.



Source: Report of DHSHD

Figure 2.2.32: Houses for Low-income Families (1)

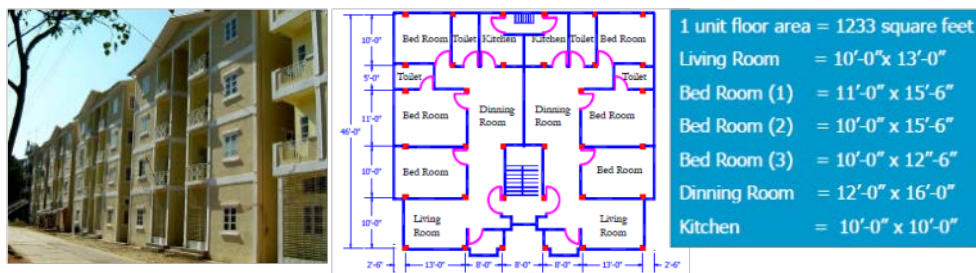
DHSHD constructed two six-storey and four six-storey apartment units in Han Thar YeikMon Housing in the Kamayut Township, where each unit has a floor area of 625 ft². with one living room, one bedroom, and one kitchen, as shown in Figure 2.2.33.



Source: Report of DHSHD

Figure 2.2.33: Houses for Low-income Families (2)

DHSHD constructed middle-income housing units in Mynt Tar Nyunt in the Tamwe Township, where each unit has a floor area of 1,233 square feet with one living room, three bedrooms, a dining room, and a kitchen, as shown in Figure 2.2.34.



Source: Report of DHSHD

Figure 2.2.34: Housing Units for Middle-income Families

2.2.6 Urban Landscape and Heritages

(1) Overview

As the former capital of Myanmar, Yangon City had always been growing as the country's largest city. Until to become such city, there were some different urban expansions in each period in various areas. Moreover, Yangon City has diversity on urban landscapes.

According to the history of Yangon City, the surrounding area of the Shwe Dagon Pagoda was the first area where people inhabited as a small village in the 1st century B.C. and earlier, and had always been the anchor of the city. Afterwards, Yangon City expanded gradually to the south along with the Yangon River; and during the British Colonial Period, a grid patterned urban area that can be seen today serve as the downtown which was developed also along the river. After the independence of Myanmar, the city grew to the north and created new towns, satellite towns, and industrial zones. All these growth had left various impacts to the city. Throughout history, we could learn and find various characteristic of urban landscapes that were strongly connected with not only with cultural heritage but also natural resources such as water and greenery, to create own unique landscapes.

In order for historical areas to coexist with the upcoming urban development in the CBD and new satellite centers, Yangon's unique urban landscapes must be preserved.

Therefore, considering the historic areas can lead to the understanding of the actual conditions. The following describe the downtown area, which is one of the most unique areas in Yangon City where many heritage buildings are found.

(2) Yangon as a Historic City

Yangon is a historic city with closely interwoven relationships among the economic, political, and cultural structures as well as the city's physical urban landscape. The city has hundreds of historical and religious monuments such as pagodas, temples, churches, mosques, and British colonial-era buildings built between the 19th and 20th centuries. These are strongly related with the urban development in each historical stage of the city. Their location, style, and use were defined from the social demand of each time. However, as time passes, there are a number of dilapidated structures that require repairs and improvement, and also facilities that have been decided to change their uses for new functions. In order to utilize the heritage buildings for sustainable urban development, proposals were made to provide a new direction for upgraded conservation and planning based on the analysis of current states.

(3) Yangon City Heritage List

For the conservation of historical buildings, the Protection and Preservation of Cultural Heritage Regions Law was enacted in 1998 by the Ministry of Culture. The Yangon City Heritage Building List for Conservation was issued in 1996 by YCDC. Altogether, 189 buildings which were constructed before 1930 are in the list. Thus, they are adopted as historical buildings and are being maintained since 1996. The locations and uses of the listed buildings are shown in Table 2.2.27.

Table 2.2.27: Distribution of Listed Heritage Buildings, Yangon City

No.	Township	Admin / Institution	Social Bldg	Commercial Bldg	Residential	Religious Buildings						Total	Ratio
						Christian	Buddhism	Hindu	Muslim	Chinese	others		
1	Latha		2					1	1	3		7	3.7%
2	Lanmadaw	2	3			1			1			7	3.7%
3	Pabedan	6	2	1		2	1	5	5		1	23	12.2%
4	Kyauktada	33		1		2	1		2			39	20.6%
5	Botahtaung	3	3			2	1					9	4.8%
6	Pazundaung					1	1	1	1			4	2.1%
7	Ahlone		1									1	0.5%
8	Kyee Myin Daing						1		1		1	3	1.6%
9	Sanchaung	1	2			2	5		1	1		12	6.3%
10	Dagon	2	5		1	3	6					17	9.0%
11	Bahan	2			2		3			5		12	6.3%
12	Tarmwe					1			2			3	1.6%
13	Mingalar Taung Nyunt			1		3		3	2			9	4.8%
14	Kamaryut		17			1	1					19	10.1%
15	Hlaing							1				1	0.5%
16	Yankin						1	3				4	2.1%
17	Thingangyun					1	2					3	1.6%
18	Mayangone						3					3	1.6%
19	Insein	3	3			1						7	3.7%
20	Mingalardon		1			2	2					5	2.6%
21	North Okkalapa						1					1	0.5%
Total		52	39	3	3	22	29	14	16	9	2	189	100%
		27.5%	20.6%	1.6%	1.6%	11.6%	15.3%	7.4%	8.5%	4.8%	1.1%	100%	

Notes: Administrative and Institutional Building: Offices, medical centers, etc.

Social Buildings: Schools, hospitals, etc.

Commercial Buildings: Hotels, markets, etc.

Source: Edited from the YCDC Heritage Buildings List

There are 21 townships among the 33 that are located in Yangon City. Among these, 48 buildings are located in the Kyauktada and Botahtaung townships in the downtown area, which are in the heart of the old Yangon City. About 48.7% of the listed buildings are religious places such as pagodas, temples, mosques, and monasteries. Meanwhile, 27.5% in the list are office buildings such as the former administrative government offices that are now under the jurisdiction of the Ministry of Construction's Department of Human Settlements and Housing Development.

Figure 2.2.35 indicates the location of listed buildings in Kyauktada and Botahtaung townships in the 94-hectare Yangon Heritage Zone, while Figure 2.2.36 shows the photographs of some heritage buildings.



Source: YCDC

Figure 2.2.35: Yangon Heritage Zone



Strand Hotel



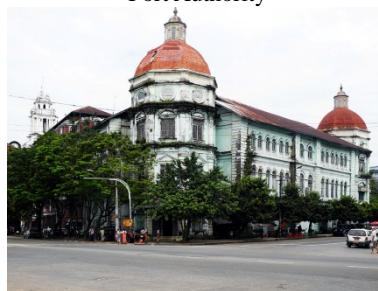
Port Authority



High Court



British Embassy



Yangon Division Court



Myanmar Agricultural Development Bank

Source: JICA Study Team

Figure 2.2.36: Heritage Buildings in Yangon

(4) Actual Conditions of the Heritage Buildings

It is necessary to grasp the actual conditions of heritage buildings in order to preserve their structures. Some damages were observed and various reasons of these were as follows: 1) aging structures, 2) by natural causes and disaster, and 3) intervention such as conversion of use, improper repairs, and repainting, as shown in Figure 2.2.37.



Aging without maintenance

Source: JICA Study Team



Roof damaged by strong winds



Modification by new owners

Figure 2.2.37: Damages of Heritage Buildings in Yangon

First, the buildings are gradually aging as time passes. Therefore, regular maintenance is needed to keep the quality of buildings. Unfortunately, there are a lot of vacant buildings that are not maintained in the downtown area. After the relocation of the capital to Nay Pyi Taw at the end of 2005, some of the former governmental offices in Yangon remain vacant or unused.

Second, natural disasters have been damaging buildings physically. Most recently, Cyclone Nargis in 2008 brought extensive damages to the heritage buildings. With unexpected strong winds, most of the slate stone finishing of the roofs were blown away. After the event, some buildings have not been repaired due to lack of funds, and only provisional zinc roofs were used as replacement, without recovering the original stone finishing.

Thirdly, arbitrary modification of new owners damages the building façade, which is one of the most important elements of the urban landscape. Even though it is listed as a heritage building, this kind of man-made intervention still happens because of poor perception for the need to preserve and lack of strict enforcement by YCDC and other organizations.

(5) Key Findings and Main Issues to be Addressed for Urban Landscape

1) Database of Listed Heritage Buildings

The updated database of the heritage buildings includes detailed information such as the origin, style and design of the buildings, location data by GIS, actual condition of usage, and damaged condition. The database has to be properly organized to be fully applicable for future planning.

2) Expansion of the Listed Heritage Buildings

To preserve the unique characteristics of the urban landscape of Yangon City, it is very important to focus on the listed heritage buildings. However, it would be better to focus on the existing cultural and historical elements such as market places in the downtown area. These non-listed buildings create the attractive urban landscape of Yangon.

3) Rehabilitation and Conversion

Since the relocation of the capital in 2006, some of the governmental offices have already moved to Nay Pyi Taw. Therefore, former governmental offices such as ministers' offices have been left almost vacant at this moment. It is important to maintain the buildings, also to search for new usage for each building, and to plan new facilities as part of redevelopment in the urban context.

4) Preserve the Surrounding Areas

Preservation should just not be conducted on heritage buildings but also on their surroundings to keep an attractive urban landscape. To avoid selfish development, a comprehensive policy must be established.

5) Development Right for Heritage Building Sites

Heritage building sites will not have the same capacity required for new development since these are already occupied. To avoid bias over development rights, a new system such as the "Transferable Development Right" should be considered to be adopted for a heritage site and its surrounding area.

2.2.7 Public Parks and Greenery

(1) Overview

The laws and regulations on public parks and greenery have not yet been well-developed in Myanmar. As mentioned in Section 2.2.1, YCDC enforced a bylaw in 1999 called the “Parks and Recreation By-law (Order No.8/99)” to accurately define public parks and playgrounds and manage such areas. In light of the bylaw, the Department of Playgrounds, Parks and Gardens of YCDC is in charge of managing public parks and appurtenant facilities in Yangon City. Guided by its vision statement, which is “To be a Green City”, the department aims to mitigate climate change through local action and to provide comfortable recreational open spaces to the citizens.

(2) Legal and institutional Framework

1) Legal Status

As mentioned above, the Parks and Recreation By-law is enforced by YCDC. In the bylaw, public open spaces are classified as follows:

- Pubic park: an enclosed space which was duly established in accordance with the characteristics of the city, and provided with trees, fruits, flowers, rest houses, playgrounds and so on for citizens’ recreation.
- Scenic spot: space established for public recreation and to add scenic beauty to the city.
- Nursery: space allotted for the cultivation and storage of trees, flowering plants and grass, which are to be planted in public parks and other relevant spaces.
- Roundabout: space enclosed by road, at the center of a junction, or at the corner of roads.
- Playground: a place established for the purpose of public sports use and/or children use.

2) Institutional Status

According to the responsibilities and duties stated in the “City of Yangon Development Law”, Yangon City needs to provide public parks, playgrounds and gardens for its citizens.

The department related to public parks was originally entitled “Sub-department of Parks”, and under the City Chief Engineers of Roads and Bridges. The responsibilities and duties of the subdepartment are focused only on the maintenance of existing parks, roundabouts and playgrounds. In 1964, Yangon City was expanded and took in new townships at suburbs as its boundary. In line with the expansion, the subdepartment was detached from the Engineering Department and entitled the “Sub-department of Parks and Gardens” in 1967. After this, the subdepartment was upgraded in 1990 to be a completely new department called the “Department of Playgrounds, Parks and Gardens”.

In 2012, the department has 54 officers and 307 staff. The department has the following responsibilities and duties:

- To maintain existing parks and playgrounds, and to construct new parks and playgrounds in the area of YCDC,

- To maintain existing scenic spots and lakes, and to construct new scenic spots,
- To cultivate and supply trees and flowers, and to facilitate equipment for parks,
- To remove old dangerous trees and braches from parks,
- To maintain plants in roundabouts,
- To construct and maintain necessary buildings and structures in parks,
- To procure and distribute necessary equipment and materials for the department and parks,
- To manage the fund established from the collection of entrance fees of parks,
- To propose the budget plan of the department, and
- To manage the officers and staff, and demarcate their tasks and duties.

(3) Current Conditions of Public Parks and Relevant Facilities

1) Overview

Table 2.2.28 summarizes the numbers and the areas of public parks and appurtenant facilities in the whole area of Yangon City. Some of the areas were calculated provisionally, according to some sample data.

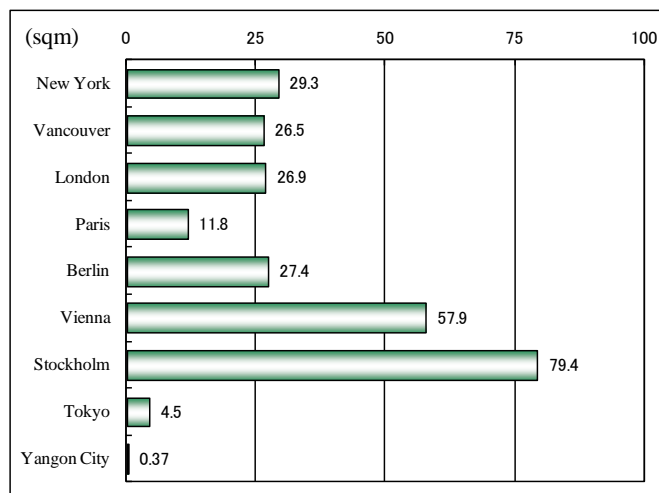
Table 2.2.28: Summary of Public Parks and Open Spaces in Yangon City

Type		The number	The total area	Remarks
Public Park		58	188 ha ^{*1}	All managed by YCDC
Public Spaces, which have equivalent functions as Public Parks	Zoological and Botanical Garden	2	-	Zoological Garden Yangon, and Hlawga Park
	Playground	76	22 ha ^{*1}	
	Roundabout	7	1.3 ha ^{*1}	
	Roadside (Triangle Space)	58	-	
Private Spaces	Golf Course	14	-	
Protected Area		1	624 ha	

^{*1} Source: Data from the Department of Playgrounds, Parks and Gardens, YCDC

2) Public Parks

In YCDC there are 58 public parks with a total area of 188 ha (470 acre). It can be said that the Yangon's public parks are mainly characterized by lakes and lakeside landscape, such as Thitaw Zone Park (along Kan Daw Gyi Lake) and Mya Kyuntar Park (along Inya Lake). These fascinating parks provide good amenity spaces for the citizens. On the other hand, looking at the total area of public parks in YCDC, 188 ha seems to be quite small, especially when considering the population of Yangon City, which is approximately 5,142,000. If the total area of public parks is divided by the population, the result would be quite small at 0.37 m² of park space per person. This figure is so small as compared with that of other cities in the world, such as 29.3 m² in New York and 4.5 m² in Tokyo, as shown in Figure 2.2.38.



