Population and spatial distribution of urbanisation in Peninsular Malaysia 1957 - 2000

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Abstract

For the past 90 years Malaysia has experienced rapid urban population growth. Beginning with towns which grew from colonial tin mining and trading and spices industries, urban growth had proceeded in tandem with population growth and economic modernisation. This article discusses the process of population growth and urbanisation in Peninsular Malaysia from 1911 to 2000 whereby urban population data from population and housing census were utilised to analyse the spatial distribution of towns in the region. Geographic Information System (GIS) was used to analyse the spatial distribution and growth centres of the cities involved. The period spanning 1957 and 2000 was chosen to look at this phenomenon. In 1957 the number of cities recorded was only 33; this had increased by 400 per cent to 140 in 2000. The analysis also found concentration tendencies of Peninsular Malaysia's urbanisation as testified by the rise of urban growth centres in Peninsular Malaysia for the same period examined.

Keywords: Geographic Information System, growth centres, historical geography, population growth, urban concentration, urbanisation

Introduction

Urbanization in Southeast Asia showed that the big cities were able to attract the most migrants from rural areas compared to smaller towns (TG McGee, 1975). Urban population growth or urbanization is expanding rapidly in Malaysia. The number of urban centres with population of 10,000 and above in Malaysia has increased from 8 in 1911 to 140 in 2000. With an average of 11.1 per cent increase each year saw rapid development of urbanization process in Malaysia. By the year, Malaysia is projected to be an urban society with the majority (over 70 percent) of the country's total population living in its cities (Norhaslina Hassan, 2009). Before World War II, immigration from China has accelerated urbanization process in Malaya (Cooper, 1951). After the world war ended and the Federation of Malaya was established in 1957, the urban population growth process was due to population migration flows from rural to urban areas.

However, for the period 1986-1991 a total of 50.1 per cent of internal migration in Malaysia was from city to city, in fact it continues to increase to 68.8 per cent for the period 1995-2000 (Department of Statistics Malaysia, 2005). While rural to urban migration has declined from 17.1 to 12.8 percent in the same period (Tarmiji Masron et al., 2011). One of the issues identified was related to imbalance urban population growth rate that resulted in higher growth occurring in the West Coast states. This phenomenon has a direct impact on the spatial distribution, density and concentration of urban centres in Peninsular Malaysia. This study will attempt to identify the number of urban centres, concentration as well as spatial distribution of urban centres growth in Peninsular Malaysia. The 1957 and 2000 period was made as the base year to look at this phenomenon. Geographic information system (GIS) was used to analyze the existing spatial pattern related to population density and urban growth throughout Peninsular Malaysia for the period before and when the country achieved its independence that was from 1911 to 1957 and then after independence period from 1957 to 2000.

Population and urbanisation

The Malaysian society is rapidly transforming into an urban society (Norhaslina Hassan, 2009). Urbanization is a continuous population concentration process in the city and metropolitan areas which plays an important role in the development and modernization of society (United Nations, 1987). Definition of urbanization in Malaysia refers to the gazetted area and the criteria used in 1970, 1980, 1991 and 2000 Population Census. The area gazetted as urban areas must have a population of 10,000 and more and gazetted areas with their adjoining built-up areas and combination of both areas have a total population of 10,000 or more when the Population Census 2000 was conducted (Department of Statistics, 1995 & 2001).

Rural settlements or rural urbanization located near metropolitan areas have helped in accelerating the urbanization process in a country. For example, Dengkil, a town in the Sepang district which has thrived in line with the development of Kuala Lumpur. There are many new factories and housing development in this area. This phenomenon was also recognized by Gavin Jones and Mike Douglass who studied urbanization in the Asia Pacific cities such as Bangkok, Manila, Ho Chi Minh City, Jakarta, Taipei and Shanghai which were found to have experienced the transformation of rural areas and built-up areas towards the metropolitan boundary. Therefore, population growth was much faster at the metropolitan suburb areas than within the metropolitan area itself. In other words, rural urbanization of the suburb areas has helped to expand the Kuala Lumpur metropolitan area in particular and Malaysia in general (Katiman Rustam, 2000).

One of the most significant impacts following the different urbanization growth rate trend stated previously was the increasing pattern of population migration to the west coast states every year. This will continue to put ecological pressure to urban areas such as Kuala Lumpur, Shah Alam, Georgetown, Johor Baharu, Ipoh, Penang and others. The migration has also created urban poverty which is becoming more apparent in major cities in Malaysia today. In other words, urbanization process has created low income problems, for example, among the Malays (Mohd Razali Agus, 1989).

