

## **Field Excursion: Aspects of Sustainability in the Urban Areas of Yangon City**

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In order to embed the single visited sites of the excursion in a coherent general concept, at first a short overview on the recent scientific discussion of sustainability in urban areas is given in which the today's perspectives are summarised.

Among the numerous definitions, Kuhnen has defined sustainability in four ways: "Sustainability first of all means survival, keeping the community alive. ...Sustainability also means an ecologically acceptable production, where everything removed is then replaced so as not to harm the ecological system. Sustainability can also be understood in a social sense, meaning a thriving economic and social order with production structures and relationships which ensure a fair distribution of income, power and opportunities, thus providing the basis for social peace. Finally, sustainability is used in the sense of long-term carrying capacity of regions, where there is no negative impact on the environment." (Kuhnen 1992: 101-102). Sustainability is therefore viewed under three major components, which are inseparable: the ecological, the economic and the social aspects. Most of the studies on sustainability at present concentrate on the ecological aspects, followed by economic aspects. The least concern is given to social aspects.

Particularly in urban areas the question of sustainability arises because here the major production and consumption takes place, here the highest dynamics of development concentrate and the inseparable interrelationship between the three aspects of sustainability can be observed most clearly. A city is the product of the relationship between a society, defined by a particular cultural, economic and political structure, and its physical landscape. Cities are the most distinct human features on earth and they can be regarded as major part of the anthropogenic subsystem of the whole earth system. There are many different societies creating different socio-economic settings and different urban surroundings – and thereby different urban environments, here understood as natural and human environments. Urban environments are living quarters, setting of social surroundings, areas of religion and people's behaviour, space for the quality of life, etc. - and as such they are areas which need particular care.

Furthermore, as people are caring to meet their basic needs as well as many other important needs of a society, cities are entities of strong demands. Larger cities demand even higher supplies and they act not only in local and regional but also national, international and global networks of demands. Interaction in cities therefore does not only takes place within the cities but also with external areas with own functions and processes. Looking at sustainability in urban areas therefore needs to look closely on at least these different aspects. These and further aspects were included when the following excursion points for Yangon, the capital of Myanmar, were selected.

Yangon is a large social structure with previous history on present spatial and economic structure. It is composed of various facets, each having so many dimensions, which all are interrelated and acting together having its own unique urban functions and processes. With this in mind, eight places in Yangon had been selected as expressed in Fig. 1, to understand the typical environments of Yangon, to look and see what kind of functions and processes are going on, and how these are shaping the sustainability of Yangon.

### **1. The Old Harbour**

The starting point is the old harbour of Yangon, which is now a part of Yangon Port. The main reason of choosing this as a starting point is not only because of the historical origin of Yangon as a small fishing village but also because it is still functioning as largest harbour in Myanmar with old structures heavily relying on both passenger commuting and cargo transporting.

Until the mid 18th century, Yangon was known as a small fishing village called 'Dagon' and it was under the Mon regime. In 1755, Alaungphaya occupied the whole lower Myanmar, renamed 'Dagon' as 'Yangon', and changed it to a port town. Since then, its value as a port has grown. At that time, there were three wooden jetties. The largest was the King's wharf, which was at the place of present Pansodan jetty. Cargo could be transferred and two large wooden buildings were used as store-houses nearby the jetty.

In 1824, the first Anglo-Myanmar War broke out and British troops occupied the Tanintharyi and Rakhine coastal areas. Due to war indemnity, heavy taxes were levied on Yangon port. Thus, after the first Anglo-Myanmar War, trade and commerce shifted to British owned ports because of free tax. During these days, this harbour place had fallen into decay and Mawlamying became a principal port. In 1852, the second Anglo-Myanmar war broke out and the British occupied lower Myanmar. At that time, Yangon fell under British rule and Yangon harbour became important again for commerce and trade. Because Yangon had a great waterway to the Ayeyarwady delta which is a large hinterland for Yangon, and the total number of ships passing through the harbour increased rapidly during 1854. Again, in 1885, after the end of the Third Anglo-Myanmar War, the whole country was occupied by the British, and then Yangon became the capital city of Myanmar and gradually developed to the most dominant place in transport and commerce. In the 1930s, about 5 million tons of sea-borne trade was handled by this harbour annually. During the Second World War, the flourishing of the harbour stagnated so that in 1945, it could only export 5% of its pre-war capacity. In 1948, Myanmar regained independence and after 1960, under the government of the Revolutionary Council, Hteedan Coal wharf, in Kyeemyindine Township was built with the help of the Asian Development Bank (ADB) and berths were connected with Sule Pagoda wharves. After 1988, the government had repaired all the wharves. In 1991-1992, Yangon Port handled 1.45 million tons of international freight.