Source: JICA Study Team based on data from the Ministry of Land, Infrastructure, Transport and Tourism, Japan

Figure 2.2.38: Park Area per Capita in Comparison with Cities around the World



Source: JICA Study Team

Figure 2.2.39: Images of Public Park Landscapes in Yangon

Looking at the distribution of public parks, the Inner Urban Ring, which includes Bahan, Dagon, and Mingalar Taung Nyunt Townships, has much more public parks than other areas. In Yangon City, there are nine townships without any public park. The nine townships are Latha, Lanmadaw, Botahtaung, Tarmwe, Seikkan, Dawbon, Hlaing, Shwe Pyi Thar, and Dagon Seikkan.

Table 2.2.29: List of Public Parks in YCDC

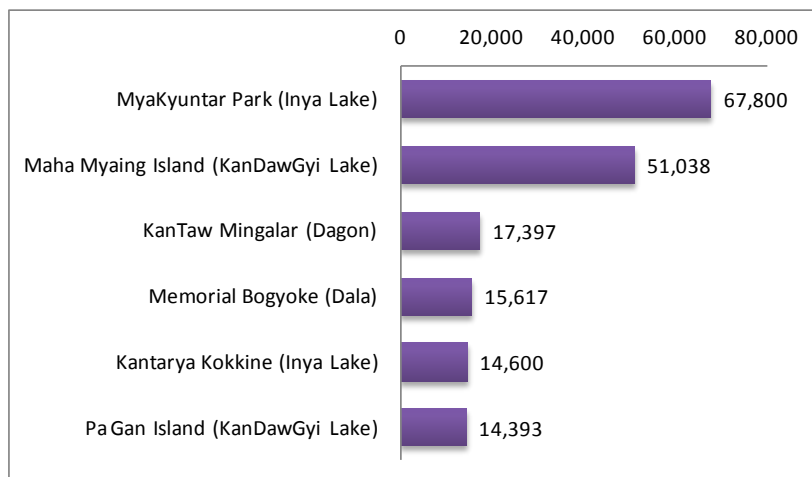
No.	Public Park Name	Area (acres)	Area (ha)	Township Name	Township Group
1	Strand Road, Kyat Shar Sune	0.02	0.01	Pabedan	CBD
2	Sule Poster	1.01	0.40	Kyauktada	CBD
3	Yatha Garden	0.08	0.03	Kyauktada	CBD
4	City Hall	0.23	0.09	Kyauktada	CBD
5	Maha Bandoola	7.50	3.00	Kyauktada	CBD
6	Pazundaung	1.45	0.58	Pazundaung	CBD
7	Thakhin Mya Park	6.39	2.56	Ahlone	Inner Urban Ring
8	Seik Kan Thar	1.03	0.41	Kyee Myin Daing	Inner Urban Ring
9	Padonmhar	2.80	1.12	Sanchaung	Inner Urban Ring
10	Poster	0.75	0.30	Sanchaung	Inner Urban Ring
11	People Square	135.70	54.28	Dagon	Inner Urban Ring
12	Taw Lan Ye	30.60	12.24	Dagon	Inner Urban Ring
13	KanTaw Mingalar	7.55	3.02	Dagon	Inner Urban Ring
14	Dagon	2.00	0.80	Dagon	Inner Urban Ring
15	Ziwaka	1.68	0.67	Dagon	Inner Urban Ring
16	Kantarya Kokkine	3.85	1.54	Bahan	Inner Urban Ring
17	Thiri Nandar Kan	2.05	0.82	Bahan	Inner Urban Ring
18	Tway Say Kan	1.00	0.40	Bahan	Inner Urban Ring
19	Saya San	2.50	1.00	Bahan	Inner Urban Ring
20	Maha Myaing Island/ Pearl Island	17.10	6.84	Bahan	Inner Urban Ring
21	Yadanar	1.40	0.56	Bahan	Inner Urban Ring
22	Thitaw Zone (Kan Daw Gyi)	36.83	14.73	Bahan	Inner Urban Ring
23	Pa Gan Island	3.90	1.56	Mingalar Taung Nyunt	Inner Urban Ring
24	Aquarium	0.86	0.34	Mingalar Taung Nyunt	Inner Urban Ring
25	Zeyar Myaing	2.50	1.00	Mingalar Taung Nyunt	Inner Urban Ring
26	Than Thumha	2.00	0.80	Mingalar Taung Nyunt	Inner Urban Ring
27	Sein Le Myaing	1.51	0.60	Mingalar Taung Nyunt	Inner Urban Ring
28	Innya Park	5.09	2.04	Kamaryut	Outer Ring
29	Kamayut Park	0.50	0.20	Kamaryut	Outer Ring
30	Yankin	0.67	0.27	Yankin	Outer Ring
31	Thuka Watty	0.95	0.38	Yankin	Outer Ring
32	Thuwanna	20.40	8.16	Thingangyun	Outer Ring
33	Pyi Thauung Su	4.00	1.60	Thingangyun	Outer Ring
34	Kyun Mar Lar	0.51	0.20	Thingangyun	Outer Ring
35	Inngyin Myaing	3.30	1.32	Thingangyun	Outer Ring
36	MyaKyuntar Park (Inya Lake)	44.52	17.81	Mayangone	Northern Suburbs
37	Myaing Hay Wun	20.63	8.25	Mayangone	Northern Suburbs
38	Bayint Naung Bridge Park	4.00	1.60	Mayangone	Northern Suburbs
39	Nan Tar Myaing Park	5.00	2.00	Insein	Northern Suburbs
40	Insein Park	3.54	1.42	Insein	Northern Suburbs
41	New Tar Gi Park	1.50	0.60	Insein	Northern Suburbs
42	Htan Ta Pin Gone Triangle	1.30	0.52	Insein	Northern Suburbs
43	Mya Nandar Park	5.00	2.00	Mingalardon	Northern Suburbs
44	Kan Tar Yar	9.80	3.92	North Okkalapa	Older Suburbs
45	Okkalar Thiri	6.90	2.76	North Okkalapa	Older Suburbs
46	Shwe Pauk Kan	2.66	1.06	North Okkalapa	Older Suburbs
47	Mya Yay Nandar	3.94	1.58	North Okkalapa	Older Suburbs
48	Tu Mingalar	0.40	0.16	South Okkalapa	Older Suburbs
49	Yadanar	0.42	0.17	South Okkalapa	Older Suburbs
50	Mya Thida	0.45	0.18	South Okkalapa	Older Suburbs
51	Shu Khin Tar Park	19.37	7.75	Thaketa	Older Suburbs
52	Myakanthar	2.43	0.97	Thaketa	Older Suburbs
53	Memorial Bogyoke	2.05	0.82	Dala	South of CBD
54	Seikkyi Kha Naungto Park	-	-	Seikgyikhanaungto	South of CBD
55	Hlaing Tar Yar Park	2.00	0.80	Hlaing Tharyar	New Suburbs
56	Dagon Thiri	10.50	4.20	North Dagon	New Suburbs
57	Dagon South	11.50	4.60	South Dagon	New Suburbs
58	Dagon East Parks	2.33	0.93	East Dagon	New Suburbs
	Total	469.94	187.98		

Note: Parks which have an area of more than 10.0 acre are highlighted in green, while parks with more than 2.5 acre are highlighted in pink.

Source: JICA Study Team based on data from the Department of Playgrounds, Parks and Gardens of YCDC



The Department of Playgrounds, Parks and Gardens of YCDC conducted a park user counting survey in October 2012 for one month, targeting 29 public parks in Yangon City. There were a total of 209,677 users counted during the survey period in all 29 public parks. Figure 2.2.41 shows that six parks had more than 10,000 users. It was obvious that the parks located around famous lakes, such as Inya Lake and Kan Daw Gyi Lake, were popular and visited by a lot of people.



Source: JICA Study Team based on the results of the survey conducted by YCDC

Figure 2.2.41: Results of the Park User Counting Survey

3) Other Relevant Facilities

(1) Playgrounds

Aside from public parks, YCDC provides and manages 76 playgrounds with a total area of approximately 22 ha. As shown in Table 2.2.30, the Older Suburbs, the New Suburbs, and the Inner Urban Ring seem to have relatively more playgrounds in their respective areas. On the other hand, the CBD has no playground at all. Regarding the type of playground, around 80% of the total playground areas are used for playing some sort of football.

Table 2.2.30: List of Playgrounds by Township Group in YCDC

Township Group	Number	Area (acre)	Area (ha)
CBD	0	0.00	0.00
Inner Urban Ring	14	9.27	3.71
Outer Ring	5	2.08	0.83
Northern Suburbs	11	13.71	5.48
Older Suburbs	28	16.58	6.63
South of CBD	3	0.91	0.36
New Suburbs	15	11.67	4.67
Total	76	54.22	21.69

Source: JICA Study Team based on data from the Department of Playgrounds, Parks and Gardens of YCDC

Table 2.2.31: List of Playgrounds by Type

Type of Playground	Number
Football	51
Net Football	3
Children Football	4
Futsal	2
Children Playground	12
Volleyball	4
Total	76

Source: JICA Study Team based on data from the Department of Playgrounds, Parks and Gardens of YCDC

(2) *Roundabouts and Roadside Green Spaces*

Roundabouts and roadside green spaces are kinds of green open spaces which are attached to road facilities and managed by the Department of Playgrounds, Parks and Gardens of YCDC. Currently there are seven roundabouts in Yangon City having a total area of approximately 1.26 ha, as shown in Table 2.2.32. In addition, there are 58 roadside green spaces, which are so-called “triangle” by YCDC.

Table 2.2.32: List of Roundabouts in YCDC

Name	Township Group	Area (acre)	Area (ha)
U Wizara Roundabout	Inner Urban Ring	0.36	0.15
U Htaung Bo Roundabout	Inner Urban Ring	0.40	0.16
Hantharwaddy Roundabout	Inner Urban Ring	0.40	0.16
Ayeyarwon Roundabout	Older Suburbs	0.63	0.25
Kayepin Roundabout	New Suburbs	0.40	0.16
Yay Tamar Pin Roundabout	New Suburbs	0.40	0.16
Anawyahta Roundabout	New Suburbs	0.54	0.22
Total		3.14	1.26

Source: JICA Study Team based on the date from Department of Playgrounds, Parks and Gardens of YCDC

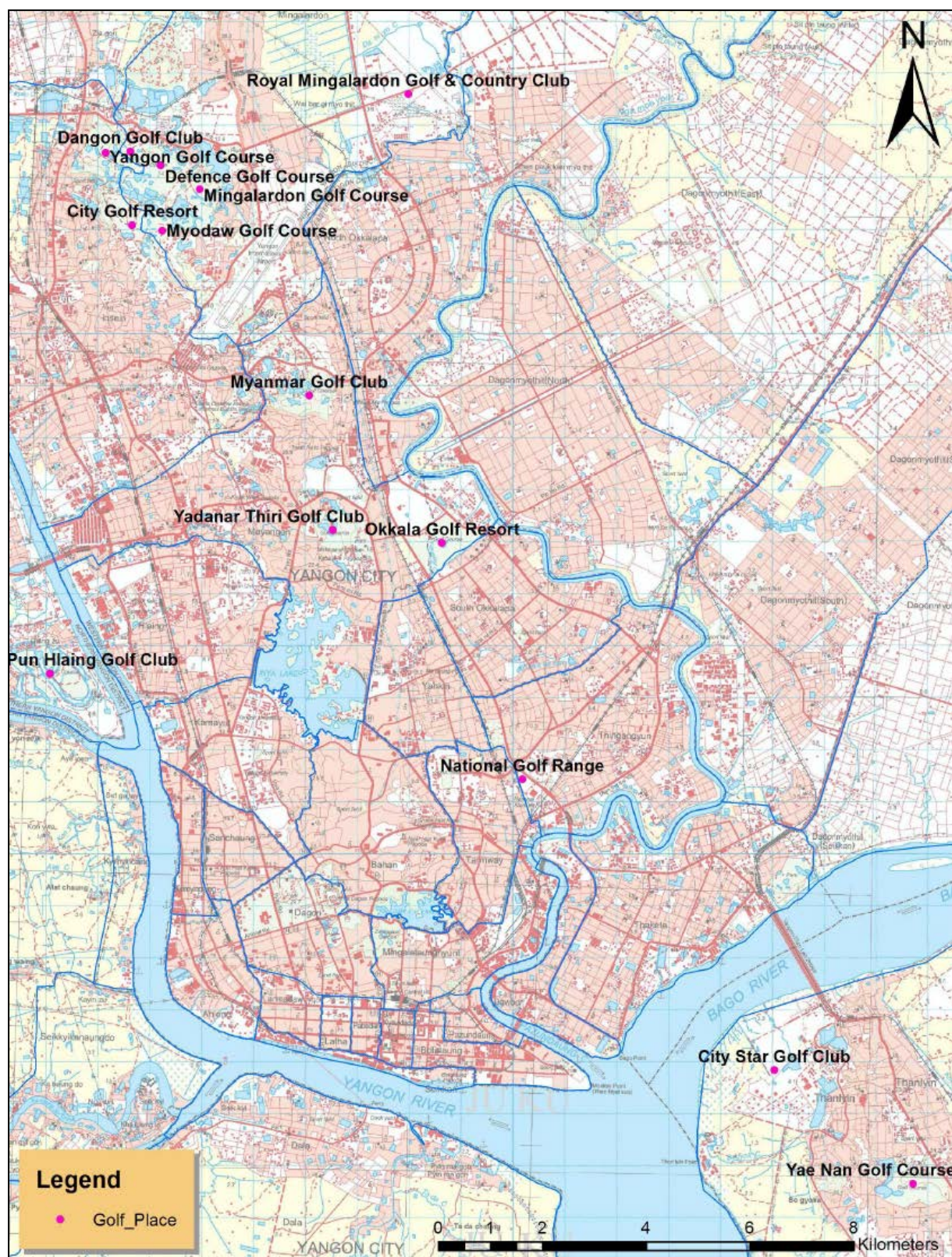
(3) *Golf Courses*

There are currently 14 golf courses in Greater Yangon which are owned and operated by either private or public bodies, as shown in Table 2.2.33. Mingalardon Township seems to have the most number of golf courses.