Pattern of growth must be viewed in the context of increasing sub-urbanization and the existence of satellite towns in the outskirts of large cities. Between 2000 and 2030, the proportion of Asian living in cities will rise from 35 percent to 53 percent (Mirshra, 2002). One of the main features of migration in Southeast Asia is, it is dominated by men and was motivated by push factor from backward village, such as lack of employment, population pressure and poverty have caused them to migrate to cities to seek better jobs. Now, the push and pull factors in rural migration is no longer sufficient to explain the process. On the other hand, the rapid social changes and economic developments such as increased education and communication facilities have moved migration changes from rural to urban, to urban to urban in Malaysia. In Malaysia more than 60 per cent of migrants was contributed by urban to urban migration (TG McGee, 1975). The attractiveness of cities is closely related to liveability and high-income city generally performs well in terms of liveability (Tenth Malaysia Plan, 2010).

It appears that the issue of rural migration is becoming less important in Malaysia. Instead, questions such as what are the characteristics of the urban-to-urban migrants, what is the main motive for this migration flows to happen, whether rural areas have prospered, and whether the present rural population are reluctant to migrate to the city due to current situation where the urban society no longer require the rural people but instead prefers people from other urban areas because they are more educated, have work experience, mobile etc., have become increasingly important issues to consider (T.G. McGee, 1975).

One of the issues identified was related to imbalanced urban population growth rate where higher urban population growth occurs in the West Coast states. Analysis of growth rates between the years 1991-2000, found Malacca and Selangor registered high annual average population growth rate in Peninsular Malaysia which is 8:09 and 7.80 per cent respectively. Meanwhile, Negeri Sembilan and Johor with more than 5.0 per cent per annum. On the other hand Kelantan and Terengganu recorded the lowest rate of 0.98 and 2.70 per cent. In 2000, the urbanization level were for Penang (79.5%), Selangor (88.3%), Melaka (67.3%), Johor (63.9%) and Perak (59.5%). On the East Coast, less developed states such as Kelantan recorded the lowest urbanisation rate of 33.5 percent in 2000. This

shows that the process of urbanization in Peninsular Malaysia was not balanced, where the West Coast states of the Peninsula which have a more advanced socio-economic development also have high urbanization levels (Saw, 1972).

For Peninsular Malaysia, the urbanisation rate began to increase from 10.1 percent (1911), 14.0 percent (1921), 15.1 percent (1931), 15.9 percent (1947) and 26.5 percent (1957). For Sabah and Sarawak, the respective urbanization rates in 1960 were 13.4 per cent and 12.6 per cent which increased to 16.4 and 16.7 per cent in 1970. This shows that the rate of urbanization in both states was low. Therefore, urban socio-economic development must be planned and implemented to attract more people to live in Sabah's and Sarawak's cities.

Data and methodology

The data main source in this study is the population and housing census information for a period of 90 years from 1911 to 2000. For the analysis of urban spatial distribution, the data set that has been selected is the urban population data for 1957 and subsequently the 2000 urban population census data. The year 1957 was selected because it was the year Malaya achieved its independence and the subsequent transition from colonial urban growth to the self-governing administration system of Malaya. While the year 2000 was the latest year that the population census was carried out, this is 90 years after the first comprehensive census in 1911. In this study, urban population refers to gazetted areas as well as the criteria used in the Population and Housing Census of Malaysia 1970, 1980, 1991 and 2000. There are five major classes intervals used, they are population 10,000 – 24,999, 25,000 – 49,999, 50,000 – 74,999, 75,000 – 149,999 and 150,000 and above (Population and Housing Census 1970; 1980; 1991 & 2000). The SPSS and GIS were the software used to analyze these data. Results of analysis from both approaches will be used to look at density growth and spatial distribution of towns in Peninsular Malaysia in a period of 90 years.

The Average Nearest Neighbour and Spatial Autocorrelation statistical methods were used to analyze the spatial distribution of towns in Peninsular Malaysia for 1957 and 2000. Average Nearest Neighbour (ANN) statistical analysis measures the distance between each characteristics or feature on map and its immediate neighbours or nearest neighbour and then the average of all features' distance on map will be calculated. Value less than 1 shows that the distribution is clustered, while value greater than *1* indicates that the distribution is dispersed. This technique, however, was analyzed without limitations. The two most notable factors are the difficulty to restrict the study area and analysis depends on the characteristics in the study. The Nearest Neighbour analysis tends to show random pattern, clustered or dispersed depending on how many surrounding areas were included in the analysis. Ord Getise General Index and *I* Moran index are the two types of indicators for spatial autocorrelation.