At present, this old harbour is in multifunctional use with all the inland waterway going boats, coastal going ships, and it is partly used as a container port functioning with old structures. From Ayeyarwady Division alone, more than 1.4 million passengers and 58000 tons of cargo pass through these inland waterway jetties per month. The important

import to Yangon through this old harbour is rice that people in Yangon totally depend on. At least 500 metric tons of rice is needed daily to feed the Yangon population. The largest part of this basic need is passed through this harbour. The other example is the import of charcoal from the Tanintharyi Division. As Yangon does not have sufficient electricity, more than 60% of the total households rely on charcoal for cooking. Charcoal import through this harbour meets at least one-third of the total supply, which is mainly produced from mangrove forests of Myeik Islands, Tanintharyi Division.

Among the nine coastal ports of Myanmar, Yangon is the largest, which handles 90% of imports and exports at present. In the Port of Yangon there are 13 international berths and more than 40 jetties which are mainly pontoon type, floating ones, mainly for domestic traffic. Most of the berths are old and require upgrading to cope with the increasing use by both people and cargo.

Pansondan Jetty is mainly used for ferries commuting with Dalla Township, which is located at the other bank of Yangon River. Foreign going vessels mainly use Sule Pagoda wharves and Bo Aung Kyaw Street wharves, especially for container handling. In these jetties, vessels from Singapore, Malaysia, China, India, Bangladesh, South Korea and Japan use to shift their cargo.

During 2003, the monthly average cargo shifting, both loading and discharge, through Sule Pagoda and Bo Aung Kyaw wharves was about 127000 tons by foreign vessels. The exports are usually agricultural products (mainly rice and pulses) and timber and the imports are mainly chemical, vehicles, equipment and steel products. Bo Aung Kyaw wharves are mainly used by vessels of government owned ocean-going vessels (Myanma Five Stars) and normally an average of 7 vessels per month are in operation.

The main purpose of choosing Yangon harbour as the first excursion site is to show the original starting point of Yangon as a small fishing village and how it has grown, to show how an old port was functioning and has grown to be still the largest harbour in Myanmar. Although the buildings and port facilities are very old, it still relies for passenger commuting and cargo. Besides, more than 1500 of hard-workers and about 100 hawkers depend on this harbour for their daily survival. There are more than 10000 daily commuters, especially government servicemen, small traders of fresh fruit and vegetable commuting to Thirimingalar Market and many workers, working at Yangon and living in Dala Township, which is one of the 33 townships of Yangon located at the other side of Yangon River. Although many motor roads were constructed in Ayeyarwady Division, this harbour will continue to act as a major door to Yangon as the travelling situation is still relies on waterways. This is partly due to the close vicinity of the harbour to the main business area of downtown Yangon from Ayeyarwady Delta for highway bus terminals are far away from this main business area. Although a container port was newly constructed in Thilawa, the present harbour of Yangon is still important for local freights.

This old harbour of Yangon has its own functions and processes with strong rural-urban linkages, it serves as a door to import the basic needs of 5.5 million people. Recently,

in the early months of 2003, this harbour was renovated without changing much of its structure.

## **2. Old Theingyi Market**

The second excursion point is Old Theingyi Market. The main reason of going there is to show the two distinct aspects, one is the old building itself and the other is social aspects of this market place, which should be considered as important aspect in social sustainability.