Table 2.2.33: List of Golf Courses in Greater Yangon

No	Name	Township	Ownership
1	National Golf Range	Thingangyun	Public
2	Myanmar Golf Club	Mayangone	Public
3	Okkala Golf Resort	Mayangone	Public
4	Yadanar Thiri Golf Club	Mayangone	Public
5	Yangon Golf Course	Insein	Public
6	City Golf Resort	Insein	Public
7	Royal Mingalardon Golf and Country Club	Mingalardon	Private
8	Dangon Golf Club	Mingalardon	Public
9	Defence Golf Course	Mingalardon	Public
10	Mingalardon Golf Course	Mingalardon	Public
11	Myodaw Golf Course	Mingalardon	Public
12	Pun Hlaing Golf Club	Hlaing Tharyar	Private
13	City Star Golf Club	Thanlyin	Private
14	Yae Nan Golf Course	Thanlyin	Public

Source: JICA Study Team



Source: JICA Study Team

Figure 2.2.42: Locations of Golf Courses

(4) Key Findings and Main Issues to be Addressed Regarding Public Parks and Greenery

In the course of getting an overview of the conditions of public parks and greenery as discussed above, the following are the key findings and main issues that need to be addressed:

- 1) In the entire jurisdiction of YCDC, there are 58 public parks with a total area of 188 ha (470 acre) which corresponds to 0.37 m² of park space per person. This number seems to be very small given the urban population; therefore, increasing the number and area of the public parks as well as other open public spaces are recommended to achieve sustainable urban development in the future.
- 2) There are currently nine townships under YCDC without any public park. The nine townships are Latha, Lanmadaw, Botahtaung, Tarmwe, Seikkan, Dawbon, Hlaing, Shwe Pyi Thar, Dagon Seikkan. six periphery townships In contrast, Bahan Township alone has seven public parks. The creation of public parks in the townships without public parks should be prioritized in order to provide amenities and open public spaces to citizens and to mitigate negative environmental impacts.
- 3) Yangon has lowland hills in its central area running almost in the north-south direction with an average height of 30m. On the lowland hills, several lakes and marshes remain in the urbanized area. Of those, Kan Daw Gyi Lake, Inya Lake and Hlawga Lake are protected as public parks or designated as protected areas from any urban development activities. Also, the conservation of other green spaces including golf courses with ponds should be paid more attention to because such water areas are very important and essential for flood control and mitigation of environmental pollution.
- 4) Without any criteria or standards related to the creation of new public parks, increasing the number and area of parks may be very difficult in the future due to the costs involved, especially in case the private sector initiates urban development. In order to improve the living conditions in newly urbanized areas, it is necessary to create more public parks by setting new criteria or standards regarding new urban development activities. Furthermore, it is recommended to set a target public park area per capita value for Greater Yangon in the future.

2.3 Review of Current Infrastructure Conditions

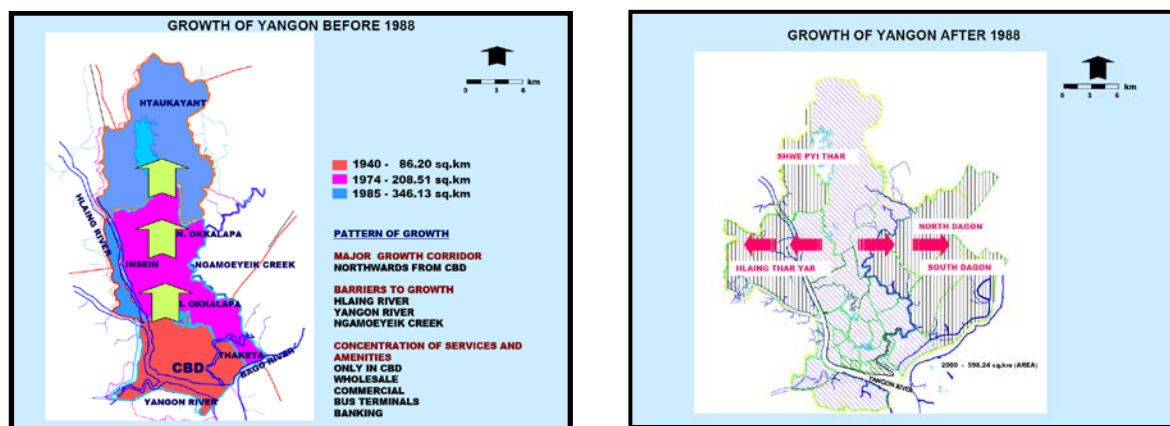
2.3.1 Urban Transport

As the economic condition in Yangon City has improved, the registered number of cars increased from 10,000 in 2000 to 15,000 in 2010 even though prohibition of importation has been strictly enforced. This increasing motorization rate has led to serious traffic congestion. In the recent years, importation was relaxed and this further caused the rapid motorization in the city. However, the people of Yangon are still mainly bus users, with a modal share of more than 80%. While the motorcycles are more popular than the bus in the other cities, since the use of motorcycles are regulated in Yangon City, the people who do not own a car do not have a choice but ride the bus. Though the circular railway has been operated in the CBD, its modal share is only 3%. This very low ridership is due to the poor quality of service, lack of feeder transport system resulting in very low accessibility to and unsecured stations as discussed below. In terms of service level, the public bus transport is also inadequate. There is very long waiting time and the buses are often very crowded. The problems and issues of urban transport, especially of public road transport and traffic management, will be analyzed and discussed in this section.

(1) Urban Development and Transport System in Yangon

Yangon City is bordered by the rivers and creeks, namely Yangon River and Hlaing River in the west, Bago River in the south and Nga Moeyeik Creek in the east. Thus, the city has historically grown northwards from the central area along the No.1 and No.4 Main Roads. Three new satellite towns, South Okkalapa, North Okkalapa and Thaketa, were built in the area between No.3 Main Road and Nga Moeyeik Creek as part of a slum clearance programme and to alleviate the housing shortage in downtown areas. The elongated shape of the urban area of Yangon had been formed until 1988 as shown in Figure 2.3.1.

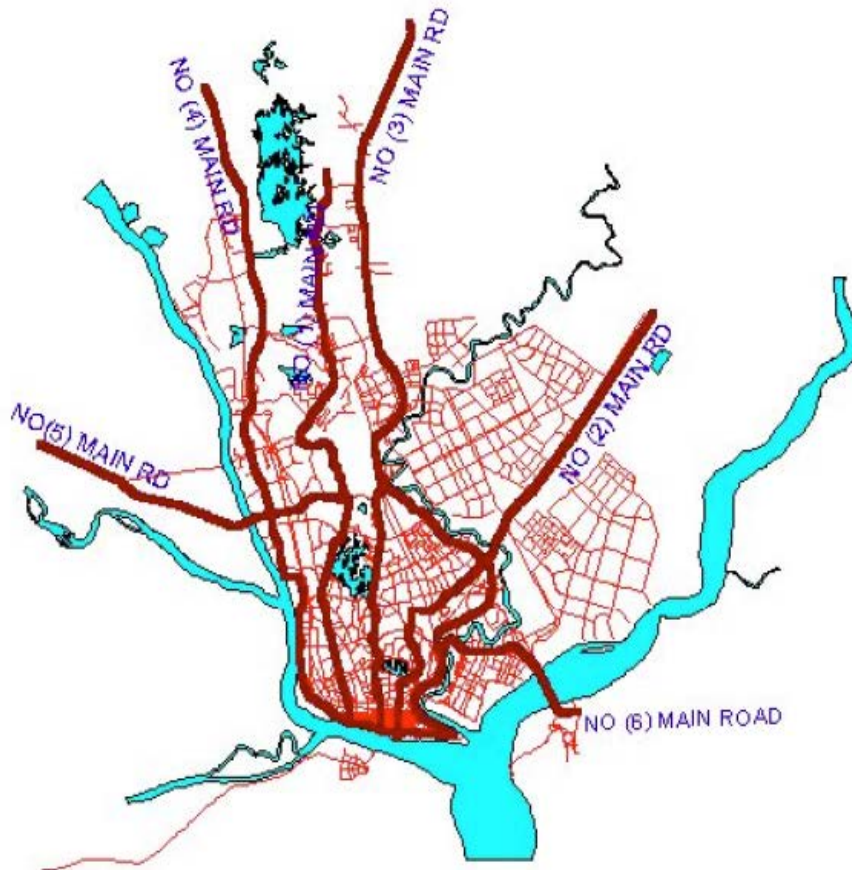
In 1989, the Government constructed Dagon North and Dagon South in the east side of the city and enlarged Hlaing Tharyar on the west side of Hlaing River, along No.2 Main Road and No.5 Main Road respectively. Those satellite towns had mainly developed along existing main roads radiating from the Central Business District (CBD). After 1989, the city has grown rapidly and new suburban satellite townships have been developed to accommodate the increasing population and resettle inhabitants from the congested inner area. Although the city boundary has been extended, the CBD, which is bordered by Yangon River, remains the same at the southernmost part of the city. All important public buildings, commercial and trading centers, markets and shopping centers, and even warehouses remain in the CBD so that most of the traffic flows are concentrating into the CBD on the limited number of radial roads.



Source: Seminar on Urban Public Transport Policy Framework, March 2009

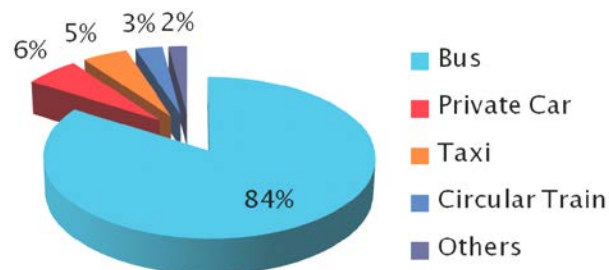
Figure 2.3.1: Growth of Yangon Before and After 1988

More than 4 million people from the suburb of Yangon city commute daily to the central downtown business area or the CBD for various reasons. At present, there are five modes of transport such as the bus, state-owned circular railway (operated by Myanmar Railways, state riverine crafts (operated by Inland Water Transport), taxi, and the private automobile. The bus system in particular dominates travel modes in the city, whereas the train only accounts for a small segment of preferred transport mode use because of its inconvenience. Figure 2.3.3 shows the transport modal share for Yangon in 2003 (Zhang et al., 2008). This indicates that 84% of all trips are made by bus, while only 3% is by railway and 6% by private car.



Source: YCDC

Figure 2.3.2: Regional Main Road Network in Yangon Division

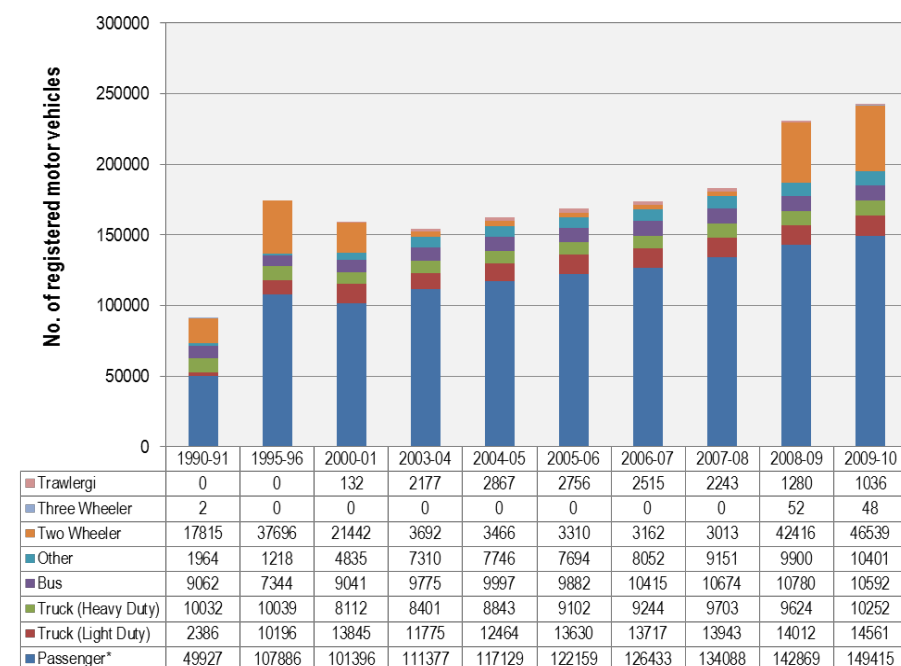


Source: Seminar on Urban Public Transport Policy Framework, March 2009

Figure 2.3.3: Modal Share in Yangon City

Figure 2.3.4 shows the number of registered motor vehicles by type in Yangon Region. Although there are some restrictions on the vehicle importation and registration in Myanmar, the number of vehicles has increased rapidly since 2008 after democratization. Within Yangon City, it is prohibited to drive trishaws, bicycles, and motorcycles (see Table 2.3.12). Table 2.3.1 shows vehicles' population in major states/division in Myanmar. As of 2010, motorization rate per 1000 population in Yangon is

comparatively lower than other major divisions or states because of the number of motorcycles. Share of motorcycle in Yangon is quite small at only 20%, as compared with around 90% share in other divisions and states.



Source: Myanmar Statistical Yearbook, 2010

Figure 2.3.4: Registered Motor Vehicles by Type in Yangon Region

Table 2.3.1: Number of Vehicle per population (2010)

No.	State/Division	Total Vehicle Registered	Motorcycle Registered	Motorcycle portion	Vehicle/ 1000 pop
1	Mandalay Division	626,202	549,338	87.73%	75.0
2	Shan State	346,073	305,894	88.40%	61.2
3	Kachin State	80,953	70,016	86.50%	51.8
4	Kayah State	16,711	14,752	88.30%	48.0
5	Taninthayi Division	70,323	64,787	92.10%	41.6
6	Sagaing Division	252,986	237,225	93.80%	38.9
7	Yangon Division	253,904	50,401	19.80%	36.5
8	Mon State	103,119	92,586	89.80%	33.2
Myanmar Total		2,291,675	1,877,596	81.9%	38.49

Source: Myanmar Statistics 2010

(2) Historical Background of Public Transportation in Yangon

1) Pre-Independence Period (Before 1948)

After the Second Anglo-Burmese War in 1852, British military engineers Fraser and Montgomerie rebuilt Yangon City with an area of nearly 2 km² for 50,000 inhabitants. Steam tramway was first introduced on 4th March 1884 to address the transportation problems within Yangon City. Soon after, in 1886, the electric tramway was constructed. On 15th December 1906, the first tramcar ran from the Surati Bazaar Road (now known as Kyee Myin Daing Kanner Road) at Kyee Myin Daing township to the Surati Bazaar (or Theingyi-Zay at present) under the auspices of the Rangoon Electric Tramway and Supply Company (RET). In 1905, the first private car was imported to Yangon and since 1906, private cars were continuously imported.

In October 1913, RET introduced the first urban bus system with a 5-bus fleet. In 1924, Myanmar Nationality Transportation Group took over from RET the provision of urban transportation with no more than 15 units of Ford buses.

In 1920, the city was extended northward to Kamaryut, Thamaing, Kanbe, and Thingangyun and the area expanded to 33.38 square miles (86.45 km²) with a population of 300,000 (Tin Tin Pyone, 2002). The city limit and population had grown quite considerably; however, there was no severe transport problems encountered then. But after the World War II, the devastation of the war had resulted to total damage to the transportation system. The 201 bus units of war surpluses were then used for urban transportation system.

