Analysis on Existing Conditions of Sittwe City for Upgrading

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Abstract— This Sittwe city is the capital of Rakhine State, Western Myanmar. It is the administrative seat of Sittwe district. Nowadays, the plan to develop the port of Sittwe city which would access from Indian Northeastern state via Kaladan River known as Kaladan Multi-modal Transport Project has been executed. But there are many weak points to develop Sittwe city planning related to housing, infrastructure (road, streets, electrical supply, etc), ecological condition and type of living. There was no systematic land utilization in Sittwe city. After completion this Kaladan Multi-Modal Transport Project, the city will face with many problems relating to urban facilities to meet the challenges of the trading economy. So Sittwe City is essentially needed to upgrade to develop now. By upgrading the Sittwe city, many advantages will be found such as developing of foreign trade market with India. In this research, the physical background and the social situation of Sittwe City will be studied first and secondly the existing conditions of Sittwe city will be analyzed by applying SWOT Analysis Method. And finally, propose the areas which are urgently need to upgrade.

Keywords— Kaladan Multi Modal Transit Project, upgrade, Sittwe, SWOT analysis, urban planning,

I. INTRODUCTION

Upgrading aims to develop the city systematically by providing good infrastructure and housing estate, facilitating economic development and promoting the health and safety. Systematic planning is very important to develop a city.

During the Rakhine Kingdom period, the king’s navy stationed at Sittwe’s island. The existence of Sittwe City can be traced back to AD 1825. Since 1826, Sittwe Port had been founded and it had become the third port of Burma in 1901.

Sittwe City is the hub of Rakhine State. The areas of Sittwe city is 6.25 sq-miles with 139030 numbers of urban population. It is also known as transit town for domestic and foreign visitors to go to Mrauk U, a famous heritage site of Rakhine State.

Nowadays, the city planning of Sittwe is needed to upgrade for future opportunities of the Kaladan project. Therefore Sittwe City is selected to study for this research.

The aims and objectives of this research are to find out the weaknesses of Sittwe city and to propose the areas which are urgently needed to upgrade.

To complete this research, the author will study the literature at first. And field survey and observation method were used to collect data, the third stage is study and analysis on existing conditions and the last is findings and conclusion after synthesising.

II. PHYSICAL BACKGROUND OF SITTWE CITY

Location, size and topography, climate and wind direction of Sittwe City and some significant places of the city are necessary for this research.

A. Location

Locate in the Sittwe District, Rakhine State. Locate between 20º 17” and 20º 19” north latitude and 92º 45” and 92º 55” east longitude. Sittwe City is bounded on the northern side by Ponnakyun Township, on the eastern side by Kaladan River, on the southern side by the Bay of Bengal and on the western side by Kwe Del River.

Fig. 1 Map of Myanmar and Rakhine State

Fig. 2 Map of Sittwe City
B. Size and Topography

The area of Sittwe city is 6.25 sq-miles, approximately 4000 acres. And it is composed of 33 wards. Sittwe City is located 15 feet above sea level and there is absence of mountainous areas. Sittwe City is a flat plain coastal area.

C. Climate

The weather of Sittwe city is Humid Tropical Climate. The yearly annual rainfall is range between 180 inches to 200 inches. Not only the level of rainfall is high, the heat is also extreme in summer.

D. Wind Direction and Velocity

The wind direction and velocity is different according to the season. The normal wind velocity ranges between 35 mph and 50 mph in rainy season. And in winter, the wind velocity ranges between 15 mph and 20 mph only. In rainy season, the highest frequency is south, south western and south eastern direction. In summer, the highest frequency is south, south western and north western direction. And in winter, the highest frequency is north and north eastern direction. The wind direction of Sittwe City is described in Fig. 3.

E. Significant Places of Sittwe City

Shukhinhar road and the view point, also popularly known as point are the natural amenities of the city. Almost all the people relax and view the scene of Kanladan River from Shukhinhar road on every evening.

From view point, the merging of Kaladan River and the Bay of Bengal as well as the western approaches the Rakhine Yoma can be seen.
And the next one is hundred year old Shwe Zedi Monastery, founded in 1903. Ashin U Ottama was a resident of this monastery during 1920 and 1930.

And the last one is Ahkyaib Daw pagoda which is believed to have built in the day of Emperor Asoka.

III. SOCIAL SITUATION OF SITTWE CITY

In social situation, population of Sittwe city and its population density are studied as well as race and religion of the city. And infrastructure of the city is also studied.

A. Population

The urban population and population growth rate of Sittwe City are described in the following tables.

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1973</td>
<td>83653</td>
</tr>
<tr>
<td>1983</td>
<td>94640</td>
</tr>
<tr>
<td>1993</td>
<td>115504</td>
</tr>
<tr>
<td>2003</td>
<td>137069</td>
</tr>
<tr>
<td>2010</td>
<td>153950</td>
</tr>
</tbody>
</table>

It is found that the population of Sittwe has risen from year 1993 because of the completion of Yangon – Sittwe Highway Road. The population growth rate was decreased after 1993 although the population continued to increase until happening social conflict in year 2012. In year 2012, the urban population of Sittwe is decreased to 139030 because of migration to rural areas due to social conflict.