In Yangon City there are 160 markets of various sizes including six tax-free markets which all are controlled by the Market Department of Yangon City Development Committee (YCDC). Markets are classified as A, B, C and D types according to the location of the market, state of prosperity, building structure and its area. By this classification, there are 21 markets of A-type, 50 of B-type, 47 of C-type and 36 of D-type in Yangon City. Theingyi Market is included in the 'A' type category, and it is the second oldest market in Yangon City next to Bogyoke Market. Bogyoke Market seems to be limited to wealthy families. Unlike Bogyoke Market, Theingyi Market provides the basic needs to all classes having both wholesale and retail character.

It has been an old market place for nearly 100 years, started on a religious place. Long before lower Myanmar was occupied by the British in 1852, the area of Kyeik-myat-than-cho Pagoda and its Thein (Buddhist ordination hall) was so large that people used to do business of selling and buying on this religious land which was tolerated by the chief monks. Small temporary huts were built and the small businesses gradually flourished and prospered. Soon after Lower-Myanmar was occupied by the British, an Indian ethnic group bought the whole market area on religious land for 750 kyats from the British to build Suriti Baryar bazaar. This group already had a similar business in Mawlamying, a town in Mon State which fell under British rule due to the first Anglo Myanmar War. To build a large bazaar with 6.26 acres, one square foot of land was bought with 9 pyas which gradually increased to 32 pyas and then Suriti Baryar bazaar was built with bamboo and thatch roofing in 1854. This bazaar was called Theingyi Market because of Kyat-myat-than-cho Pagoda and its Thein (Buddhist ordination hall) and became the most famous market at that time. Fire broke out in 1855 and again in 1857. After the fire, new A, B, C buildings with a clock tower were rebuilt at a total cost of about 123600 kyats. In 1868, D and E buildings were extended for groceries and for fruit.

After 1988, some buildings of the Theingyi Market, C, D, E were tore down and replaced with new modern buildings. Only A and B buildings were left as it was, which should now be kept as heritage buildings. The 'A' building was rebuilt in 1905 and located between two main roads, Anawrahta Road and Maha-Bandoola Road, and between Konzaytan and 26th Street. The building is 500 feet (152.4 meter) long and 110 feet (33.5 meters) wide. The total area is 55000 square feet (5111 square meters). Totally, 652 shops are arranged in five rows of north-south direction, which are divided by 19 rows of shops in east-west direction. Major selling commodities are meat and vegetable, pharmacy for

indigenous medicinal ingredients, chemicals for food stuffs, miscellaneous things for fisheries and dry groceries.

The 'B' building was built in 1938 and located between two main roads of Anawyahta and Maha-Bandola and between 25th and 26th Streets. The building is 450 feet (137.2 meters) long and 110 feet (33.5 meters) wide, having an area of 49500 square feet (4596 square meters). There are 505 shops mainly selling clothing, cloths, cosmetics, stationery, toys and foot wares such as slippers. People doing business in this market have mainly inherited their shops from their ancestors. Although in a few cases some shops have been sold to others, most shop owners perceive it as a legacy, which should be maintained with adoration for their next generation.

These can be regarded as heritage buildings which are still functioning well in business and have a strong social coherence which should be preserved as a sustainable social characteristic. Until now, this market place is not regarded as one of the heritage buildings and even endangered in the transformation process which took place intensively after changing to a market oriented economy after 1988, like the other part of Theingyi Market buildings of C, D and E.

The uniqueness of this market is not only the old physical buildings, but also the family ties between the shop owners and their adoration for the old market and pride in their coherence through a historical event, mainly the building of a huge stairway, well known as hnit-pya tan-saung at Shwedagon Pagoda constructed in 1932 and finished in 1935, by saving two pennies of money each day by each shop owner of Theingyi Market. It is the best outcome of a strong social coherence, which was deeply rooted in religion and it is still strongly thriving until now. This is an important social aspect, which should be considered in urban sustainability in terms of cultural heritage.