2) Period of 1948-1958

After independence in 1948, the population of Rangoon reached up to 600,000 resulting from many people migrating to Rangoon, living in slums and squatter areas such as Minmanaing, Bahosoi and Goodliffe, among others. Until that time, public transportation in Rangoon was manageable because of the abundant supply of buses and a large number of squatter settlements were very close to CBD. In 1954, the total number of buses registered in Rangoon was 1,557 while 254,950 commuters were using the public transport with 904 buses operating daily. During those days, the municipal area was not so extensive and bus routes were short.

Also during that time, railway services from the suburban area to Yangon started with steam engine traction train sets. It consisted of six coaches with 64 seats in each coach. An average of 25,964 commuters was carried with an average of 100 trips per day (Aung Myint, 1983).

3) Period of 1958-1962

By 1958, the population has reached 1.5 million. And from 1959 to 1960, three new satellite towns, namely South Okkalapa, North Okkalapa and Thaketa were built as part of a slum clearance programme and to alleviate the housing shortage in Rangoon. The city by this time has already expanded to about 78 square miles (202 km²) (Tin Tin Pyone, 2002). The bus service was not so different from the previous decade. Although the city limits have been extended, the CBD remains the same at the southernmost part of the city. All important public buildings, commercial and trading centers, the main railway terminals, the biggest markets and shopping centers, the best cinema halls, retailers and wholesale dealers, even warehouses, remain at the CBD. This brings in a large volume of commuters from the new satellite towns entering CBD on a daily basis which results to passenger transport problems in Rangoon at present.

Due to expansion of city area and the rapid growth of population, on 1st May 1959, MR Corporation introduced a circular railway service which operated up to eight diesel rail cars set. At that time, the rail services made an average of 160 daily trips and carried 57,578 commuters. Two circular routes (clockwise and counter-clockwise) and three suburban routes were operated (Win Thaung, 2002).

After the World War II and until 1962, privately-owned buses provided the public bus services in Yangon City. The private bus owners operated under animal signs such as Rabbit, Horse, Prawn, Elephant, Rhino, Dagon, Zebra, Fish, Yatch, etc. Buses were only marked with these animal signs which already indicate the line they operate. However, since there was no central authority which regulated these private bus operators the bus lines were essentially operated to maximize individual incomes without regard to the social benefit of the general public.

4) Period of 1962-1972

When the Revolutionary Government came in 1962, the privately-owned bus lines were abolished and all the individual operators were brought under the regulatory control of Motor Transport Management Committee, which is now referred to as the Yangon Division Bus Supervisory Committee - Ma-Hta-Tha, to ensure commuter services which are safe, efficient

and as economical as possible. The state-owned bus lines were introduced in 1st September 1963 to attract people to use public transportation that provides better quality of buses.

In the circular railway sector, nine additional diesel locomotives were provided in 1964. Even though the daily services increased to 190 trips in 1965 and 200 trips in 1971, the train still did not become a major mode of public transportation.

5) Period of 1972-1986

During this time, public transportation was operated by three main groups: the State (Road Transport Corporation or the R.T.C), cooperatives (Rangoon Division Cooperative, Disabled Soldiers Cooperative), and the private sector under the guidance of Motor Transport Management Committee or the present Yangon Division Bus Supervisory Committee - Ma-Hta-Tha.

(1) Road Transport Corporation (RTC)

When the RTC faced difficulties in the management of bus transportation system, it turned-over the operation of four bus lines to Ma-Hta-Tha in 1967 and 1971. RTC operated seven lines with 361 buses in 1974, which dropped to 255 buses in 1978 and increased to 348 in 1982. However, the target of 700 buses in accordance with the 7-year Transport and Traffic Management Program of RTC was never achieved.

Table 2.3.2: Bus Operation of the State Sector (RTC)

Year	Avg. daily operating buses	Avg. daily no. of passengers
1974	361	412,915
1975	376	409,481
1976	340	431,579
1977	314	532,344
1978	255	468,883
1979	270	450,037
1980	260	377,322
1981	309	408,434
1982	348	511,131

Source: Htin Linn Oo et. al, 2003

(2) The Cooperative Sector

This sector played a relatively very minor role in public transport in Rangoon. The Rangoon Division Transport Cooperative was established in 1975 to alleviate the public transport problems in Rangoon. Its objective was to transport government employees to and from their homes and the work place. It started with 27 buses in 1976, then peaked at 38 in 1977, but it soon dropped to 25 in 1978.

**Table 2.3.3: Bus Operation of the Cooperative Sector
(Yangon Division Co-operative & Disabled Soldiers Co-operative)**

Year	Avg. daily operation buses
1976	27
1977	38
1978	25

Source: Htin Linn Oo et. al, 2003

(3) Private Sector under Motor Transport Management Committee

The private sector has grown steadily both in the number of buses as well as passengers. The total number of buses in operation was 276 in 1974 and it has increased to 497 in 1978. However, it never reached the target number of 1,557 buses in 1984. The condition of the roadworthiness of the buses in the private sector is not very satisfactory because most of them

are World War II surplus trucks reconditioned for passenger use. Pick-ups and light trucks which were newly imported by private individuals were also used as passenger carriers in the private sector. The increasing number of cars under Ma-Hta-Tha was caused by the use of pick up vehicles with 13 passenger capacity.

Table 2.3.4: Bus Operation of the Private Sector
(Under Motor Transport Management Committee)

Year	Avg. daily operating buses	Avg. daily no. of passengers
1974	276	357,984
1975	363	453,107
1976	468	620,913
1977	449	653,644
1978	497	752,593
1979	508	776,763
1980	552	832,704
1981	561	877,084
1982	1,093	1,067,878

Source: Htin Linn Oo et. al, 2003

6) Period of 1986-2000

The city has historically grown northwards from the central area, forming an elongated shape because of the constraint of the Hlaing River, Pazundaung Creek and Nga Moeyeik Creek. The area of the city has expanded from around 33 square miles (85 km²) in 1920 to over 80 square miles (207 km²) in 1974 and 133 square miles (344 km²) in 1985 (Win Thaug, 2002). After State Law and Order Restoring Council took over the State power in 1988, the city area has been further extended to over 200 square miles with the inclusion of substantial additional areas to the East and West.

Before 1988, the number of commuting trips between downtown area and the old suburban area were equally distributed among the railway, bus and private cars.

After 1988, with the expansion of development to the East, North and West of Yangon city, medium and low income level people moved to the new satellite towns and they commuted to downtown area by buses. The railway network however was not extended to support commuting from the new suburban and downtown to Yangon city. Commuters from outer ring and inner ring also shifted to bus-use because of accessibility and short waiting time for buses. On the other hand, there was a decrease in the level of service in the railway sector and maintenance standards of railway infrastructure had deteriorated. This resulted to the bus becoming the dominant transportation mode in daily commuting trips between suburban area, old suburban area, outer ring, inner ring, and downtown area. This further created additional demands on the already overloaded transportation system in the city.

7) Period of 2000-2008

Bus trips account for almost 80% of all public transport trips, with the remaining 20% distributed to use of rail, water transport, and taxis. The quality of circular railway is poor and mostly used by low income people and those who collect green grocery from the suburb and sell them in the downtown area. In addition, majority of the people in Yangon could not afford a car due to very high cost given their relatively low income. Since the Myanmar Government allows only a few thousand cars to be imported each year, car prices in Yangon are among the highest in the world (The New York Times, 2008). In July 2008, the two most popular cars in Yangon, the 1986/87 Nissan Sunny Super Saloon and the 1988 Toyota Corolla SE Limited, cost about US\$ 20,000 and US\$ 29,000 respectively (Thomas Kean, 2008). As a result, people rely heavily on urban bus transport system for their daily mobility needs.

Bus services are provided by using a variety of old and second-hand vehicles including Second World War Chevrolet chassis with locally built wooden bodies, converted light trucks,

city buses, pick-ups and minibus. Average daily bus demand was 3,305,726 passengers in 2008. There were 5,039 bus vehicles serving 283 routes in Yangon (Aung Myint, 2008). All buses run on Compressed Natural Gas (CNG) following the 2005 government decree to save money on imported petroleum.

Since buses are mainly imported, second hand units from Japan and Korea, they are already old and poorly maintained. This situation is attributed to lack of resources, principally funding, as well as to inadequate workshop facilities, tools and equipment and difficulties in obtaining spare parts. The shortage of mechanical skills due to poor educational standards and limited training facilities also contribute to poor maintenance of vehicles and equipment. This adversely affects safety and reliability of bus transport and results to very high operating costs. There was a bus explosion incident in September 2008 while the bus was in operation. The cause of the explosion was due to a faulty re-fitting of the bus to run on CNG instead of petrol or diesel that led to the explosion in gas tanks of the bus.

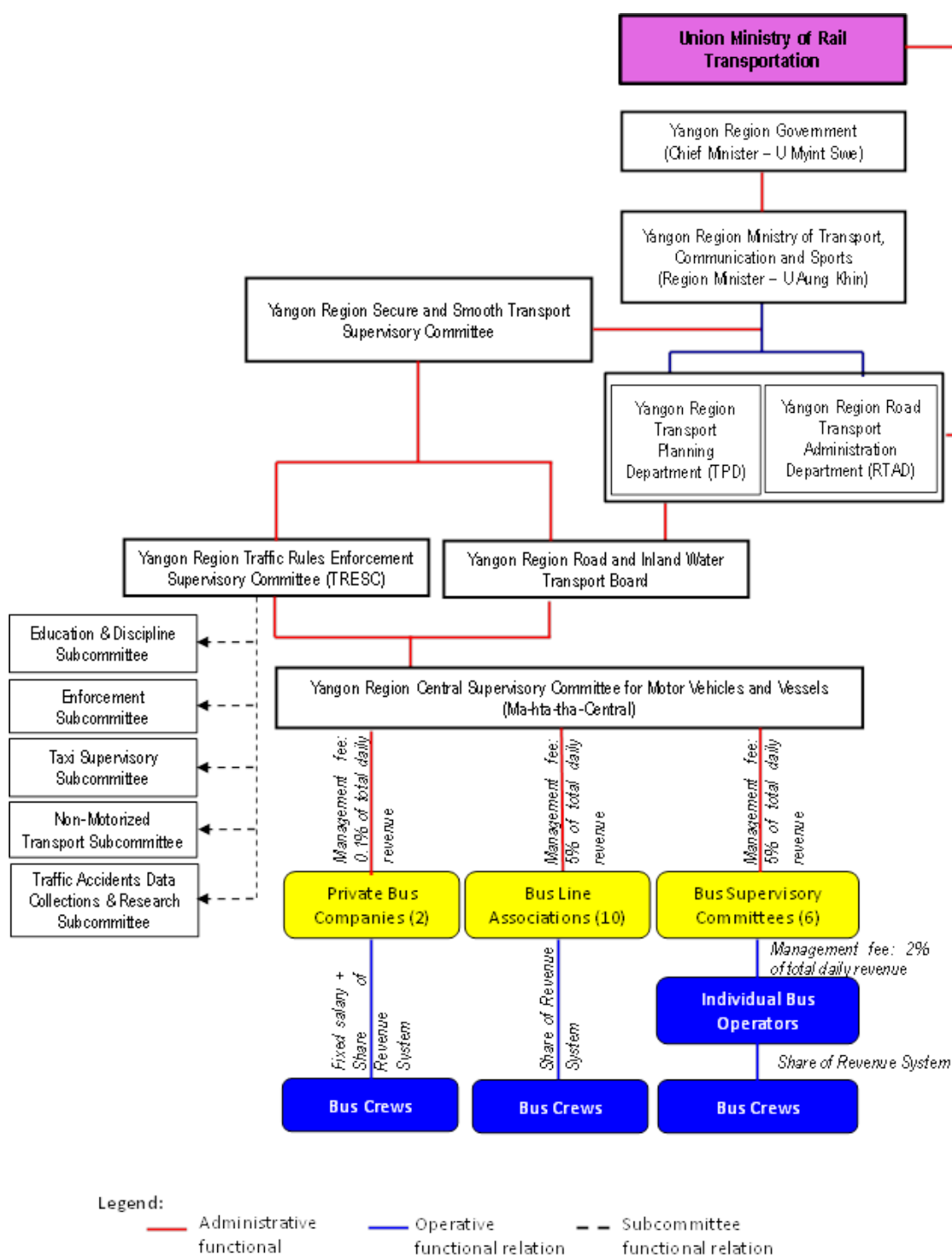
(3) Current Situation of Bus Transportation

1) Bus Transport Industry Structure and Institutional Arrangement

Bus services are presently provided through composite mechanisms. There are three types of bus services in Yangon. These are:

- Bus services provided by private bus companies
- Bus services provided by individual private bus owners and managed by bus supervisory committees
- Bus services provided by bus line associations

All are under the control of Yangon Region Central Supervisory Committee for Motor Vehicles and Vessels (herein after referred to as Ma-hta-tha-Central). Total 18 bus line organizations are involved in providing bus services under the control of Ma-hta-tha-Central. The current bus transport industry structure and institutional arrangement, and comprehensive details of characteristics of market environment for bus operation are described in Figure 2.3.5 and Table 2.3.5.