B. Population Density

The population density of Sittwe City ranges from minimum 6.09 persons per acre to maximum 223.72 persons per acre. As a whole city, the average population density is 34.78 persons per acre. The average households unit is approximately 5.5 persons per family. The population density for individual ward is shown in Fig. 8.

<table>
<thead>
<tr>
<th>Year</th>
<th>Population Growth rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1973 – 83</td>
<td>1.2%</td>
</tr>
<tr>
<td>1983 – 93</td>
<td>2.01%</td>
</tr>
<tr>
<td>1993 – 2003</td>
<td>1.73%</td>
</tr>
</tbody>
</table>

Legend for Fig. 8.

1 West Sanpya 18 Yu Pa Mrauk
2 East Sanpya 19 Bauk Thee Su
3 PyiDawThar 20 BaungDwatThar Su
4 Yee New Su 21 YwarGyiTaung
5 Ma GyeeMyaing 22 Myo Thu Gyi
6 Baw Lone gwin 23 ThaYar Thee Su
C. Race and Religion

In Sittwe City, Rakhine, Kaman, Hindu, Burmese, Chinese and Bangali are lived. When studying the religion of Sittwe, Buddhism, Christian, Hindu and Islam can be found.

Population Ratio of Each Religion

<table>
<thead>
<tr>
<th>Religion</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buddhism</td>
<td>54%</td>
</tr>
<tr>
<td>Hindu</td>
<td>1.03%</td>
</tr>
<tr>
<td>Christian</td>
<td>0.13%</td>
</tr>
<tr>
<td>Islam</td>
<td>45.045%</td>
</tr>
</tbody>
</table>

D. Recreational Facilities

There are only three parks can be found. They are U Ottama Park, KhineThazin Park and Mi Zan Park. But all of public recreational areas in these parks are applied for commercial uses.

E. Educational Facilities

In Sittwe, 93 numbers of primary school, 13 numbers of middle school and 7 numbers of high school can be found. There also have Governmental Technological University, Governmental Computer University, Sittwe University, Nursing School and Technological Institute.

F. Health Facilities

There are 1 number of 200 bedded general hospital, 1 number of 16 bedded hospital, & 3 numbers of private hospitals, 1 number of traditional hospital and 38 number of private clinic.

G. Economy

Sittwe is the economic hub of Rakhine State, Myanmar. The staple product of Sittwe is rice. Fish, prawn, dried fish, fish paste, dried shrimp and salt are the other major products of Sittwe City.

H. Transportation System

Sittwe had road transportation system, waterway transportation system and airway transportation system. Railway transportation system is still constructing.

For road transportation system, there are many numbers of express lines and all are private. There is no inner urban transportation system in Sittwe. Almost all the people use motor cycles, bicycle for transportation within the city. And the other uses for transportation within city are trishaw and tri motorcycle.

For waterway transportation system, Sittwe has two boat jetties along the Set Yoe Kya crack and these two used for local transportation. And another two jetties, named as Shwe Min Gan and Sittwe are used for abroad.

For airway transportation system, there are so many airlines in Sittwe and have flight daily to Yangon.

I. Water Supply System

Kandawgyi, Kandaw Nge, Kandaw Kalay reservoir, Golden Triangle reservoir and Kan Paing reservoir are the main source of water supply for Sittwe City. Among 32 wards, water is distributed to 26 wards by gravity flow system. Use 20” pipe from the main source and use 16” and 10” pipe to distribute water to the consumers. Distribute 2.6 million gallons per day. Approximately 20% of city’s population lack of water supply.

J. Drainage System

There are 14 number of drainage channels in Sittwe. Rainwater and waste water are disposed into the Set Yoe Kya crack by using these 14 numbers of drainage channels.

IV. EXISTING LAND UTILIZATION OF SITTWE CITY

Land utilization, road network and significant locations of Sittwe City are described in this part.

A. Land Utilization

Nearly half of the city’s areas are devoted for residential purpose. Institutional areas occupied about one fourth of the whole areas as Sittwe is administrative township. The recreational area and commercial area are too small to account.
B. Road Network

In Sittwe, there are five major roads. They are May Yu road, Merchant road, King Min Bar Gyi road, Main road and Strand road. Among them, Ma Yu road and Merchant road connect the eastern part of the city with the western part. And the rest three connect from northern part of the city to southern part. There is only one express way in Sittwe City shown in Fig. 9.

C. Significant Locations

Some significant locations of Sittwe are shown in Fig. 10.