### **3. Waste Water Treatment Plant (Thanlyet-soon Point)**

The next point is Thanlyety-soon, where a wastewater treatment plant is being constructed. The main aim of selecting Thanlyet-soon (Monkey Point) with the waste water treatment plant which is under construction, is to show the present sewerage disposal system of Yangon, especially of its downtown area, because it is an important aspect to care for a better urban environment. In addition, to know how the Yangon City Development Committee (YCDC) is trying to create a better city environment.

In Yangon City, the central sewer system is especially used in the six downtown townships which cover only 0.7% of the whole city's area. It was installed more than a century ago to serve 40,000 people. Today, about 300,000 people live in the same area making the system overloaded, and it is nearly at the end of its carrying capacity.

Since 1965, there had been a plan of four wastewater treatment plants at Kamayut, Ahlone, North Okkalapa and Botataung (present Thanlyet-soon Point) townships. In Ahlone and Kamayut, the outlets were proposed to discharge into Hlaing River, from North Okkalapa into Ngamoeyeik Creek and from Thanlyet-soon into Yangon River. Due to many

difficulties, only one can be started now in Thanlyet-soon. This site was chosen because it is very close to the end of an existing outlet of a 91cm pipe line which discharges into Yangon River. It is impossible to replace the old sewer pipelines with a new system. Although the existing sewerage system was built more than 100 years ago, it has still been well functioning until now. Among 40 ejectors, 36 are still operating very effectively and as the whole downtown is relying daily on it, the present place is the best to construct a wastewater treatment plant.

The whole project area at present is 5.7 acres (2.3 hectares) although it requires about 10 acres (4 hectares). Formerly this area was owned by Myanmar Shipyard, where large storehouses and some residential houses of government employees existed. Residential and all other buildings were tore down and people were relocated to other places where the Department of Human Settlement and Housing Development (DHSHD) provided housing.

The construction project is aimed to be completed in one year. Although the construction was proposed to be completed in one year, the data collection before starting the actual construction took about one year. Data were collected in various forms and various places of the downtown area. Tests were made in Yangon Technology University and 216 tests were made throughout the year to have seasonal fluctuation. The daily average output of sewer is 14775 m<sup>3</sup> from the six downtown townships. Based on these data, analyses were made and the 'Activated Sludge Process' method was chosen for the type of treatment plant.

Though the outlet pipe had discharged directly into Yangon River for many years without any treatment, the equilibrium still exists because of tidal effects and a strong discharge power of Bago River. The Environmental Impact Assessment (EIA) was made by the Ministry of Health and found that there was still no important impact because of this open disposal of sewer into Yangon River. Near the mouth of the disposing pipe and along the riverbank, many small shrimps can be found. Although the present sewerage disposing system is still in equilibrium with the natural system, the main objective of this project is to prevent future problems, which will develop with the population growth. This is an important fact concerning the urban environment dealing with the ecological aspect, which will have a strong impact on the health of the population.

#### **4. Chaukhtatgyi Pagoda**

The next excursion point is Chaukhtatgyi Pagoda. It is necessary to explain a bit about the physical uniqueness of this pagoda and then the social aspect rooted in this pagoda compound. The pagoda was named Chaukhtatgyi (six steps), because it stands on a hill, which has six steps. It was first built on 1907 by Sir Pho Thar and that pagoda was replaced by the present one because the old building collapsed and nearly broke down because of weathering. Then in 1966 it was decided to build a new pagoda which was finished in 1974. This is the third largest Buddha image in a lying posture in Myanmar. (The first is in Hanthada, the second in Htawei, the fourth in Bago)

The physical uniqueness of this pagoda is the eyes. All of the eyes of Buddha images, which were usually made with cement and some painting on it. However, the eyes of this pagoda are made of glass. The length of the eye is 1.7 meter and the width 0.5 meter. People were proud that they could do such glass eyes with limited technology at that time.

The environmental uniqueness is the greenery, quiet and peacefulness of the area although there are more than 370 monks living in this compound in 54 monasteries.