Source: Information obtained from Interview with Yangon Region Transport Planning Department, Ma-hta-tha-Central, Traffic Police Divisional Department & Ma-hta-tha (As of September 2012)

Figure 2.3.5: Bus Transport Industry Structure and Institutional Arrangement

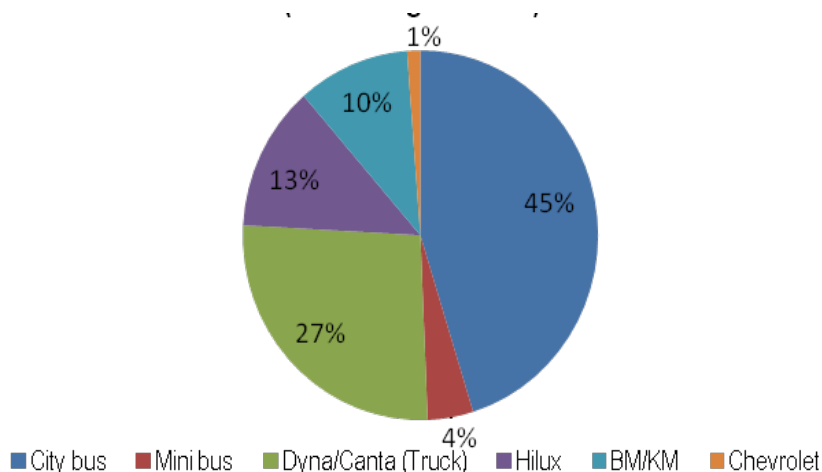
Table 2.3.5: Characteristics of Market Environment for Bus Operation

I. Financial Regulation			
Fare regulation	Controlled by government		
Financial operating assistance			
(i) Finance for infrastructure	YCDC is responsible for construction and maintenance of bus stops.		
(ii) Subsidies for operating deficits	No		
(iii) Subsidies for vehicle purchase	No		
Fare system	Under Bus Supervisory Committees	Golden City Link Co. Ltd.	Bandoola Transportation Co. Ltd.
	Distance-based fare	Flat fare	Flat fare & Distance-based fare
Fare level (Fare structure effective August 2012)	Mini: MMK 50 (until 8 km) Increased amount: MMK 50 / 8 km Max: MMK 250 Special bus fare: MMK 200-300	MMK 300	Flat fare (Air-con bus): MMK 200 Distance-based (Non-air con bus): same as used by Bus Supervisory Committees
Fare collection system	On-board conductors		
Forms of payment	Cash		
Revenue control system	<div><div>Bus passengers</div><div>↓ <i>Bus fare</i></div><div>Bus crews</div><div>↓ <i>Revenue</i></div><div>Bus Operators</div><div>↑ <i>Fixed salary + % of revenue (or) Share of revenue</i></div></div>		
Contract between operators and drivers	<u>Individual Operators</u> Share of revenue (30% of daily revenue for driver; 15% of daily revenue for two conductors)	<u>Bus Companies</u> Fixed salary + commission payment from daily revenue (6% of daily revenue)	
II. Operational Regulation			
Market Regulation			
(i) Control of access to the market	By administrative decision {process of selection of an operator is not clear}		
(ii) Competition	Competition in the market		
(iii) Type of ownership	Public and private		
(iv) Payment for operators	None		
Procurement of services			
(i) Bus service contracting	Required {Individual bus operator must belong to one of the bus supervisory committees}		
(ii) Route permission	Required {given by Yangon Region Central Supervisory Committee for Motor Vehicles and Vessels }		
(iii) Operators licensing	Required {Operating license, valid for 1 year} Any person who engages in road transport business is required to hold operating license that are issued by TPD under the Ministry of Rail Transportation. In practice, TPD tends to follow the recommendations of the RTAD which inspect the vehicle in accordance with the regulations. License is normally valid for 1 year and buses are inspected by RTAD every year when license is renewed.		
(iv) Licenses for bus crews	Required {valid for 2 years}		
(v) Regulation on frequency	For bus companies: self-controlled For individual bus operators: controlled by bus supervisory committees		
(vii) Passenger information provision	No information for schedule, map, name of stops, fare		
III. Safety Regulation			
(i) Regulation on vehicle maintenance	Buses are inspected by RTAD every year when vehicle registration is renewed.		

Source: Information obtained from Interview with Ma-hta-tha (Central) and Ma-hta-tha (As of September 2012)

2) Distribution of Bus Vehicles by Types and Bus Routes Distribution

Figure 2.3.6 shows the distribution of bus vehicles by type that are operated by local bus operations in Yangon. The city buses account for 45% of all buses in Yangon. Table 2.3.6 shows the number of bus routes by each bus line organization and their type of vehicles in operation.



City Bus	Mini Bus	Dyna/Canta
		
Hilux	BM/KM	Chevrolet
		

Source: Ma-ha-tha-Data from Yangon Region Central Supervisory Committee for Motor Vehicles and Vessels

Figure 2.3.6: Distribution of Bus Vehicles by Type

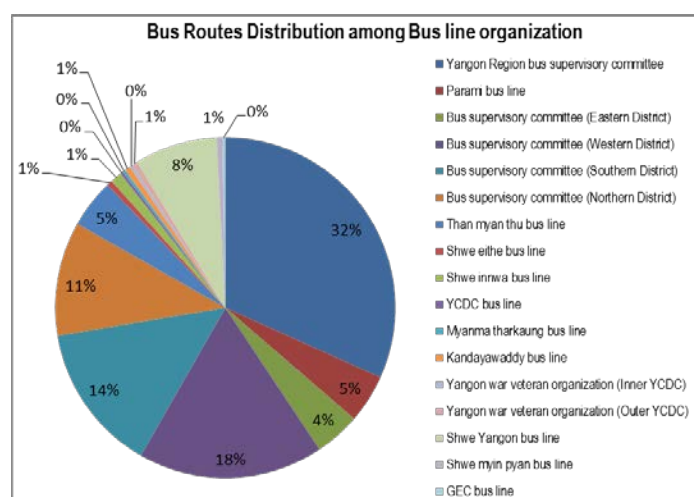
Table 2.3.6: Total Bus Routes & Type of Vehicles by Each Bus Line Organization

No	Name	Total Bus Routes	Type of Vehicles						
			City bus	Mini bus	Dy/Canta (Truck)	Hilux	BM/KM	Chevrolet	Total
1	Yangon Region Bus Supervisory Committee	117	1251	191	412	163	44	82	2,143
2	Yangon Highway Bus Supervisory Committee	129	1125	-	125	25	-	-	1,275
3	Parami Bus Line	17	474	-	-	-	-	-	474
4	Bus Supervisory Committee (Eastern District)	16	36	-	91	-	402	1	530
5	Bus Supervisory Committee (Western District)	65	115	77	681	279	285	1	1,438
6	Bus Supervisory Committee (Southern District)	52	68	16	47	159	16	6	312
7	Bus Supervisory Committee (Northern District)	40	192	26	211	245	3	5	682
8	Than Myan Thu Bus Line	17	40	11	391	-	37	-	479
9	Shwe Eithe Bus Line	2	80	-	-	-	-	-	80
10	Shwe Innwa Bus Line	4	30	-	-	-	-	-	30
11	YCDC Bus Line	1	6	-	-	-	-	-	6
12	Myanma Tharkaung Bus Line	1	-	-	1	-	-	-	1
13	Kandayawaddy Bus Line	2	-	-	35	-	-	-	35
14	Yangon War Veteran Organization (Inner YCDC)	1	-	-	-	37	-	-	37
15	Yangon War Veteran Organization (Outer YCDC)	2	4	-	-	43	-	-	47
16	Shwe Yangon Bus Line	29	123	6	57	45	15	-	246
17	Shwe Myin Pyan Bus Line	2	-	-	18	-	-	-	18
18	GEC Bus Line	1	-	-	11	-	-	-	11
Total		498							

Bus lines committee
 Bus lines association
 Private bus companies

Source: Yangon Region Central Supervisory Committee for Motor Vehicles and Vessels (As of August 2012)

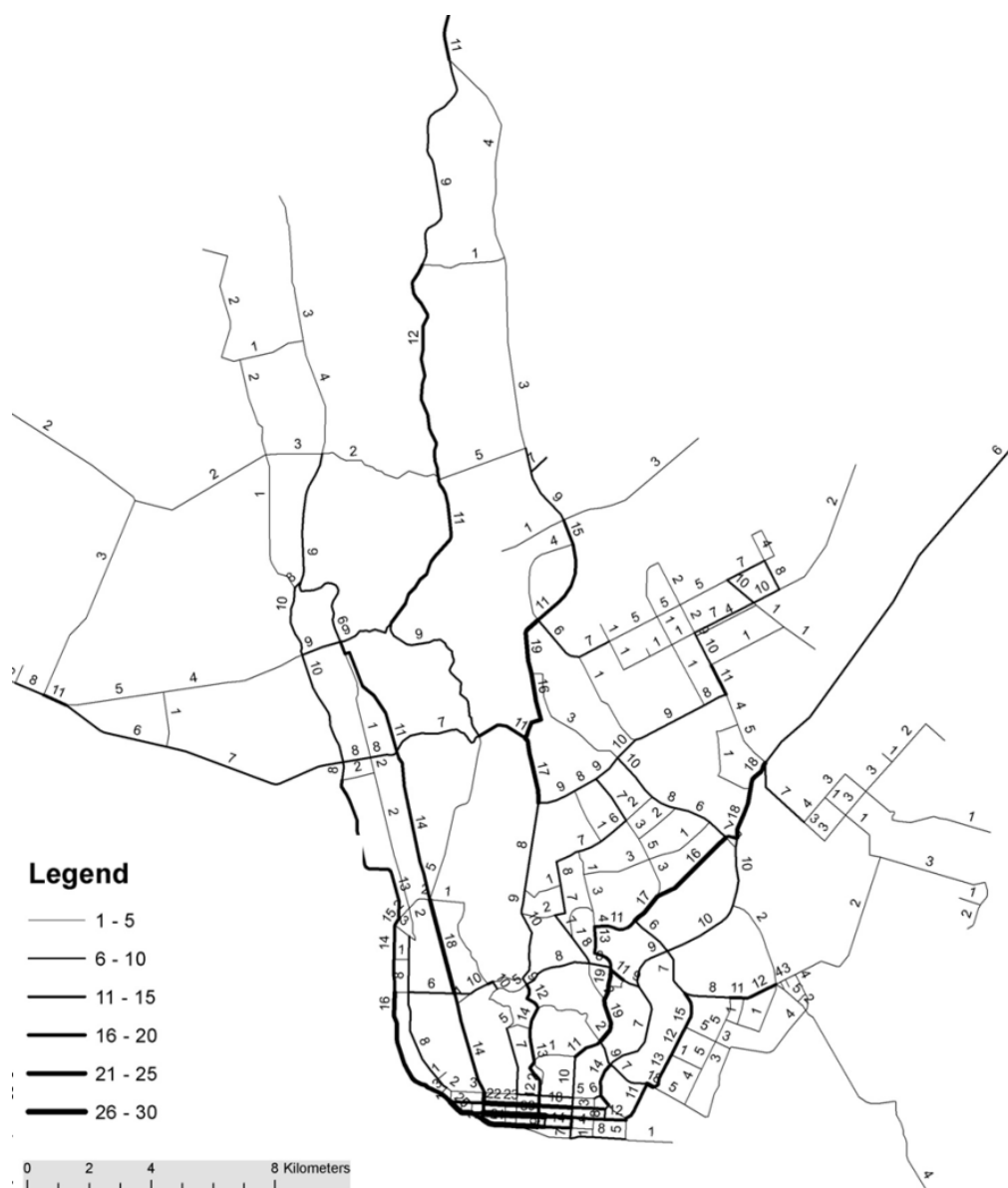
There are a total of 369 bus routes that are operated by 17 bus lines associations/committees/private bus companies (excluding Yangon Highway Bus Supervisory Committee-129 routes). Share of bus routes among those bus line organizations are shown in Figure 2.3.7. As shown in Figure 2.3.8, existing bus routes are set mainly on main roads, such as No.1 Main Road, No.3 Main Road, Pyay Road, Bayint Naung Road. Service supply characteristics of bus line organization are shown in Table 2.3.7.



Note: Excluded Yangon Highway Bus Supervisory Committee

Source: Data from Yangon Region Central Supervisory Committee for Motor Vehicles and Vessels (As of August, 2012)

Figure 2.3.7: Bus Routes Distribution among Bus Line Organizations



Source: JICA Study Team based on the information from Ma-ha-tha-central

Figure 2.3.8: Existing Bus Routes Distribution

Table 2.3.7: Bus Operations Data by each Bus Line Organization

No.	Bus Line Association/Committee/Company	Per Month				Type of Fuel Used			Daily Average			
		No. of operating bus	No. of round trip	Income (kyat)	No. of passengers	Petrol (Gallon)	Diesel (Gallon)	CNG (Litre)	No. of operating bus	No. of round trip	Income (kyat)	No. of passengers
1	Yangon Region Bus Supervisory Committee	47,169	381,737	4,857,711,800	47,578,060	-	26	1,519,020	1,522	12,314	156,700,381	1,534,776
2	Yangon Highway Bus Supervisory Committee	18,241	18,241	61,554,516	785,925	-	795,650	1,676,160	588	588	1,985,630	25,352
3	Parami Bus Line	14,632	51,615	500,000,000	3,293,765	-	-	25,075	472	1,665	16,129,032	106,250
4	Bus Supervisory Committee (Eastern District)	7,399	68,258	358,546,000	3,843,200	5,188	-	2,291,078	239	2,202	11,566,000	123,974
5	Bus Supervisory Committee (Western District)	26,128	104,512	1,910,988,800	12,615,640	-	8,805	6,548,800	843	3,371	61,644,800	406,956
6	Bus Supervisory Committee (Southern District)	7,184	29,205	362,715,000	1,307,684	3,378	-	1,385,330	231	942	11,700,484	42,183
7	Bus Supervisory Committee (Northern District)	17,349	85,696	983,580,200	5,081,458	4,952	-	959,452	560	2,764	31,728,394	163,918
8	Than Myan Thu Bus Line	8,311	66,488	391,992,000	4,927,200	--	-	53,484	268	2,145	12,644,903	158,942
9	Shwe Eithe Bus Line	1,736	9,474	121,520,000	426,330	-	-	901,270	56	306	3,920,000	13,753
10	Shwe Innwa Bus Line	613	2,181	2,901,500	436,200	-	-	637,520	20	71	93,597	14,071
11	YCDC Bus Line	136	408	1,020,000	31,400	-	-	5,900	4	13	32,903	1,013
12	Myanma Tharkaung Bus Line	31	124	40,000	800	-	-	554	1	4	1,290	26
13	Kandayawaddy Bus Line	729	4,374	17,496,000	183,708	-	-	153,090	24	141	564,387	5,926
14	Yangon War Veteran Organization (Inner YCDC)	1,036	5,180	23,310,000	88,060	-	-	93,240	33	167	751,935	2,841
15	Yangon War Veteran Organization (Outer YCDC)	1,000	1,000	12,800,400	12,744	-	4,013	9,500	32	32	412,916	379
16	Shwe Yangon Bus Line	5,367	34,216	225,315,000	1,593,644	100	4,449	1,129,982	173	1,104	7,268,226	51,408
17	Shwe Myin Pyan Bus Line	338	3,380	20,280,000	202,800	-	-	84,500	11	109	654,194	6,542
18	GEC Bus Line	269	807	12,105,000	121,050	-	-	9,415	9	26	390,484	3,905
Total		157,668	8,668,896	9,863,876,216	82,529,668	13,618	812,943	31,154,370	5,086	27,964	318,189,556	2,662,215

Bus lines committee
 Bus lines association
 Private bus companies

Source: Yangon Region Central Supervisory Committee for Motor Vehicles and Vessels (As of August 2012)

(4) Vehicle Registration System

Vehicle registrations are valid for one year and are issued by Yangon Region Road Transport Administration Department (RTAD). All vehicle registrations can subsequently be renewed at RTAD's branch office in states or regions. In Yangon, this is done in accordance with the residing townships.

Before a certificate of registration is issued, an evidence of being covered by Myanmar Insurance must be shown. Vehicle registration is carried out for vehicles imported with the State permit, domestically assembled vehicles and vehicles which are allowed to register by law. Every motor vehicle (including motorcycle), imported or domestically manufactured has to be inspected for identification and road worthiness at RTAD Head Office prior to initial registration. It has also to be inspected annually for road worthiness before renewal of registration.

RTAD carries out vehicle inspection in line with the 1964 Motor Vehicle Law and 1989 Motor Vehicle Rules. Identification marks such as model, engine and chassis number, type, dimensions and weight are recorded for accuracy of registered motor vehicle and traffic safety devices such as lighting system, braking system, steering system, tires and wheels. In addition, exhaust system, engine and power train systems are inspected for safety standards.

