# CHAPTER 6
# SOCIO-ECONOMIC CONSEQUENCES OF URBANISATION

## INTRODUCTION

Adverse environmental consequences of urban growth are usually the products of some form of human activities in the pursuit of wealth or in some cases for sheer survival. Therefore, environmental issues are inexorably linked to human issues. A brief look at the socio-economic consequences of a rapidly deteriorating environment caused by urbanisation is given.

## SOCIO-ECONOMIC GROWTH

The City of Kuala Lumpur has undergone a remarkable transformation over the past decades and its dramatic growth has been attributed to its economic success. Since the launching of the New Economic Policy (NEP) in 1970, the role of Kuala Lumpur in the context of the nation's economic growth has become more challenging. Since its mining industry which began in the 1800s until the present day, Kuala Lumpur has achieved success in every aspect such as the quality of life, health, income, and standard of living (Mohd. Yusof 1995). Selected socio-economic indicators for Kuala Lumpur, as shown in Table 6.1 reveals that the provision for public amenities and services have increased with more of its residents having access to electricity, safe water supply and paved roads. The quality of life has also improved as the amount of doctors per 1000 population has increased from 16.7 to 22.6, the infant mortality rate has remained at 9.7, and the literacy rate among Kuala Lumpur's population has also increased from 92.7% to 94.0%, which is the highest in the country (GOM 1996).

The average income for the residents have also increased from RM1058 a year in 1976 to RM2102 in 1990, and the rate of unemployment in 1990 was also lower than any other state in Malaysia, at 3.4% compared with the national rate which was 5.6% (Mohd. Yusof 1995). Poverty among the lower income group was also reduced from 9% in 1976 to 4.9% in 1984.

Table 6.1: Selected Socio-Economic Indicators for Kuala Lumpur 1990-95

| | **1990** | **1995** |
|---|---|---|
| Registered cars and motorcycles per 1000 population | 350.9 | 616.3 |
| Telephones per 1000 population | 224.3 | 369.5 |
| Television licences per 1000 population | 146.8 | 201.4 |
| Literacy rate % | 92.7 | 94 |
| Population provided with piped water % | 100 | 100 |
| Population provided with electricity % | 100 | 100 |
| Infant Mortality Rate per 1000 live births | 9.7 | 9.7 |
| No. of doctors per 1000 population | 16.7 | 22.6 |
| Length of paved roads per 10 sq. km. | 41.4 | 71.1 |

Source : GOM 1996

**POPULATION GROWTH**

Population growth in Kuala Lumpur began in the early 1800s when it was founded when tin was first discovered. As more labourers came to work for the mines, by 1875 Kuala Lumpur had 8,500 residents. Its infrastructure development such as roads, shophouses and other facilities attracted more migrants from other States into the city. Its position as a mining centre, trade and industrial centre launched it into a new era of a modern city with comprehensive facilities. By 1911, the city had a population of 46,718 which grew to 175,961 in 1947 consisting of 12.5% Malays, 63.5% Chinese, 17.% Indian and 6.1% others, mainly from Europe (Oong 1995). After independence, population growth continued to its present figure of 1.3 million in 1996 (Department of Statistics 1996). The launching of the New Economic Policy (NEP) in 1970 further intensified Kuala Lumpur's growth as an administrative and industrial centre. In order to decrease the concentration of activities in Kuala Lumpur, the NEP encouraged economic activities to spread to new townships such as Petaling Jaya, Subang, Kajang and Bandar Baru Bangi. However, during the time, the lack of infrastructure and tax relief incentives did not attract or encourage investors to relocate or start new industries to the new townships.

Table 6.2: Population growth in Kuala Lumpur 1957 - 1990

| Year | Total Population | Growth rate |
|---|---|---|
| 1957 | 176,000 | 6.0% |
| 1970 | 452,000 | 5.75% |
| 1980 | 1,036,000 | 4.3% |
| 1990 | 1,200,000 | 1.58% |
| 1991* | 1,223,480 | 1.96% |
| 1992* | 1,250,603 | 2.21% |
| 1993* | 1,277,502 | 2.16% |
| 1994* | 1,304,490 | 2.11% |
| 1995* | 1,331,629 | 2.08% |
| 1996* | 1,360,200 | 2.15% |

* Estimated population in Kuala Lumpur based on census surveys carried out by the Department of Statistics
Source: Revised from Ibrahim 1996 and Department of Statistics 1996

The rural-urban migration is an inevitable consequence of rapid economic growth. Its population grew from 176,000 in 1957 to about 1.2 million today. Table 6.2 shows the rate of population growth in Kuala Lumpur since Malaysia's Independence.