The social uniqueness is the annual donation festival of monk's bowl during the last five days of worshipping Buddhist scriptures. There is no such event in any other pagoda in Yangon. Every year in December, there is a recitation of Buddhist scriptures for five days. The festival of monk's bowl takes place on the last day before afternoon. On that day, monks do not need to go around to accept offerings of food. Foods are already prepared in bowls by households and they take it to this pagoda and arrange them on the long table. There are 500 bowls for 500 monks. After the recitation, monks gather at the main assembly hall of the pagoda compound. When the time commences, they come in a file according to seniority. Then each monk is offered a bowl with food which is a very simple and graceful donation of food for 500 monks. It is the unique character of this pagoda and the nature of the people who live nearby and their social context to religion which has always shaped the social environments.

Though this pagoda stands still on a hill, it had some small globalisation effect because numerous tourists made their names on the high wall of this pagoda building by donating some money to show some sign to late comers or some ways of wishing for next visits. The original meaning of making name in donation is to share the goodness to others and this was changed a bit by those tourists.

The main purpose of choosing Chaukhtetgyi Pagoda among many others is to show the daily life of monks living in this pagoda compound and to get an idea of the daily lives of the people as well. This is a place not very far from downtown. It is in the heart of the city, but quiet, calm and peaceful with green spaces which is the normal situation of monasteries. This environment has a favourable micro effect on the urban climate. As such, as far as a sustainable urban environment is concerned, this place had already been naturally established, synchronised in a good context of traditional behaviour through religion. This is a place of mental desire, which is always freely open for the public. People use to come from various places of Myanmar to worship the pagoda. Apart from it, people use to come to this pagoda in their leisure time and rest. This whole pagoda compound serves as a good example for the aspect of human behaviour rooted in tradition and religion as an important social environment of Yangon City.

It is important that there is a strong urban management and controls for the rapid population growth, otherwise the large vacant area around this pagoda compound could easily be congested with people and a filthy environment could develop. Thus, this area should be preserved with great care in order not to destroy the existing good urban environment.

## 5. Dagon: The Largest New Town of Yangon City

Since 1959, Yangon has had an experience of establishing new towns to relocate the congested post-war squatter population. The present North Okkalapa, South Okkalapa and Thakata were developed at that time which are now well-developed townships of Yangon although some problems still exist owing to insufficient infrastructure.

Again, after 1988, large-scale establishments of new towns were started. Main purposes of constructing new towns were to restructure and renovate Yangon as a standard capital city, to provide land for homeless people and government employees and to lessen the congestion problem of the downtown area.

Among many new towns, there are three large ones. Dagon is the largest having 287 square kilometres. It is the largest new town that has an area of more than the whole Yangon of the 1970s, which only had 208.6 square kilometres. The main objectives of constructing Dagon new town were to relocate squatters and government employees and to transform the former elongated shape of Yangon into a compact circular shape aiming to have better transport connections. The construction started in 1989. Between 1989 and 1991, about 116,000 of land plots were reclaimed. The total population of Dagon New town was increasing. There were only 28,000 inhabitants in 1990 and it reached 310,000 in 1997 which was an increase of 11 times within seven years. This was mainly because of the relocation of squatters and government employees.

The main reasons of choosing Dagon new town and one of its industrial zones as an excursion place is to show how the government provides land for housing to squatters, homeless people and government servicemen and to have some inside views on urban fringe of Yangon, what is going on, how the social characteristics are in these new towns, what problems are there and to think about how they can be improved, etc.

Dagon new town can best be portrayed as an excellent example of major characteristics of a rural-urban transition area which can be assumed as urban fringe area of Yangon City. Normally, the building structures are wooden. Although roads were planned on a map, there are no proper streets apart from some main roads. Nevertheless, people can own their land and this will encourage its further development with their own investment. Although drainage lines were included in the whole plan, there were no proper constructions. Thus flooding occurred after every heavy rain. An outstanding fact was, people in new towns usually have strong neighbourhoods and social coherence. They also have a chance of earning some income by providing small services, such as tailor work, repairing of bicycles and selling some household goods in front of their houses. In many areas of Dagon new town, trees are planted on their own initiative for shading that encourage people to make their surroundings greener in their leisure time. People can even practice growing kitchen plants in their compounds, all these cannot be carried out in downtown areas. This is a favourable practice of urban agricultural activities in the new towns of Yangon. Since 223 square meters of land plots were given for each house, households have more privacy, which is a valuable quality in social lives. It is an important aspect of urban social sustainability. Social coherence, responsibility and security guaranteed by close



neighbourhoods are most favourable aspects of social sustainability in the new towns of Yangon which should not be ignored.