Autocorrelation spatial index is similar to Getise Ord or Moran index which is the degree of measurement indicator for a spatial set that has characteristics and values with relevant or useful data to be clustered or grouped together spatially (positive spatial autocorrelation) or a dispersed cluster (negative spatial autocorrelation). *I* Moran Index is easier compared to the other two previous indicators (Nearest Neighbour and Getise Ord) and it has a fixed standard to determine the spatial autocorrelation, but for the Getise Ord indicator, it shows the highest value cluster or the lowest value cluster indicator (Getis and Ord, 1992; Ord and Getis, 1995).

Analysis and discussion

Economic modernization and urbanization process occur in parallel and continuously in Malaysia. From 1911 to 2000, the total urban and urban centre population continue to grow. In 1911, there were eight urban centres in Peninsular Malaysia with six in the group of 10,000 to 24,999 people and the remainder, in the category of 25,000 to 49,999 people and 75,000 to 149,999 people respectively. Within 46 years, in 1957, the total city centre continued to increase to 33, an increase of 54.3% with 18 urban centres in the category of 10,000 to 24,999 people, eight in the category of 25,000 to 49.999

people and three in the category of 75,000 to 149,999 people and the rest in the category of 50,000 to 74.999 people and 150,000 people for two of the urban centres. During the 43 years since the country gained independence starting from 1957 to 2000, the number of urban centres in Peninsular Malaysia increased further to 140, an increase of 248.8%. All categories of urban centres experienced significant increase with 71 urban centres in the category of 10,000 to 24,999 people, 28 in the category of 25,000 to 49,999 people, 10 in the category of 50,000 to 74,999 people, 14 in category of 75,000 to 149,999 people and the rest of the 17 centres in the category of 150,000 people (Figure 1.).
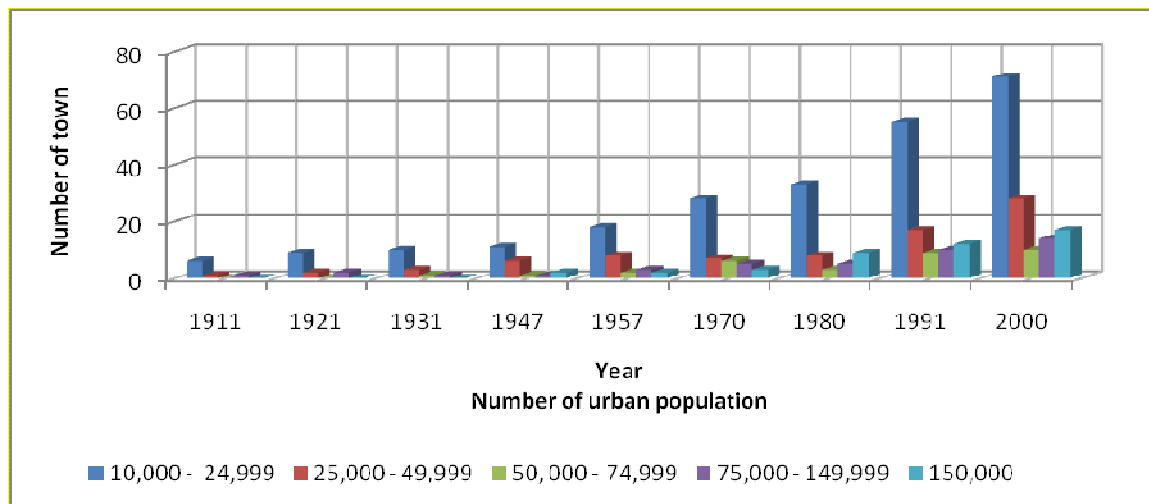
Figure 1. *Peninsular Malaysia : Number of town centres from 1911 to 2000*

Figure 2. shows the distribution of urban centres in Peninsular Malaysia in 1957 by total population category. In 1957 city centres with population of more than 150,000 people were George Town in Penang and Kuala Lumpur. While city centres with total population of 75,000 to 149,000 people were Ipoh (Perak), Klang (Selangor) and Johor Baru (Johor). Melaka and Seremban were city centres with population 50,000 to 74,999. Meanwhile, Taiping, Butterworth, Batu Pahat, Muar, Kota Baharu, Teluk Intan, Kluang and Kuala Terengganu were town centres with population of 25,000 to 49,999 people. For the town centres with population of 10,000 to 24,999 people were Bukit Mertajam, Kampar, Kuantan, Sungai Petani, Ayer Hitam, Bentong, Segamat, Kulim, Jinjang, Petaling Jaya, Raub, Kuala Kangsar, Sungai Siput Utara, Pasir Pinji, Dungun, Kuala Pilah, Batu Gajah and Serdang Bahru.