In developing a city, a large amount of human and natural resources are needed. The city's large population, mostly derived from the rural shift to the city, has exerted unprecedented pressures on the city's transportation network, housing demands, and provision of basic amenities. The residents of Kuala Lumpur have been severely impacted by urbanisation especially in respect of public health, squatters, youth development, urban crime. The migration of skilled and unskilled workers into the city further exacerbate these problems. The NEP has undoubtedly improved the quality of life of Kuala Lumpur's residents but what socio-economic consequences do its residents have to pay?

## SOCIO-ECONOMIC CONSEQUENCES OF URBANISATION

### Impact on Health

Health is commonly accepted as a determinant of the nature and rate of socio-economic development. It is defined by the World Health Organisation (WHO) as '*not merely the absence of disease but also the total physical, mental and social well being of the person'*

(WHO 1996). The development of the health sector is an integral part of Kuala Lumpur's growth. Malaysia is now in an era of tremendous economic development and technological changes which are reshaping the world. The quality of life has improved over the past 60 years or so. Until 1960, infectious diseases were the main health concern in Malaysia but diseases such as typhoid, leprosy, tuberculosis which was common are now minor concerns.

The government's policies throughout the seven Malaysia Plans have always prioritised the need to improve the health of the nation to combat diseases and provide for the rural poor. In the Malaysia Plans, promotive and preventive health programmes are carried out through education, immunisation, control of communicable and non-communicable diseases, environmental health and sanitation (GOM 1996).

***Communicable Diseases***

The economic growth of Malaysia has resulted in increased urbanisation from 34.2% in 1980 to 50.6% in 1991(Department of Statistics 1991). Increasing urban population and changing pattern of diseases have implications on the quality of health care provided in local authority areas. DBKL is faced with the problems of manpower and financial constraints thus limiting the expansion of scope of health services. According to its latest annual report, tuberculosis and dengue have been the main health problems in the city (DBKL 1994). Efforts carried out to reduce the incidence of dengue, from 1706 cases in 1993 to 429 in 1994, have been successful.

DBKL has its shares of problems related to health, particularly with squatters. Poverty is the main obstacle in achieving a healthy life. Squatters are particularly affected because since they live in illegal settlements, they have been deprived of much of the basic services such clean water supply, garbage disposal and sanitation (Khairuddin 1984). With the lack of basic necessities such as sanitation facilities, water supply and sewerage services coupled with overcrowding and habitats of the urban poor, the re-emergence of communicable diseases may become a threat (Abu Bakar 1996). The squatter areas have been identified as having the highest number of communicable diseases occurrences in the city. In 1994, the highest number of cases for communicable diseases was tuberculosis with 1,125, followed by dengue fever (401), syphilis (59), leprosy (37), dengue haermorrhagic fever (35), gonococcol infection (33), malaria (28), measles (21), and others such as typhoid, whooping cough, and typhus which were negligible (Department of Statistics 1996 and DBKL 1994).

***Non-Communicable Diseases***

Although the standard of living in Kuala Lumpur has improved and health services have been greatly advanced as shown in Table 6.1, non-communicable diseases is becoming a concern. The

changing lifestyles and behaviour due to the urbanisation process in Kuala Lumpur and the demographic transition has changed the concentration from communicable diseases to non-communicable diseases such as cancer, road accidents, high blood pressure and so on. These are associated with the rising dietary consumption of fats, smoking and other behaviour that accompany the contemporary affluent lifestyles (Armstrong 1993). Table 6.3 illustrates the non-communicable diseases related to socio-economic development.

Another cause for the increase in non-communicable diseases is the rapid development activities, which is causing much concern to the city's residents. Kuala Lumpur has enjoyed a healthy economic development since the 1950's with the discovery of tin deposits to the present day high technological input into development. Over the years, this has brought about unavoidable environmental stress. Water, air, land and noise pollution have started to take its toll on its residents. In 1994, DBKL received 332 complaints related to development activities. 158 of these were related to noise pollution and others on open burning, creation of nuisance and pollution streams/rivers from construction sites (DBKL 1994). These sites also provide breeding grounds for mosquitoes.