## **6. South Dagon Industrial Zone - 1**

The main purpose of establishing industrial zones around Yangon was to employ the new town population and to help to develop the area. The establishment of industrial zones around Yangon started in February 1992. South Dagon Industrial Zone is one of these zones. There are three main industrial zones in South Dagon Township, Zone 1, 2 and 3. Zone 1 and 2 are for large and medium size factories. Zone 3 is for small industrial activities and shop-houses. Most of the industries are based on local raw material and labour intensive works.

Zone 1 located in ward 23 of Dagon South Township, having a total area of 192.4 hectares (including the areas for road and open spaces). It has 481 land plots and all are sold to private entrepreneurs. The total investment of factories in Zone-1, in 2002, was 6022 million kyats (about 6.8 million US\$). Most industrial works are garment factories, (10 garment factories employed for 1112 people in 2001). The second largest manufacturing work was plastic, having about 20 factories, where about 1000 workers were employed. Totally, there were more than 4000 workers in 135 factories in South Dagon Industrial Zone 1 in 2001.

Like new towns, industrial zones were transformed from paddy lands, which are flat and lower than 20 feet (6 meters) above mean sea level. Though plans had been made, there is still a lot of insufficient basic infrastructure. For instance, for lack of a proper drainage system, flooding occurs in every rainy season. The other is the waste disposal problem. Most of the plastic wastes and pieces of iron are disposed nearby the road. Waste collection and disposing is out of the capacity of YCDC. There is no proper plan for solid waste and liquid waste in industrial zones. The most severe problem is the insufficient electricity. Most of the factories cannot operate fully and nearly all of the factories have to install generators run by oil and creating serious noise pollution.

Two different factories are selected to look around the present working situation and to get to know about the different kinds of production. First is the Shwe Pi Nan Thanakha factory and handicraft factory of Great Myanmar Island Co., Ltd. which produce art crafts and furniture made of cane, bamboo and water hyacinth. Both factories are labour intensive, based on local raw materials produced from forests, but the nature of production is different. However, both of the two factories are based on forest products as their raw material.

To look around and see the situation, Shew Pi Nan Thanaka (a kind of tree, the bark and root of which are used in making cosmetic articles) processing factory was chosen. The first portion of production is processed with ordinary machinery and the second part, the packing is mainly done in a labour intensive way, having more than 200 workers. This is aimed to improve the traditional use of tha-nat-kha. It was mainly oriented to local markets and the demand is so great that production cannot meet the demand at this moment.

The second factory is a cane factory. Not only cane, but also water hyacinth and bamboo are also used to produce furniture and many other items. The raw materials, cane, mainly come from Yaykyi, Ayeyarwady Division, and Myeik, Tanintharyi Division. The water hyacinth is mainly imported from Ayeyarwady Division, mainly from Kyaung-kon, Kyonma-ngay, Kyon-pyaw and Wakhalma. The products are mainly aimed for foreign markets, especially Italy, France and Belgium.

As Myanmar is a developing country, the priority aim is to develop the State's economy as quickly as possible. For this, it is necessary to promote the industrial sector and one way of promotion was the establishment of industrial zones. The establishment of industrial zones around Yangon is favourable as such industrial zones need vest flatland and a good natural drainage situation. The physical situation of Yangon, having low central ridges surrounded by flatlands with big rivers and creeks which can act as natural drains and transport routes, greatly favours the physical setting of industrial zones.