In a period of 43 years from 1957 to 2000, the number of urban centres in Peninsular Malaysia continued to increase. Figure 4.3 shows the distribution of urban centres in 2000. In 2000 the city centre with population 150,000 and above were Kuala Lumpur, Kelang, Petaling Jaya, Subang Jaya, Shah Alam, Kajang and Selayang Baru in Selangor, Johor Baharu in Johor, Ipoh and Taiping in Perak, Seremban in Negeri Sembilan, Kuantan in Pahang, Kuala Terengganu in Terengganu, Kota Baharu in Kelantan; George Town and Bukit Mertajam in Penang and Sungai Petani in Kedah.

Urban centres with population of 75,000 to 149,999 people were Bandar Melaka in Melaka, Kelang, Ampang and Taman Gombak in Selangor, Batu Pahat, Sekudai, Bandar Muar Maharani and Pasir Gudang in Johor, Kulim in Kedah, Sungai Ara, Butterworth, Gelugor and Ayer Hitam in Penang and Kemaman in Terengganu. The next category is urban centres with population of 50,000 to 74,999 people were Port Dickson and Cukai in Negeri Sembilan, Kuala Kangsar and Teluk Intan in Perak, Rawang and Balakong in Selangor, Segamat in Johor, Perai in Penang, Kangar in Perlis and Dungun in Terengganu.

For town centres with population between 25,000 to 49,999 people in 2000 were Ulu Tiram, Banting, Semenyih, Bentong, Gombak Setia, Kuala Selangor in Selangor, Jitra and Bedong in Kedah. Kulai, Senai, Kota Tinggi, Tangkak, Pontian Kecil and Pekan Nanas in Johor, Bukit Baru, Ayer Keroh and Masjid Tanah in Melaka, Val D'or and Nibong Tebal in Penang, Sitiawan, Sungai Siput Utara, Lumut, Batu Gajah, Klebang and Kampung Koh in Perak, Nilai in Negeri Sembilan, Raub in

Pahang and Pangkalan Kalong in Kelantan. The last category is town centre with population of 10,000 to 24,999 people. In 2000 a total of 71 towns were in this category, namely, Tanah Merah, Kuala Kerai, Kuala Kubu Baru, Pasir Mas, Wakaf Bahru, Gua Musang and Tumpat in Kelantan. Jerantut, Bukit Tinggi, Kuala Lipis, Bandar Muazam Shah and Mentakab in Pahang. Bahau, Tampin, Kuala Pilah, Labis and Pangkalan Kundang in Negeri Sembilan.

For Perak, urban centres with population between 10,000 to 24,999 people were Bidor, Tapah, Kuah, Bagan Serai, Pantai Remis, Tanjung Malim, Lawan Kuda Bahru and Kampar. Air Molek, Alor Gajah, Batu Berendam, Bemban, Bukit Rambai, Kuala Sungai Baru, Sungai Udang and Pulau Sebang in Melaka. Alor Setar, Gurun, Kepala Batas and Kuala Kedah in Kedah. Ayer Tawar, Bandar Baru Salak Tinggi, Batang Berjuntai, Batu Arang, Beranang, Bukit Beruntung, Jenjarum, Sabak, Tanjung Karang, Tanjung Sepat, Kuang, Serendah, Sungai Besar, Sungai Pelek and Sekinchan in Selangor. Bukit Bakri Buloh Kasap, Chaah, Mersing, Parit Raja, Pekan Nanas, Simpang Renggam, Kelapa Sawit and Yong Peng in Johor. Jertih, Kertih and Paka in Terengganu. Juru, Permatang Kuching, Tanjung Bunga and Tanjung Tokong in Penang. Kadok and Peringat in Kelantan and Kuala Perlis in Perlis.
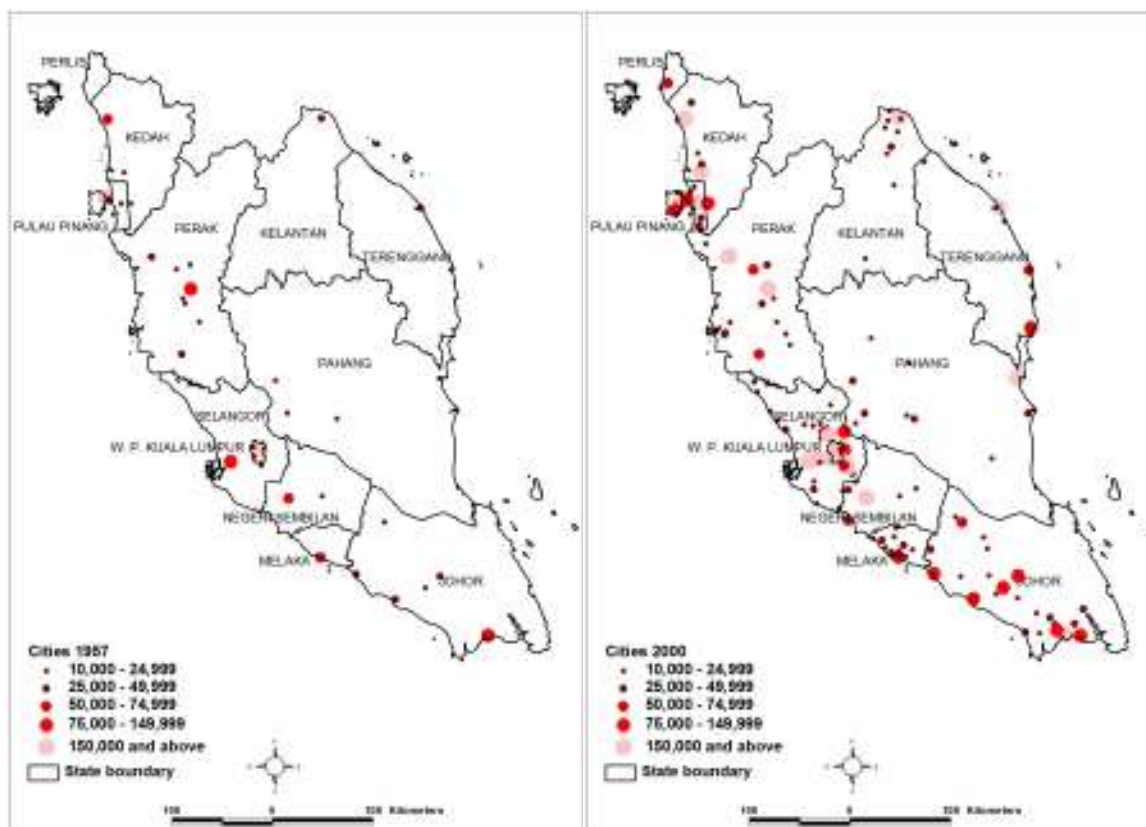
Figures 2. and 3. *Distribution of urban centres in Peninsular Malaysia,1957 and 2000*