Myanmar follows the ASEAN Standards for vehicle inspection and issues the Vehicle Inspection Certificate (VIC) which is compulsory for every vehicle driven on public roads. Every RTAD State/Region office has a vehicle inspection center, but inspections are only carried out visually and not with technical equipment. Only Yangon Head Office has some technical equipment such as brake tester (Source: Road Safety Action Plan in Myanmar).

(5) Transport Licensing

1) Driver Licensing System

Driver licenses are issued if applicants pass the driving test which is conducted by RTAD. RTAD has the authority to control training services, driver training centers and the issuance of motor vehicle driver license. Driver license fees are one of prime sources of revenue. The holder of the driver license must be at least 18 years old and the driver license is valid in any area of the country. RTAD also issues "International Driving Permit" in conformity with the International Convention on Road Traffic 1968 held in Vienna, Austria. Majority of learners take driver training with their parents or relatives and then apply for a driving test at RTAD. Currently, private driving training schools are not eligible to issue driving licenses to their trainees without RTAD's driving test. The driver license types issued by the department are listed in Table 2.3.8. The statistics of driver license for each type by State and Region are also shown in Table 2.3.9.

Table 2.3.8: Types of Driver's Licenses

Type of License	Valid Period	Vehicles permitted to be driven	Limitations	Remarks
A	5 years	Motorcycles	Type A license holder has the right to drive motorcycle only.	A person wishing to hold Type A or Type B driver's license should already have been issued a Type L driving license.
B	5 years	Privately-owned vehicles (up to 3 ton except commercial vehicles)	Type B license holder has the right to drive vehicles allowed for Type A and Type C driver licenses. A person learning to drive should be accompanied by a Type B driver license holder with at least 2 years experience. Such person shall be able to supervise the learner. The vehicle used for learning to drive shall not have any extra person.	
C	5 years	Other mechanized vehicles (tractor, trawler, etc.)	Type C license holder has the right to drive the other vehicles registered by the provision of Chapter II in 1989 Motor Vehicle Rules.	A person wishing to hold a Type C driving license must be 18 years of age and should be capable of driving the vehicle which he applied for.
D	3 years	All sorts of registered vehicles (except commercial truck and buses)	Type D license holder has the right to drive privately-owned heavy motor vehicles, including buses, taxi and hearse. Moreover, Type D license holder can also drive the vehicles allowed for Types A, B and C licenses.	A person wishing to hold a Type D driving license should have been a holder of Type B license for at least 3 years.
E	3 years	All sorts of registered vehicles	Type E license holder has the right to drive any registered vehicle.	A person wishing to hold a Type E driving license should have been a holder of Type D license for at least 2 years and should be a citizen, a permanent resident or a naturalized citizen of the Union of Myanmar. Moreover, that person must comply with the prescribed health requirements and pass the tests as specified by the Central Registration Authority.
F	5 years	-	Type F license holder has the right to perform ticket seller or spare man.	A person wishing to hold a Type F license (conductor or spare man license) should be a citizen, a permanent resident or a naturalized citizen of the Union of Myanmar. Must be at least 18 years old and must comply with the prescribed health requirements and pass the tests as specified by the Central Registration Authority.
L	1 year	For learners	Type L driving license is for learning to drive a motor vehicle.	A person wishing to hold a Type L driving license should at least be 18 years old.

Note: A license is not transferrable to another person.

Source: Ministry of Rail Transportation official website (www.mrt.gov.mm); Accessed on September 5, 2012

Table 2.3.9: Statistics of Drivers' License by States and Regions (As of April 2012)

Sr. No.	State/Region	Types of License					TOTAL
		A	B	C	D	E	
1	Head office	-	5,976	-	-	-	5,976
2	Nay pyi daw	95,200	22,155	2	2,241	3,469	123,067
3	Yangon	28,933	275,272	2	133,334	96,797	534,338
4	Mandalay	362,291	171,860	1	30,582	31,832	596,566
5	Bago (East)	60,330	17,081	-	954	6,320	84,685
6	Bago (West)	41,792	16,091	-	505	5,965	64,353
7	Saging	152,613	46,294	3	1,057	8,436	208,403
8	Shan (South)	53,671	37,249	1	3,066	9,345	103,332
9	Shan (North)	48,118	34,514	1	3,174	8,445	94,252
10	Shan (East)	49,694	13,483	-	1,512	822	65,511
11	Mon	70,427	25,210	-	1,376	5,569	102,582
12	Magway	87,104	31,109	-	854	7,539	126,606
13	Taninthayi	79,104	17,414	-	685	2,319	99,522
14	Ayarwaddy	107,570	27,756	-	1,026	4,325	140,677
15	Kachin	36,159	32,565	-	868	1,873	71,465
16	Kayin	18,581	9,858	-	264	1,563	30,266
17	Rakhing	17,211	4,438	-	122	1,069	22,840
18	Kayar	23,948	4,905	2	74	1,483	30,412
19	Chin	10,245	1,672	-	22	297	12,236
TOTAL		1,342,991	794,902	12	181,716	197,468	2,517,089

Source: Ministry of Rail Transportation official website (www.mrt.gov.mm); Accessed on September 5, 2012

2) Business License Law

Under the 1963 Road and Inland Water Transport Law, all the motor vehicles and motor vessels for transportation of commercial nature (except departmental vehicles which are under exemption by Law) require annual renewal of business license to operate as shown in below Table.

Table 2.3.10: Type of Business License

Sr. No.	Business	Type of Business License
1	Transportation of goods	A
2	Transportation of passengers	B
3	Taxi	C
4	Hire under contracts and/or Ferry	D
5	Private- or business-owned	E

Source: Transportation Planning Department, Ministry of Rail Transportation official webpage (Accessed on 19th October 2012)

Table 2.3.11: 1998-1999 to 2011-2012 (As of September) Business License Issued

Year	Motor Vehicle	Tractor Trailer	Motor Vessel	Under 20 Hp Vessel	Tri Cycle	TOTAL
1998-1999	96,433	1,570	3,062	22,185	0	123250
1999-2000	90,044	4,914	2,449	17,742	0	115149
2000-2001	90,711	8,324	2,257	18,803	0	120095
2001-2002	93,842	15,054	1,972	24,354	0	135222
2002-2003	96,228	25,607	2,055	27,931	0	151821
2003-2004	99,670	32,232	1,992	28,143	0	162037
2004-2005	103,940	38,885	2,042	24,305	109	169281
2005-2006	104,975	43,822	1,903	23543	550	174793
2006-2007	104,231	42,048	2,001	28,808	1,791	178879
2007-2008	106,398	47,784	2,206	27,799	3,122	187309
2008-2009	107,375	37,512	2,406	2,427	3,904	153624
2009-2010	111,017	32,736	2,663	25,795	5,571	177782
2010-2011	115,581	29,865	3,067	25,574	7,851	181,938
2011-2012 (September)	120,854	28,762	3,182	13,838	9,141	175,777

Source: Transportation Planning Department, Ministry of Rail Transportation official webpage (Accessed on 19th October 2012)

(6) Institutional Arrangement

Since the inauguration of the new Government in March 2011, organizations in both central and regional governments have undertaken gradual reforms. Therefore roles and responsibilities as well as coordination mechanism among the relevant agencies in the urban transport sector has not been clearly defined yet, particularly for the urban transport planning. Figure 2.3.9 shows the organizations involved in the transportation sector in Yangon City. Responsibilities of the public transport system development and operations including licensing and supervising are assigned to the Regional Minister for Transport and Communication and Sports. Administrative organizations under the regional transport minister are not the organizations owned by the regional government. They are mainly regional offices of the central government agencies such as Ministry of Rail Transportation (MORT) and Ministry of Transport (MOT). Thus they have to get order from their own vertical administrative system, but also they have to report to the regional minister.

For issues related to traffic and public transport system and operations, Yangon Division Security and Smooth Transport Supervisory Committee chaired by the Regional Minister for Transportation play major roles in the control and supervision of traffic rules and regulations, as well as in the management of public transport system in the region including Yangon City Development Committee (YCDC).

For road infrastructure, YCDC Engineering Department is responsible for the construction and maintenance of all kinds of roads in the YCDC administrative area. On the other hand, outside of the YCDC in Yangon Division, various central ministries are responsible for the construction and maintenance of their respective road network system, such as Ministry of Construction, Ministry of Progress of Border Area and National Races and Development Affairs, and Ministry of Home Affairs, among others. On the regional level, Region Minister for Development Affairs is responsible for coordinating the organizations involved including YCDC.

1) Yangon Division Security and Smooth Transport Supervisory Committee

The committee chaired by Region Minister for Transportation and Communication and Sport is responsible in the examination of transport policies for the region and to report to the Chief Minister. Secretariat for the committee is Yangon Region Transport Planning Department.

2) Yangon Region Transport Planning Department

- To scrutinize plans, budgets and financial affairs of the organizations under the Ministry of Rail Transportation and to compile and prepare the summary for the Ministry.
- To issue commercial licenses to private-/cooperative-owned vehicles and vessels.
- To coordinate transportation of cargo in accordance with the 1980 Procedures of Movement Coordination Committee.
- To act as the focal department with international relations related to land transport.

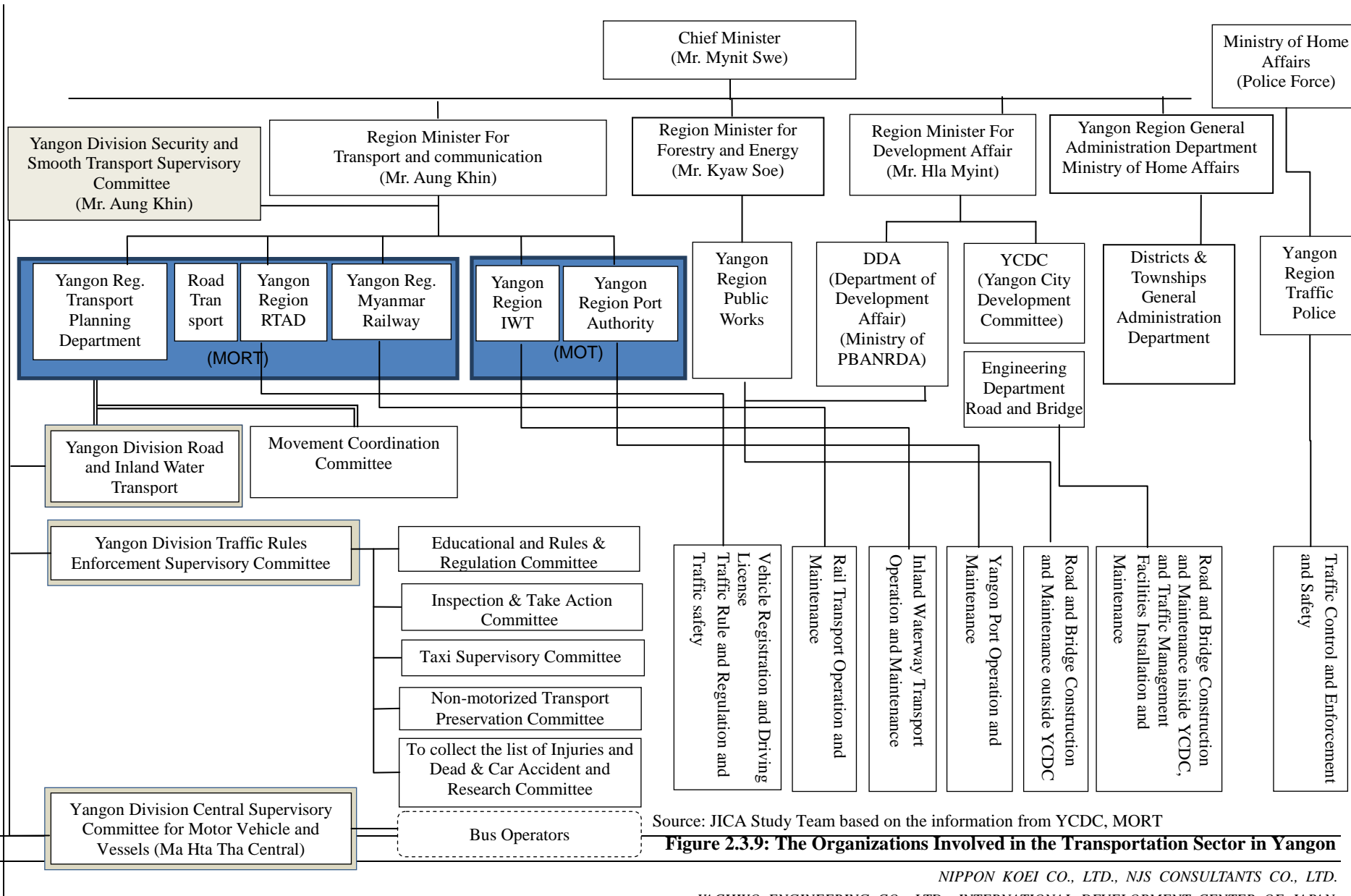


Figure 2.3.9: The Organizations Involved in the Transportation Sector in Yangon

NIPPON KOEI CO., LTD., NJS CONSULTANTS CO., LTD.
YACHIYO ENGINEERING CO., LTD., INTERNATIONAL DEVELOPMENT CENTER OF JAPAN,
ASIA AIR SURVEY CO., LTD., and ALMEC CORPORATION

3) Road Transport Administration Department

- Motor vehicle inspection for road worthiness and registration in accordance with the laws and regulations.
- Administers drivers' license testing and issuance in accordance with the laws and regulations.
- Formulates traffic regulation, road signs and signals for road safety measures and road users, analysis of traffic accident statistics.
- Administer levying of taxes and collection of revenues for the state.

4) Road Transport (Ministry of Rail Transportation)

- One of the state-owned enterprises under the Ministry of Rail Transportation and provide transport services for both passengers and freight.
- The passenger service is organized with a fleet of 480 units of buses in six branches in Yangon City to operate urban and intercity transportation.
- The passenger service is also extended in two other major cities such as Mandalay and Mawlamyine.
- The road freight services are organized with a fleet of 1,398 units of trucks.
- Regarding contribution to development of the State, Road Transport is now providing services to develop the projects and works, logistics from Defense, troops deployment, relief and rehabilitation works, border areas development projects, state-sponsored ceremonies and festivals, rail road construction, etc.
- It is also involved in transportation of cement and sugar cane for the state-run projects.

5) Yangon Division Road and Inland Water Transport Board

- To systemically mobilize road, inland water and coastal transport to ensure convenient movement at minimum cost on resources.
- To provide safe and secure travel experience for the people.
- To ensure harmony in transporting goods and passengers and to fix fares and tariffs to bring down prices of commodities.
- To issue commercial license to privately-owned road vehicles and river vessels and collect revenues.