V. SWOT Analysis On The Existing Conditions Of Sittwe City

A SWOT analysis can be used to provide clear and simple information about our city and its infrastructure. It identifies the fields and activities that have the biggest potential for further development and improvement. This can be done through four key points:

S = What are the strengths and advantages of our city?
W = What are the weakness and disadvantages in our city?
O = What are the opportunities that our city (can) exploit?
T = What are the threats and barriers that can negative affect developments in our city? [6]

A. Strengths

As Sittwe city is located on the mouth of Kaladan River and bounded by Bay of Bengal, it is the important seat of maritime commerce, especially as port for export activity.
And Sittwe is also known as transit town for domestic and foreign visitors to go to Mrauk-U which is famous heritage site of Rakhine State. Sittwe is the main transit town to go to other towns of Rakhine State. There are options of transportation system such as Roadway, Waterway and Air- Services to go from Sittwe to Yangon as well as others cities of Myanmar region.

B. Weaknesses

There are many weaknesses in Sittwe City. First of all, road condition is presented. Almost all the major roads of the city are not corresponded with the acceptable standard. And all major roads have rough surfaces. There also have not island node and street lighting. The width of all major roads ranges from minimum 45 feet to maximum 60 feet. According to standard, the major road should have at least 100 feet width [6]. And there also lost green buffer zone and sidewalk as shown in Fig. 11 and Fig. 12. It is some weaknesses of the city. Because roads and streets are the heart of the city and 25 to 35 per cent of a city’s developed land is likely to be dedicated to road infrastructure [3].

The residential housings in Old Dan ward and Mi Zan ward can be found as shop house as this ward is closely located near the Sittwe wet market and Sittwe Wholesale market. In these wards, it is found that the land use for public areas have been lost. Almost all the residences occupied the public walkway by applying their selling materials. Besides, when view this Old dan and Mi Zan ward from Kaladan River, the unpleasant scene of environmental condition and unplanned housings will be found as shown in Fig. 13 and Fig. 14.

Sittwe wet market and wholesale market areas are also unplanned and wastes from the market are disposed directly into the Kaladan River as shown in Fig.15.

And traffic congestion is happened almost the whole day, shown in Fig. 16. The main reasons to cause traffic congestion is due to loss of parking areas, loss of public walkway and the retail shops spill over to the road.
Another one is Pyi Daw Thar ward, with the population density of 13.06 persons per acre, the third lowest density area of city. In this ward, institutional areas and the governmental rental housing named as PyiDawThar Housing can be found. Some residential roads of this housing estate are not wide enough to enter fire-engine even private vehicles as shown in Fig. 18. And almost are the housing are now unplanned and need to upgrade.

The main road of this ward is not wide enough and the public walkways are too narrow to walk two persons together as shown in Fig. 19. And there is no green buffer zone and also has so many rough surfaces on the road.

Current land utilization of this ward is not appropriate to meet the challenge of urban facilities.

C. Opportunities

Sittwe City is programmed as Sea Port Special Economic Zone according to the development potential of Rakhine region. Besides, Sittwe is located on the economic corridor with India. The future opportunity of the city will be the Kaladan Multi-modal Transit Project. The project will connect the eastern Indian seaport of Kolkata with Sittwe port in Rakhine State by sea route. And then it will link Sittwe to Paletwa via Kaladan River and from Paletwa to the land-locked region of Mizoram in northeastern India by road transportation system.

This project has been executed from last year (2012) and now some part of the project has completed to some extent.
After completion this project, ocean liners from foreign countries will land at Sittwe port and the water transportation system of Sittwe will be used widely. At the same time, the economy of Sittwe City will be more improved than now. Consequently, the city will need more urban facilities to meet the challenges of this project.

Fig. 21   Linking Route between Sittwe and India

As presented in Fig. 21, ocean liners will use route (1) to transport to Kolkata port, India. And route (2) will be used to transport to land-locked Mizoram State in India.

D. Threats

Threat of the city is the social conflict between Rakhine people and Bangali who entered illegally from Bangladesh. Consequence of social conflict is arson. There are many acres of land have been fired during social conflict in year 2012.

VI. FINDINGS

After studying the physical Background of Sittwe city and analyzing the current situation of Sittwe City, Sittwe City has many opportunities and challenges for future. It is found that, the eastern part of the city, along the Kaladan River must surely integrate with Kaladan Project.

Sanpya ward, Pyi Daw Thar ward, Kyay Pin Gyi ward, Old Dan ward and Mi Zan ward are located in the eastern part of the city and all these wards will become very valuable in the future.

But there are many weaknesses in all of these wards related to housing design, land utilization and infrastructure which are presented as above. And the environmental conditions of these wards are polluted with disposed wastes, especially along the Kaladan River. Therefore, the eastern part of the city is needed to upgrade to meet the required urban facilities for future.

The following points will be recommended for redeveloping. All the major roads are needed to upgrade to meet the standard width and facilities. Green buffer should be provided in all major roads and streets. And the sidewalk should be wide enough to walk conveniently. Selling materials which spill over the road should be banned. Adequate parking areas should be provided to reduce traffic congestion. All residential housings should have building set back. And all the housings should be applied for residential purpose only.

Acknowledgments

The author wishes to express her profound gratitude to all the teachers from Architecture Department of Yangon Technological University. The author wishes to express special thanks to Dr. Maung Hlaing, Professor and Head, Department of Architecture, Yangon Technological University. Last but not least the author is truly grateful to her parent who fulfills our wishes and supports everything from childhood till now.

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