In terms of spatial distribution of town centres in Peninsular Malaysia for the period 1957 and 2000 the overall spatial pattern that existed was a cluster with urban growth concentration around Kuala Lumpur and Selangor. In 1911 the distribution that existed was random in nature with growth centre around Ipoh and this pattern continued until the census of 1947. Starting from 1957, growth centre began to shift to towns around Kuala Lumpur and Selangor with random pattern. However in 2000 the spatial pattern that existed began to change from random pattern to high cluster with concentration of urban growth areas around Kuala Lumpur (Figure 4. and 5.).

Before the colonial period, small towns and ports have already existed as growth centres situated along the coast, rivers and lakes by conducting business and trading activities through water

transportation as the main route either among local population or from outside the area. The situation in towns and ports began to change after entering the colonial period. Penang which was said to be colonized in 1786 and Singapore in 1816, were the 'door' to the beginning of the urban evolution in Malaysia. Both of these ports were the main option for a colonial port due to its strategic location, which in turn can expand the spatial structure of the colonial economy to the surrounding areas (Wan Rozali Wan Hussin, 2010). In a period of 90 years beginning from 1911 to 2000, there were various policies as well as social and physical development plans implemented by the government in ensuring the social and economic progress running in balanced in every state in Malaysia. This scenario has a direct effect on population growth and urbanization process in Peninsular Malaysia.

Apart from historical factors there are many other factors that contributed to this development, among others, better socio-economic level, such as health facilities, education, job opportunities and others infrastructure facilities. Transformation in the economic sectors from agriculture and mining to industries and services has become the key factor of population concentration in urban areas and its surrounding. Prior to and until the country gained independence in 1957, most of the existing cities such as Ipoh, Taiping, Teluk Intan, Kampar, Kuala Kangsar, Sungai Siput Utara and Batu Gajah in Perak, Kelang in Selangor, Seremban and Kuala Pilah in Negeri Sembilan were direct impact from mining activities (Aiken et al., 1982).

The opening of more tin mines has encouraged large-scale entry of mine workers from China which further boost the business activities within the mining area. In fact, they also organized money using business activity to meet the growing demand from the mine workers (Aiken, 1982). This mining area became population settlement centre which subsequently created a small town with various activities. The need to export the products of mining and import a variety of other essential goods related to the mining industry has created a number of ports such as Port Weld, Telok Anson, Kelang and Linggi (Hamzah Sendut, 1962). When Kinta Valley was alive with mining activities, Ipoh became the centre for those activities. Towns around Ipoh began to grow such as Batu Gajah, Papan, Gopeng, Kampar and Sungai Siput which have developed Kinta Valley and its location at the centre of Perak has made Ipoh as the state's economic centre and subsequently became the state capital.