6) Movement Coordination Committee

- Coordination of State-, cooperative- and privately-owned vehicles for transporting State- and Cooperative-owned goods.
- Coordinates to ensure smooth flow of passenger transport with permission of authorities concerned.
- Systematically supervises the privately-owned commercial vehicles.

7) Yangon Division Central Supervisory Committee for Motor Vehicles and Vessels

This committee is primarily established to supervise individual bus lines association and private bus companies. The main responsibilities of this committee are:

- To review the performance of bus operations and gives guidelines whenever necessary.
- To check whether it is necessary to operate new bus route, or to extend/shorten existing bus route, or to allow route changes proposed by bus lines association or private bus companies.
- To know the difficulties/necessity of bus operators, drivers/conductors.
- To report immediately to the relevant organizations whenever any special case occur.
- To monitor bus fare.

In order to carry out above mentioned responsibilities, this committee occasionally holds a meeting (hereinafter referred to as Committee Meeting). Most of the important decisions are made during these committee meetings. The committee meeting is headed by the Transport Minister Mr. Aung Khin, Chairman of Transport Planning Department, and attended by representatives from the Road Transport Administration Department under Ministry of Rail Transportation, Myanmar Oil & Gas Enterprise under Ministry of Energy, Traffic Police Divisional Department under Ministry of Home Affairs, member of Ma-Hta-Tha-Central, and representatives of each bus lines association.

(7) National Urban Transport Policies and Measures in Yangon

Myanmar has adopted a policy of economic reform and has been implementing its market oriented policy since 1989. Myanmar is building a modern and developed nation with 12 national objectives in the social, economic and political fields. As the transport plays a vital role in the successful implementation of the four economic objectives, the following transport policies which were drafted by the Ministry of Transportation are laid down to fully support the economic development of the nation:

- To develop and fully utilize transport capacities to contribute towards the realization of an economically strong, modern and developed nation.
- To fulfill transport requirements and to extend and maintain the transport infrastructure to be able to fully support increased production from other economic sectors and meet growing public and social demands.
- To ensure smooth and secure domestic and international transport systems as well as contribute towards the development of border areas and national races and the development of tourism.
- To provide safe and secure transport for people and freight.
- To enable all-weather river transportation by maintenance and preservation of natural resources rivers.
- To develop road, rail, air and maritime transport infrastructure in line with international standards for environmental protection.
- To enhance the transport sector through human resources development and upgrade expertise in management and advancing modern technology.

- To abide by international conventions, acts, laws, rules and regulations with respect to the transport sector.
- To develop domestic and international transportation and actively participate in the implementation of a national multi-modal transport system.
- To plan for implementation of national, sub-regional and international transport network.

However, the national policies have not been realized yet into an implementation mechanism due to the lack of comprehensive and strategic planning system and organizational capacity. Even so, YCDC and the Regional Government have implemented numerous transport and traffic measures on the passenger transport system (bus and circular rail as abovementioned) and traffic management issues, as follows:

- Control of Vehicle Import: the Government allows only a few thousand cars to be imported each year. However, the Government reduced the regulations in September 2011 in order to promote replacement of the old and non-emission control cars by vehicles manufactured after 2007.
- Prohibition of old model cars: over 20 years old of manufactured cars are registered out of the Yangon City Development Area.
- Control of usage of Motorcycle in Yangon: Number of motorcycle shares 30% of the total registered vehicles in Myanmar. However, in Yangon Division, the share is less than 20% because of the prohibition of motorcycle in YCDC area (31 townships out of 33 townships in YCDC). The motorcycle ban is contributing to the easy traffic flows and traffic safety in YCDC.
- NMV (Non-Motorized Vehicle) Countermeasures: NMV such as bicycles and trishaws are limited to CBD of Cities during day time. Bicycles and trishaws are used in the suburban of Yangon and other major Cities.
- Besides above countermeasures, YCDC employs the following countermeasures to alleviate traffic congestions and problems:
 - Traffic police patrols are placed along the main roads of Yangon
 - Use of one-way road system
 - Identification of no entry zone for slow moving vehicles
 - Identification of no entry zone for over 3-ton vehicles
 - Prohibition of car parking at particular roads
 - Prohibition of car parking at particular roads in the morning and evening hour
 - Permit only passenger buses to use right of way
 - Identification of “No Horn Zone” in CBD
 - Prohibition of light truck buses in downtown areas

(8) Laws and Regulations

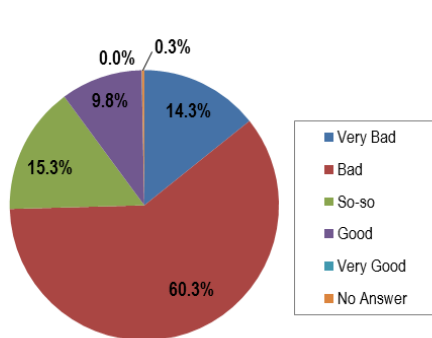
YCDC has been implementing Yangon City as a Green and Clean City. The committee is continuously carrying out for expansion and construction of the roads, construction of the bridges and maintaining as well within the YCDC area of Yangon City in pace with rapidly increasing in motor vehicles growth rate. Furthermore, YCDC has been posted road direction sign and notification boards for vehicles and non-motorized vehicles whenever necessary in order to reduce traffic congestion, traffic accidents, and any road damages.

Moreover, in order to develop Yangon City more efficiently and effectively, YCDC sets the following laws and regulations in accordance with Yangon City Development Law No. 33 (a). There are a total of five laws and regulations relating with urban transportation in Yangon City. Laws and Order Letter No. 11/91 is for Road and Bridges, No. 1/95 is for Parking Restricted Zones, No. 4/96 is for Vehicle Trading Areas, No. 5/96 is for Parking for Vehicles and Non-Motorized Vehicles, and No. 1/99 is for Non-Motorized Vehicles (Trishaw) Restricted Zones. The outlines of each laws and regulations are mentioned in the following Table.

Table 2.3.12: Yangon City Development Committee's Laws and Regulations

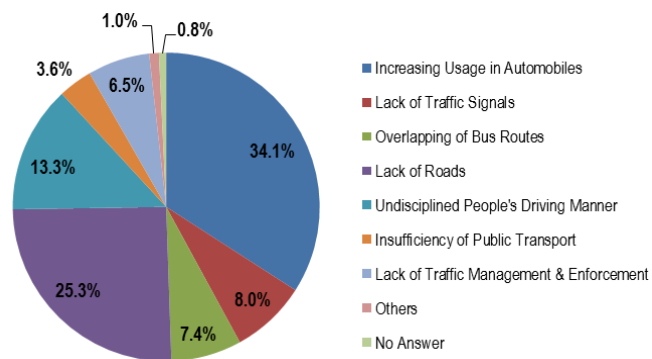
No.	Title	Outlines
11/91	Road and Bridges	<p>For roads and bridges constructions and maintenance, construction of flyover, pedestrian bridges, and underground roads, YCDC has the right to do it by itself or as a contract system.</p> <p>YCDC has the right to dispose the whole or any parts of gutters into the Yangon River, Hlaing River, Bago River, and Nga Moeyeik creek. Moreover, YCDC can dispose outside of the city area in which YCDC should negotiate with the development committee of relevant districts.</p> <p>Any person who wants to construct self-owned road needs to submit the application form in accordance with YCDC prescribed orders. After construction of this road, either the owner of the road or the residents on that road can apply to YCDC in order to convert it to a public road. In that case, YCDC must announce the application to the public. If there is no objection, YCDC can identify it as a public road.</p> <p>YCDC can levy on wheel tax and parking fee on any registered motor vehicles. YCDC shall carry out the following tasks.</p> <ol style="list-style-type: none"> Setting traffic signals if necessary Setting direction sign, road signs and lane marking Setting no-entry, no-parking area and one-way street Setting parking restricted zones and collecting parking fees Setting of bus stops and terminals Setting no-entry areas for over limited tons Non-motorized vehicles restricted areas Restriction of vehicle speed
1/95	Parking Restricted Zones	<p>The following streets are declared as parking restricted zones since 1 September 1995.</p> <ol style="list-style-type: none"> Bo Aung Kyaw Street Lanmadaw Street Bogyoke Aung San Street Kannar Street <p>Any vehicles parked in these streets between 8:00 to 18:00 are required to pay parking fees.</p>
4/96	Vehicle Trading Area	<p>No one is allowed for vehicle trading within city area except the following restricted places.</p> <ol style="list-style-type: none"> Vehicle Trading Compound, Botahtaung, Botahtaung Township (For under 1 ton vehicles and Motorcycles) Vehicle Trading Compound, Yamona, Dawbon Township (For any vehicles) Vehicle Trading Compound, Hantharwaddy, Sanchaung Township (For any vehicles)
5/96	Parking for Vehicles and Non-Motorized Vehicles	<p>In order to reduce road damage, traffic congestion and accidents, YCDC declares the following regulations:</p> <ol style="list-style-type: none"> Vehicle washing, repairing, and parking for long period is not allowed on the streets. Parking of any break down and non-motorized vehicles for long period is not allowed. Buses, trucks and any other vehicles are not allowed to park in no-parking zones and on the streets.
1/99	Non-Motorized Vehicles (Trishaw) Restricted Zones	<p>The following streets are declared as non-motorized vehicles (Trishaw) restricted zones.</p> <ol style="list-style-type: none"> Theinphyu Street Merchant Street Lanmadaw Street Bogyoke Aung San Street <p>Any non-motorized vehicles (Trishaw) are not allowed to enter in these streets between 5:00 to 22:00.</p>

Source: YCDC Laws and Regulations



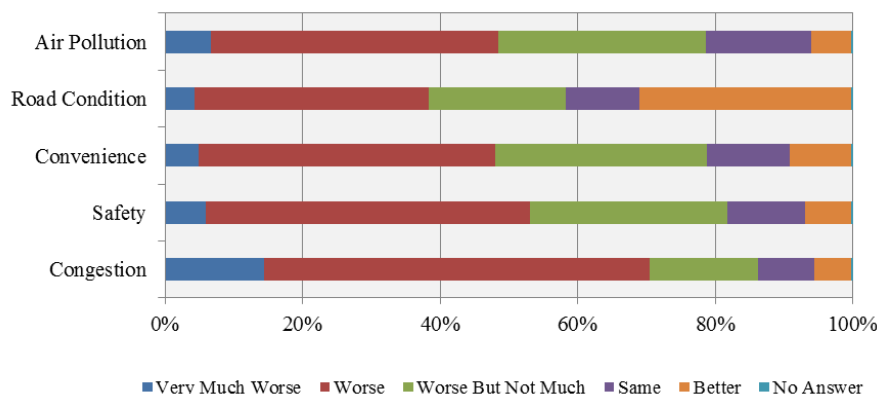
Source: JICA Study Team based on Results of HIS

Figure 2.3.12: Assessment on Current Traffic Situation



Source: JICA Study Team based on Results of HIS

Figure 2.3.13: Causes of Traffic Congestions

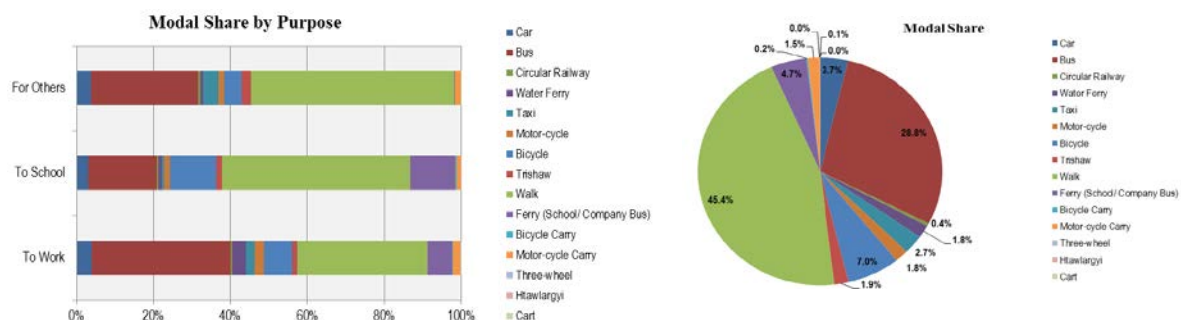


Source: JICA Study Team based on Results of HIS

Figure 2.3.14: Assessment of Traffic Situation Compared to 5 Years Ago (%)

3) Modal Choice and Travel Time

The survey asked the respondents on their transport modes and travel time for commuting to work or to school. The results are shown in Figure 2.3.15. More than 80% of respondents go to work by walking or by taking the bus and students go to school on foot (more than 50%). Other trip purposes such as shopping and visiting a friend's house are also mainly done by walking. It shows that daily activities of the people in Yangon are mostly within walking distance and public transport particularly bus passenger transport system is the only one transport means to go to far places. Circular railway, even if it runs on the main urban areas in Yangon, is not so popular among the commuters. Figure 2.3.16 also shows the modal share without "walk" trip, and high proportion of the bus transport can be seen clearly with more than 60% of the share, followed by Bicycle (12.7%) and Ferry (8.6%).



Source: JICA Study Team based on Results of HIS

Figure 2.3.15: Modal Share by Purpose incl. Walk

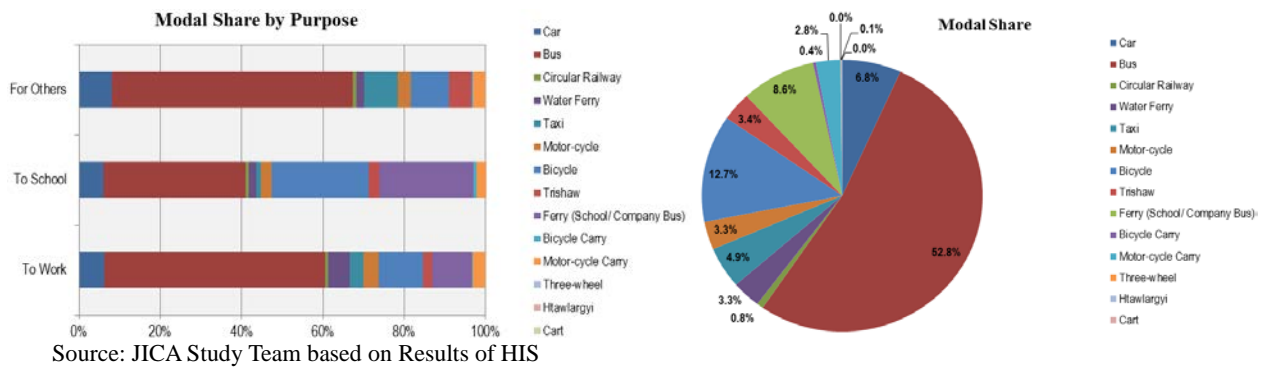


Figure 2.3.16: Modal Share by Purpose excl. Walk

Figure 2.3.17 shows distribution of travel time by purpose. It only takes less than 30 minutes for approximately 60% of respondents to commute to work places or schools.