The main aim of establishing industrial zones in Yangon is to attract labour forces from the new towns and to help develop the region. Such an encouragement of industrial growth in a particular area to provide employment is favourable. Besides relocation of industries as part of a programme of urban renewal it is also appropriate that industrial zones are part of the whole economic and social situation extending over the city. The industrial zones are one important function of Yangon which occurred as the result of the transformation process that strongly took place in late 1988.

Although these two factories can be regarded as small scale, these clearly show the situation of industrial zones of Yangon which provides works for local people. Employment plays an important aspect in social sustainability of Yangon.

## **7. Thirimingalar Market**

It is the largest wholesale centre of fresh fruit and vegetable located in Kyeemyindine Township. The one and only market open for 24 hours daily in Myanmar. It was formerly located in Seikkan (Port) Township, in Kili Wharf of Yangon harbour, and shifted to its present place in April 1989. At the beginning, large wharves were prepared to use as a market. So, spaces for shops were small and the whole market place was congested. Although it was located in a good location, the building was not suitable as a market. As the business was growing, the whole market became congested again. To ease this problem and partly under the port beautifying project, the old wharves were replaced with a new market building for more convenience purpose. Construction started in February 1997 and opened as a new market in October 1998. The total construction cost was 1400 million kyats.

The size of this market building is about 816 feet (250 meters) long and 236 feet (72 meter) wide. It has five stories and the whole fruit and vegetable market place is in two stories, the ground floor and the first floor. The third floor is the Happy World amusement park for children, the fourth floor is owned by two large companies which distribute furniture and umbrellas. The top floor is used as karaoke lounge and for TV production purposes.

The sizes of the shops are 40 square feet, 168 square feet and 200 square feet. There are more than 2300 shop places in this market.

Shops are arranged in certain sections according to the commodities sold. There are sections A, B and C on the ground floor and sections D, E and F on the first floor. For instance, section A is for vegetables, beetle leaves, flowers, bamboo shoots, etc. And section B is for ginger, lemon, fruits, etc. So there is a certain arrangement in dividing the commodities mainly according to water requirements. For some fruits and vegetables you need water to keep them fresh and some do not need a lot of water. The main products are various vegetables like cabbage, cauliflower, tomato, banana, coconut, beetle leaves, ginger, lemon, etc.

Most of the vegetables and fruits are imported from Ayeyarwady Division, Shan State and from various other areas. About 40% of the total imports are from Ayeyarwady division and 40% from Shan State. The remaining 20% come from various other places. Sometimes even from China, especially apples and flowers. Goods are imported by road, rail, and waterway. There are two jetties for boats, especially from Ayeyarwady Division. Lorries and trucks are used for vegetables from Shan State.

One distinct characteristic of this market is that there is place for hawkers on the first floor. They need to pay a low tax on a daily basis. Business is more active at night as it is also allowed to sell things at the unoccupied shop places and the tax for it is 1000 kyats per night for one place which normally has 40 square feet. The other distinct feature concerns bananas and coconuts. Rather than for eating, these are mainly for religious purposes. Bananas are imported from Kyon-pyaw, a small town in Ayeyarwady Division and then they travel to Bago and even to Mon States and Rakhine States. There are about 90 banana shops which sell at least about 500 hands of banana per shop daily. On festival days more than 1500 hands of banana can be sold daily by each shop. Thus even in business, religion is strongly rooted.

It is interesting to interpret the background processes, which are related to this market. The whole building represents the decentralisation and transformation process of Yangon City. It was moved to Kyeemyindaing Township from downtown due to the decentralisation process, which is favourable in solving congestion problem of the downtown area. Soon after this, another transformation process took place as the new building was constructed with more stories. It became a multifunctional building that is favourable in financial terms.

In regard to the basic needs of people, in terms of distribution of fresh fruit and vegetable, it is the main functional node in the urban economic network of Yangon. The main nodal point which provides fresh fruit and vegetable to the Yangon population through 157 local market places of YCDC, even to street vendors and also for the people of Dala, a township at the other side of Yangon River. It creates jobs for people not only in this market but also along the whole network system. It has far-reaching supply networks, even from China, and thus it also has far-reaching impacts, especially in labour force generation. Since

such a market place creates employment, it results in a growing number of immigrants from other States and Divisions of Myanmar.