The same situation happened in Selangor, which is also rich in tin reserves in the Klang Valley area. Kuala Lumpur emerged as Selangor's mining centre. Due to its location in the centre of the state and also in the centre of the Malay Peninsula, it became the state capital for the Federated Malay States over other areas in Selangor. The importance of Kinta Valley was taken over by Kuala Lumpur and its surrounding areas (Lim Heng Kow, 1978). Likewise, Negeri Sembilan which was also rich in tin which was concentrated in Seremban, could not overcome the strength and importance of Kuala Lumpur.
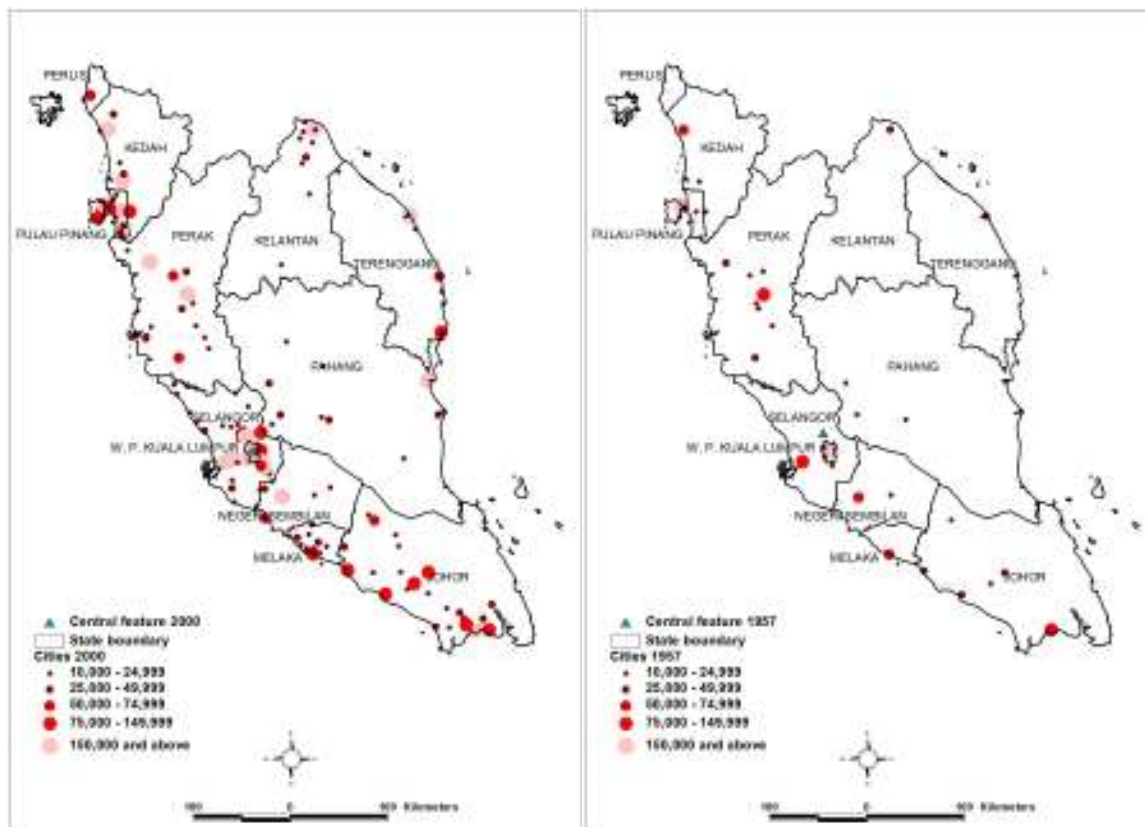
Figure 4. and 5. *Spatial distribution and central feature of towns in Malaysia, 1957 and 2000*

The main thing that the colonial authority worked on at that time was to link the colonial towns with other growth centres in order to obtain supply of raw materials, particularly tin ore. Gradually, the relevant growth centres expanded due to population increase, the provision of basic facilities including transportation network and serves as collection and distribution centre for goods. Within that period, road network connecting towns from north to south, from east to west have been built until a system of main roads networks throughout Peninsular Malaysia was developed (Wan Rozali Wan Hussin, 2010).

The 2000 population census showed the development and rapid increase of urban centres with a population of 10,000 and more. If prior to and in the early independence period, mining based economic activity factor greatly influenced the population development and urban growth in Peninsular Malaysia, but in 2000 the diversity of economic activities such as business, manufacturing, services and others as well as natural population growth and internal migration assisted by the level of health and health facilities and basic community facilities as well as improved infrastructure such as roads have helped to further the growth of urban population and consequently growth of new towns and development of existing towns.