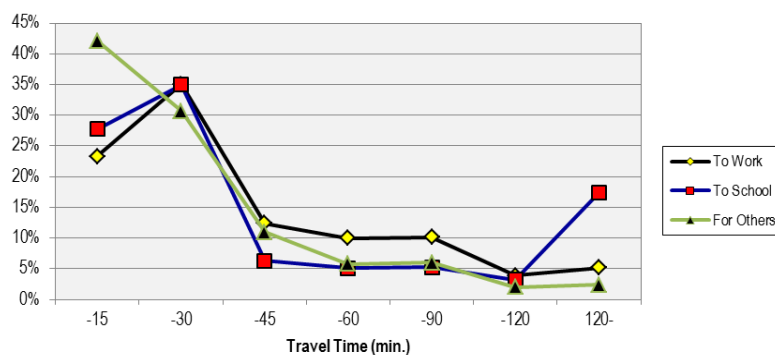


Figure 2.3.17: Distribution of Travel Time by Purpose

4) Users' Opinion on the Passenger Bus Services

HIS asked users' opinions on the bus transport system which is the most predominant transport system in Yangon. Almost 90% of respondents have used bus transport system. Their assessments on the eight kinds of bus services are shown in Figure 2.3.19. More than 50% of the respondents are not satisfied on the "long waiting time at bus stop during late time" and "on-board comfort (crowded)". Many people also complain about driver/conductor's attitude, as well as safety driving and frequency of the operations. A cause of these complaints can be current operation system in which many private operators are competing to get customers as much as possible and sometimes they may not operate properly based on the operational contract between authorities and private bus operators.

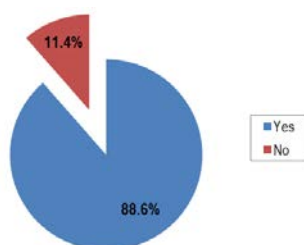


Figure 2.3.18: Usage of Bus Services

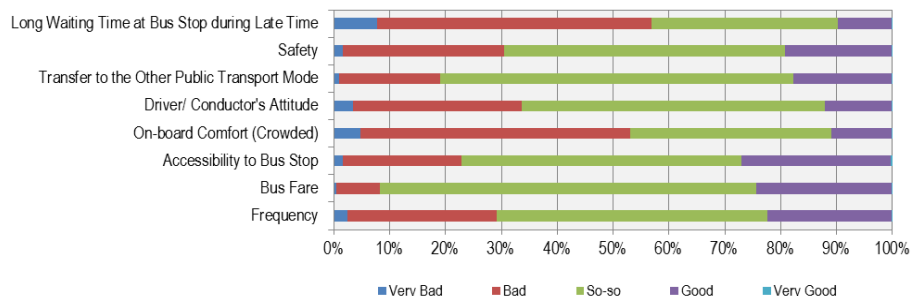
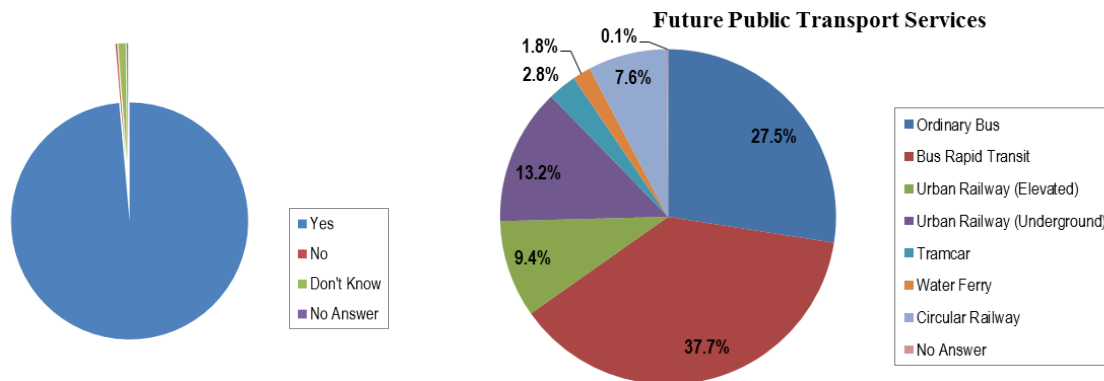


Figure 2.3.19: Assessment of Bus Services

5) Opinion on the Future Public Transport System

HIS asked the respondents about future public transport system. As shown in Figure 2.3.21, among the list of future public transport system, many people expect improvement of ordinary passenger bus system and they prefer the BRT (Bus Rapid Transit) system as a new transit system. Railway system, including elevated rail and subway, is not so popular among the people in Yangon. These responses may be explained by the fact that bus transport is the most popular existing transport mode while they do not have a good image on the existing circular rail. Even so, in the future of Yangon region, rail transport systems have to play a major role to handle the huge amount of traffic demand, thus it is necessary to promote rail transport system in coordination with strategic urban developments.



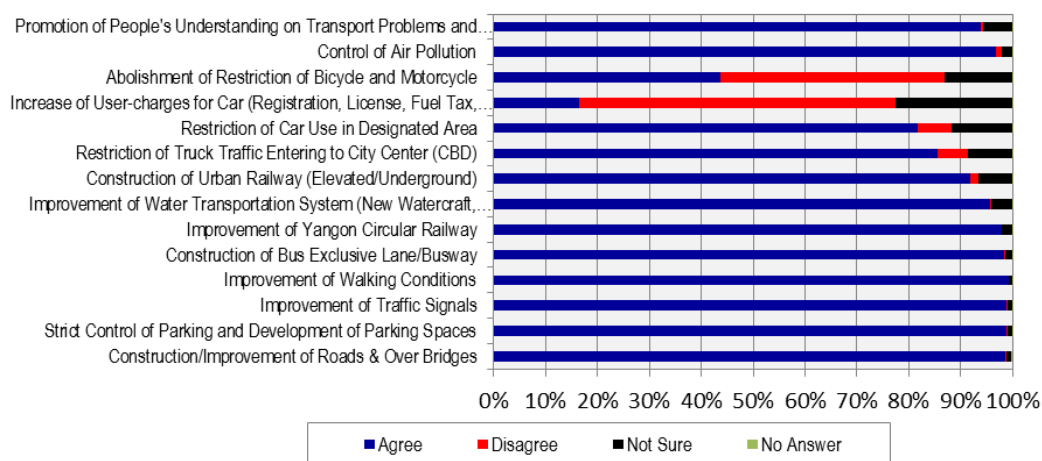
Source: JICA Study Team based on Results of HIS

Figure 2.3.20: Necessity of Public Transport Service Expansion

Source: JICA Study Team based on Results of HIS

Figure 2.3.21: Future Public Transport Services

Regarding transport improvement policies in Yangon, most of the people understand the necessity of the various countermeasures including road improvement, improvement of traffic signal system, etc. but many of the respondents disagreed with the pricing measures as well as restrictions of usage of private mode of transports.



Source: JICA Study Team based on Results of HIS

Figure 2.3.22: People's Opinion on Transport Measures

(10) Key Findings and Main Issues to be Addressed

1) Vision and Master Plan on Urban Transport Plan

Although the policy on transport in Myanmar has been discussed by the Ministry of Construction, Ministry of Rail Transportation and the Ministry of Transport on the national level, a clear and manifesto national strategy on transport has not yet been formulated. City Development Committee including YCDC is supposed to have the jurisdiction for urban transport, but neither an urban transport vision nor a master plan has been prepared. While YCDC proposed a basic concept of urban development in 2012 for Yangon 2040 which includes a preliminary urban transport network, the vision of transport to be implemented is not clearly defined. Thus, a clarification on the vision of urban transport development based on the vision of urban development and its subsequent preparation of an urban transport master plan are urgently required.

2) Institutional Development

The current urban transport sector requires elaboration of the organizational framework to efficiently deal with complex urban transport issues. Particularly responsible organization for the urban transport planning is not clear. Road and Bridge Department in YCDC plays a major role in the construction and maintenance of the roads and bridges in the YCDC areas, but planning function has not been established yet. On the public transport system, Myanma Railway (MR) under Ministry of Rail Transport plays a significant role, but for the public bus transport system, several organizations are involved in the licensing, vehicle inspections, operations and management respectively, such as Ma Hta Tha Central and Road Transport Administration, etc. There is no single authority responsible for public transport system in Yangon. For the urban transport planning, it is required urgently to establish organizations with capable human resources which will be able to deal with various mode of transport system and to coordinate urban development. Moreover, new institutional framework and their capacity development are required to implement future public transport system. That institute should cover management and operation of public transport system as well as control the traffic flow and demand.

3) Financing

A strategic institutional development including improvement of governance is required to address institutional issues. To implement scheduled development and maintenance of transport infrastructure under expected tight governmental budgets, it is necessary to look into other ways to raise funding such as revenue collection from new taxes (e.g. road user tax and congestion tax, etc) and tapping of private funds through the Public Private Partnership (PPP), Build-Operate-Transfer (BOT), etc.

4) Public Passenger Bus Transport System

There are a number of problems affecting public passengers of bus transport in Yangon. Based on the examination of existing situation and from secondary information, problems related to the level of service provided by bus transport and the bus-related facilities are summarized as follows:

- (i) Inefficient operation due to traffic congestions: Buses experience traffic congestion during morning and evening peaks on weekends. The road traffic congestions are mainly caused by passenger cars and trucks. In addition, too many buses also contribute to the traffic congestions.
- (ii) Onboard congestion is serious during peak hours. This is because bus capacity is small whereas demand is very high. This is further aggravated by the unreliable and irregular

service frequency. As a result, passengers cram into the buses because they do not want to wait for what is likely to be a long time until the next service arrives. The passengers hanging from behind of truck buses are very common.

- (iii) Buses are so old that they frequently experience mechanical problems. As they are imported from other countries (such as Japan and Korea), they are quite old to begin with. They are used for many years, with some buses over 60 years old, as it is difficult to replace old vehicle with new ones. Only few buses are air-conditioned and many have no windows or doors.
 - (iv) The buses are not well maintained. For example, the entry doors often do not work on many vehicles. Passengers are endangered by such defective doors.
 - (v) Customer information for bus passenger is very limited. Neither timetables nor route maps are shown at bus stops. The quality of bus drivers and conductors are also poor.
 - (vi) Inadequate and poorly planned bus-related infrastructure including bus stops and terminals. The capacity of bus stops and terminals is small, passengers often have difficulty finding where to wait particularly during peak periods. There are no facilities in some bus terminals and a lot of buses park on the road shoulders including passengers who utilize the road as waiting area.
- 5) Introduction of Urban Mass Rapid Transit (UMRT) System and Transit-Oriented Development (TOD)

Public transport in Yangon city accounts for more than 90%. However, the most used public transport in Yangon is old bus services with crowded and unsafe operations. The modal share of the circular railway is a mere 3%, and the very low ridership of the circular railway is due to its old and dilapidated railcars and low service level of the trains. In addition, lack of urban development in the areas around the stations and also lack of feeder transport system from the stations cause the very low popularity of the railway as a commuter service.

But future expansion of the urban area and population in Yangon will require the UMRT system to handle the large volume of traffic demand instead of the limited capacity of public bus passenger transport. In order to ensure the effectiveness and economic viability of the system, coordination with the urban development, which is the TOD, is necessary. Previously, spatial urban design is prepared at first and transport system is examined based on it, so that UMRT systems are sometimes not convenient for the people in the new urban areas. TOD therefore is expected to be an effective measure to promote UMRT and to provide maximum mobility to the people in these areas. Eventually, the TOD will lead to a smooth and systematic urban development.

6) Comprehensive Transport Network System which supports Strategic Urban Development

The UMRT system will play a major role to provide smooth peoples' mobility in the metropolis, while functional road network system will provide valuable urban space and environment as well as a basic infrastructure for the urban economic activities. As discussed in the following section, the functional road network will be consisted of major arterials and secondary arterials and local distributors, and these functional roads system are effectively connected forming grid pattern or radial-circumferential pattern among others. The functional road network system and UMRT network system are connected effectively and strategically forming a comprehensive transport network system. In addition, the comprehensive transport network should be linked with international port and airport in order to contribute to economic development of Myanmar. In particular, coordination with Thilawa Port development in the Yangon port area and new international airport project should be considered.

7) Urban Transport/Traffic Management

The current outstanding share of public transport mode in Yangon City as discussed previously is caused mainly by control of import of vehicles and restriction of motorcycles and bicycles in the city's central area. In addition, operation of small truck type of buses is restricted in the CBD. These restrictions have mitigated traffic congestion and risk of traffic accident caused by the mixing of various transport modes. However, recent relaxation of regulations on the import of vehicles has accelerated increase in the number of vehicles, and vehicle traffic demand has surely been increased causing serious traffic congestions in the CBD, on the major road sections and also on the major river bridge sections. So far, YCDC has taken actions to mitigate the congestions, such as construction of fly-over bridge at Hledan Intersection, strict parking management in the CBD and traffic control by traffic police force, among others. With the expected urban expansion and resulting motorization together with economic development, it is apparent that current traffic demand management system should be continued or further strengthened.

8) People's Perception on Urban Transport System

- (i) Regulations (control) of the vehicular import and economic stagnation in the country had made it difficult for people to own a motor vehicle so that a number of registered vehicles had been kept at a low level. However, recent economic development and a relaxation on the regulation has encouraged rapid expansion of motorization resulting to worsening traffic congestion in the urban areas as compared to the past years. According to the survey, the expansion of the motorization and its adverse effects are realized clearly by many people. Urban problems and issues experienced in the many cities in developed countries are caused by the rapid motorization or motorized life style. In order to avoid this happening in Yangon, motorization should be controlled. However, support from the people in Yangon for necessary countermeasures to control motorization will be difficult to get thus capacity developments in the relevant organizations as well as enhancement on the political leadership will be indispensable.
- (ii) Currently, there is not much choice of the transport means and peoples' daily activities are also limited within their neighborhoods. However, according to the economic development and urban expansion, peoples' living areas will be expanded and they will go out of their neighborhood in order to get more good jobs and to enjoy the new and modern shopping complexes for example. Urban development and transportation system will be necessary to meet the diversification of the peoples' life style. However, from the transportation viewpoint, it will be much desirable if they can access necessary places for their new quality life styles within their neighborhoods, they may be free from traffic congestions and waste of time in traffic congestions may be avoided. Whether they can have a chance to get such life style will be highly dependent on the urban development or land use pattern in coordination with the transport system.
- (iii) Although existing passenger bus transport system is the most predominant transport means among the people, the level of service does not meet the peoples' desires. Moreover, in the future, when peoples' life style will be improved, it is definitely difficult for current bus transport system to get the existing status without radical improvement of the services, such as modernization of the operation system, improvement of passenger services as well as safe driving. In order to undertake such radical improvement, there are many issues to be addressed such as how to control the many private bus operators, where to get funding to improve bus service level including comfortable bus vehicles, how to evaluate and ensure the effective bus route and operations, etc.