### **8. A Green Alley of Yangon**

Yangon already has a garden character due to many trees. It is the corner of Khayaypin Road and Manawhari Road, one of the beautiful quiet places with delightful large trees and very old houses. In this place, one can detect subtle processes of land use change in freehold lands through various ages of the houses ranging from more than 100 years to very recent.

In Yangon, free hold lands have the highest land prices because they are tax-free, and this land can be divided, given, or sold. Formerly, land plots were very large and large houses had only two stories. Later, land plots become smaller by dividing the large ones due to equal sharing by parents for their children as their patrimony. In this situation, more houses were built or some were sold, creating more housing and increasing population density in this area. The best example can be seen along Khayaipin Road near the old houses. The result is increased traffic flows, congestion within this area, slowly losing the calm and quiet character of the place.

Besides, as it is located near the downtown area, business came to intrude into this area and created more traffic flows, which created noise pollution and this somehow slowly deteriorates the urban environment of this area.

The good example is the A & T jewellery company which is located in a four-storey building just close to the more than 100 year old heritage house. The land plot was divided from that old house. The other example is a kindergarten school where only the children of rich people can join, creating more traffic flows in this place. Business is steadily intruding to this place because of the nearness to the main business area of downtown Yangon. Although businesses are coming in, this place is a fragmented area with lack of social coherence, which is an unfavourable social environment. As this is the end point of our urban excursion, a question arose as to how we can create such an environmentally sound place like in the green alley with at the same time a strong social coherence like in Dagon new town.

### **Conclusion**

At the end of the excursion, it is necessary to wind up the whole day field observation. Firstly, it started with the port area because it is the origin of Yangon City. It is one main functional point of Yangon City, having a strong rural-urban linkage, which is an economically, socially and environmentally important point. Through seeing the present situation of the old harbour place which is heavily used until now and it can be concluded that it will be the same until the near future.

The second place was the old Theingyi Market. A century old market which has supplied fundamental things to ordinary people in a traditionally functioning style for a long time. A strong social coherence between shop owners and an attachment to their old market building was found and this represents a sustainable cultural heritage which is endangered by present transformation processes.

A third place was Thanlyet-soon (Monkey Point), where a waste-water treatment plant is being constructed. From that point it could be seen that the more than 100-year-old sewerage system is still totally relied upon by the six downtown townships. This is dealing with the ecological aspect of Yangon City, mainly concerning the social aspect in terms of health. The next point was Chaukhtetgyi Pagoda with a close look at the daily normal life of monks and people in context with religion. It is an environmentally sound place, which has naturally occurred in good context with religion resulting in a sustainable open space for public.

To understand the urban fringe situation of Yangon, Dagon new town and Dagon Industrial Zone (1) were visited. In Dagon Industrial Zone (1), the thanakha processing factory and the cane factory were visited, where people of the new towns are employed thus giving an insight into the situation of an industrial zone in Yangon.

The next stop was Thirimingalar Market. It is the 24-hour open market and the main supplying centre for fruit and vegetable to the whole of Yangon, one main node of urban economy, also a labour force generation point, which has far reaching impacts not only on the urban environments of Yangon but also on the rural environments.

The last point was the place of green alley in Yangon. Obviously, it is the place of the very rich. Nevertheless, it has a favourable character as an urban environment, which should be maintained. The next step is to consider how it can be reached to create similar places to cover the larger part of Yangon based on its existing green character from an ecological aspect, together with both a sound economic development and a desirable strong social coherence like in Dagon New Town.

It is really the task of urban planning and management. Though the planner and the authorities should perceive the goal of sustainable urban environment, understanding of the public to maintain a pleasant urban environment is also important and this is the most difficult task. Therefore, the public education is critical. Effective education programmes with effective laws and regulations need to be adopted. Educating the public to understand the importance of sustainable urban environment is a fundamental task for sustainable urban environments. In the mean time, the existing unique characteristics, which are of value in three aspects of sustainable urban environment, should be preserved for our society.