The concentration of economic activities in the vicinity of metropolitan cities has a significant effect on the pattern of urbanization in Malaysia recently. The polarization of urbanization and urban population concentration in the central region becomes more apparent. Prior to 1970, urbanization in Malaysia generally occurs at a slower rate and only certain large cities, particularly Kuala Lumpur which became the focus for population migration. Urbanization level at the time was relatively low at 28 per cent because the majority of population lived in rural areas (Katiman Rostam, 2010). However when, the New Economic Policy (NEP) and a twenty-year Perspective Plan was introduced in 1970, and urban and regional development policy emerged in the Second Malaysia Plan (1971-1975). Regional development was seen as necessary for the development of nation and strategies of

industrial decentralization and integrated rural development began to take shape (Ahmed Idriss, 1990).

By the late 1980s which was at the end of the NEP implementation, Malaysia's economic structure experienced rapid changes. The manufacturing sector, especially the labour-intensive in nature with electrical and electronics products as their main product and manufactured for export, have contributed substantially to the country's economy. The development of the manufacturing sector has increased urbanization process. The average urban population growth rate was also quite high at that time with average more than 5.0 percent. After the expiry of the New Economic Policy (NEP) implementation in 1990, the urbanization and urban growth trend began to change. These changes are consistent with the national economic structural shift to manufacturing sectors and modern services which were centralized in the city's vicinity. The entry of foreign direct investment into the country has increased due Malaysia's competitive edge in terms of skilled labour supply with relatively low wages as compared to developed countries.

The modern economic activity in this country was converged in the vicinity of Klang Valley metropolitan cities, including Langat Valley, Penang and Johor Bahru. The development of urban economy which was city-based has encouraged focused urbanization and the growth of metropolitan cities (Katiman Rostam, 2010). In Malaysia, small towns with population size of 10,000 – 25,000 grew rapidly in the 1970-1980 period, while some medium-sized towns experienced negative growth rate. In the Third Malaysia Plan for the years of 1976-1980, the government increasingly intervened in the development process, as is apparent in various Acts of Parliament. The changing attitude towards regional development emerged slowly during the last decade as the need for intervention became more pressing with recognition of the extent and dimensions of regional problems (Ahmed Idriss, 1990).

During 1981-1991, only cities in the large population category experienced negative growth while cities in other categories recorded average urban growth rates of above 5.0 percent except for towns in the 50,000 – 100,000 category which recorded relatively slow growth rate (2.5 per cent per annum). These urbanization and urban population growth trends indicates the existence of dispersion effects on the economic and social development outside the major growth areas. It is interesting to observe the 1991-2000 period in the Malaysian urbanization history. It is not only because of the increasing number of urban centres and the high national urbanization level reaching almost 65 percent, but also because of the rapid urban population growth. It is more interesting because most of the country's urban population was concentrated in cities over 400,000 in size, especially in the Klang Valley.

Besides Kuala Lumpur, there are five (of eight cities in Malaysia) located in Klang Valley and they are Klang, Petaling Jaya, Ampang Jaya and Subang Jaya. There are also some large cities with population exceeding 100,000 people in the Klang-Langat Valley, namely Selayang, Shah Alam, Kajang and Batu 9, Cheras. This indicates that urbanization process is rapidly concentrated around developed areas of the Klang – Langat Valley (Katiman Rostam, 2010). The existence of new cities around Kuala Lumpur were found to be able to absorb growth and prevent excessive concentration of population in Kuala Lumpur (Ho Ching Siong, 2008: 9)

Now, Malaysia adopts a more modern and high technology road transportation system under the Malaysian Highway System which is being monitored by the Malaysian Highway Authority. This modern road network acts as a catalyst for the national economic growth and consequently the population and urbanization growth. Among the major highways are the North-South Highway, East-West Highway, Kuala Lumpur-Karak Highway, Kuala Lumpur - Air Hitam, the Pan-Borneo Highway and the Sabah West Coast Highway. All of the completed or still under construction highway networks are the key link to all road networks and existing cities across the country.

Summary

A period of 90 years has witnessed Malaysia recorded rapid urban population growth. In 1957, 26.5% or 1,666,300 of the 6,278,800 population of the Federation of Malaysia lived in urban areas; by 2000 this number has increased to 62% or 14,426,800 people living in urban areas compared to 38% or 8,847,800 people living in rural areas. Starting from historical factors, such as tin mining activities as

well as spice and tin ore trading activities through ports that are located in the various states involved, the urbanization process continues to grow due to the effects of economic modernization, infrastructure facilities as well as natural population growth and migration. In terms of spatial distribution, most towns in Peninsular Malaysia are located in West Coast states of Peninsular Malaysia, while the growth centre also experienced changes from 1957 and 2000.

References

Ahmad Idriss (1990) *Malaysia's new economic policy*. Pelanduk Publications (M) Sdn. Bhd., Selangor, Malaysia. pp. 10 and 15.

Aiken SR, Colin H Leigh, Thomas R Leinbach, Michael R Moss (1982). Development and Environment in Peninsular Malaysia. McGraw-Hill International Book Company, Singapore. pp. 59.

Cooper E (1951) Urbanization in Malaya. *Population Studies* **5** (2), 117-131.

Getis A, JK Ord (1992) The analysis of spatial association by use of distance statistics. *Geographical Analysis* **24**, 189-206.

Hamzah Sendut (1962) Patterns of urbanization in Malaya. *Jounal of Tropical Geography* **16**, 114.

Ho Chin Siong (2008) Urban governance and rapid urbanization issues in Malaysia. *Jurnal Alam Bina* **13** (4), 9.

Jabatan Perangkaan Malaysia (1995) Laporan am banci penduduk 1991, Jilid 2. Kuala Lumpur, pp. 34-61.

_____ (2001) Laporan kiraan permulaan bagi kawasan bandar dan luar bandar, Kuala Lumpur.

_____ (2005) Laporan am banci penduduk dan perumahan 2000. Kuala Lumpur.

Department of Statistic Malaysia (1977) General report population census of Malaysia 1970, Vol. 1. Kuala Lumpur.

_____ (1983) General report population census of Malaysia 1980, Vol. 2. Kuala Lumpur.

_____ (1995) General report population census of Malaysia 1991, Vol. 1. Kuala Lumpur.

_____ (2001) Preliminary count report for urban and rural areas. Kuala Lumpur.

Katiman Rostam (2000) Pembandaran dalam era globalisasi: Beberapa kesan terhadap ruang ekonomis desa di pinggiran metropolitan. In: Katiman Rostam (ed) Prosiding Seminar Kebangsaan Alam, Manusia dan Pembangunan di Malaysia, pp. 195-205. Universiti Kebangsaan Malaysia, Bangi, Selangor.

Katiman Rostam (2010) Kecekapan ekonomi ruang bandar *versus* ketaksamaan pembangunan di Malaysia: Suatu pola pembandaran dalam era perubahan global. In: Yazid Saleh, Sauziah Che Leh, Mazdi Marzuki (eds) Isu-isu alam sekitar manusia di Malaysia, pp.189 – 212. Universiti Pendidikan Sultan Idris, Perak.

Lim Heng Kow (1978) The evolution of the urban system in Malaya. Penerbit Universiti Malaya, Kuala Lumpur. pp.xix.

Mirshra Vinod K (2002) Population and environmental challenges in Asia (Asia-Pacific population and policy No. 63). East-West Center, Honolulu. pp. 1-4.

Mohd Razali Agus (1989) Impacts of urbanization on the Urban Malays of Malaysia: Problems of house ownership of the lower income groups, Sarjana, Julai 5 (Dec). pp. 114-132.

Norhaslina Hassan (2009) Issues and challenges of sustainable urban development in Malaysia. In: Nurhaslina Hassan (ed) *Sustainable urban development issues in Malaysia*, pp 1 – 22. Dewana Sdn. Bhd., Selangor.

Ord JK, Getis A (1995) Local spatial autocorrelation statistics: Distributional issues and an application. *Geographical Analysis* **27**, 286-306.

Saw SH (1972) Patterns of urbanization in West Malaysia, 1911-1970. *Malayan Economic Review* **17** (2), 114-120.

Tarmiji Masron, Usman Yaakob, Hassan Naziri Khalid (2011) Pertumbuhan penduduk dan pembandaran di Semenanjung Malaysia 1911 – 2000. Persidangan Kebangsaan Geografi dan Alam Sekitar Kali Ke 3. Universiti Pendidikan Sultan Idris. 8 – 10 Februari 2011.

TG McGee (1975) An aspect of urbanization in South-East Asia: The process of city ward migration. In: Jones E (ed) *Reading in social geography*, pp. 224-239. Oxford University Press, London.

United Nations (1987) The prospects of world urbanization revised of 1984-85. New York. pp. 6-11.

Unit Perancang Ekonomi (2010) Rancangan Malaysia Ke Sepuluh. Unit Perancang Ekonomi Jabatan Perdana Menteri, Putrajaya. pp. 258.

Wan Rozali Wan Hussin (2010) Kualiti hidup sosial dan proses perbandaran di Malaysia. In: Yazid Saleh, Sauziah Che Leh, Mazdi Marzuki (eds) Isu-isu alam sekitar manusia di Malaysia, pp. 19 – 42. Universiti Pendidikan Sultan Idris, Perak.