Table 6.3: Non-communicable diseases influenced by socio-economic development

| **Non-communicable diseases** | **Reduced due to modernisation** | **Increased due to modernisation** |
|---|---|---|
| Cardiovascular | | Coronary heart disease |
| Cancer | Gastric | lungs |
| | Cervix | breast |
| | | Colon |
| | | Rectum |
| | | Pancreas |
| Breathing | | Obstruction to Lungs |
| Injury | | Injury caused by Accident |

Source: Osman Ali 1997

With the total number of vehicles entering or transiting Kuala Lumpur amounting to 840,000, and those registered in Kuala Lumpur amounting to 860,000, pollution from traffic has become a major concern. As a result, DBKL's focus in providing health services has changed. In the early 1980s, emphasis was given to food quality in restaurants and assistance for expectant mothers (DBKL 1992,1993, 1994). Although the latter is still given priority, the former focus has

changed towards health problems related to development activities in the city and providing health check-ups for schoolchildren, particularly for schools which are situated on busy roads. Respiratory ailments such as chronic bronchitis and asthma are major problems, particularly among children and the elderly.

In recent years, occupational health and safety have become a rising concern because of the increase in occupational accidents (Table 6.4). Industrialisation in Kuala Lumpur has brought about medical cases related to the workplace such as pneumoconiosis, dermatitis, poisoning and occupational injury. The increase of these accidents over the past few years have prompted the government to undertake efforts to increase awareness among employers, employees and the general public on the need to prevent and reduce industrial accidents (GOM 1996).

Table 6.4: Accidents reported to SOCSO 1991-1994

| **Sector** | **1991** | | **1992** | | **1993** | | **1994** | |
|---|---|---|---|---|---|---|---|---|
| Mining and Quarry | 1,837 | 9 | 1,947 | 14 | 1,578 | 8 | 1405 | 21 |
| Manufacturing | 62,622 | 108 | 69,370 | 218 | 71,291 | 212 | 67,473 | 283 |
| Electrical, Gas and Cleaning Services | 1,093 | 7 | 636 | 4 | 698 | 6 | 573 | 10 |
| Construction | 3,377 | 35 | 3,615 | 39 | 4,207 | 51 | 4,311 | 44 |
| Transportation | 3,080 | 34 | 3,464 | 35 | 4,406 | 87 | 4,417 | 52 |
| Public Services | 3,698 | 18 | 3,840 | 23 | 5,567 | 60 | 2,830 | 23 |
| Commerce | 12,073 | 51 | 11,395 | 52 | 11,114 | 75 | 9,164 | 81 |
| Finance and Insurance | 221 | 1 | 309 | 2 | 620 | 1 | 583 | 3 |

Source: NST 1995

Urbanisation can also affect the mental well-being of an individual. The Institute for Mental Health, U.S.A., defines mental stress as *"a condition which covers a group of mental disorders that cause disturbances in thinking, feeling and relating. These disturbances often result in a substantially diminished capacity to cope with the ordinary demands of life. Such common mental illnesses are depressions, schizophrenia, compulsive disorder, phobias*". The impact of traffic, air and noise can result in the disturbance of an individual's mental health. For example, the time taken to drive from one place to another in Kuala Lumpur

causes mental stress and can affect family life. This type of stress has long been associated with psychologically affected behaviour such as irritation, lost tempers and damage to interpersonal relationship. Mental health is determined by multiple social, environmental, biological and psychological factors (WHO 1996). According to a recent study carried out by the Ministry of Health, 8.3% of Malaysians are mentally ill. The study found that the various forms of mental illnesses among those surveyed are psychoneuroses, schizophrenia (inability to distiguish fantasy from reality), chronic depressions and phobias. In Kuala Lumpur alone, 25,000 individuals are affected from which 1% could be diagnosed as having chronic mental sickness (Sunday Star 1997). This illness causes a marked distress that significantly interferes with the individual's normal routine, occupational or academic functioning, or usual social activities or relationships. Mental illness is not seen by the authorities as a serious concern as it is does not affect the person physically. The lack of understanding and inadequate efforts by the Ministry of Health on mental illness in Malaysia has caused alienation and isolation for those affected. This has made it harder for them to cope with everyday living.

**Squatters**

Squatters are defined as people who live in an illegal dwelling. They are found mostly in urban cities. As cities begin to grow as centres of government or as centres of production and commerce within an increasingly inter-related world market, new neighbourhoods begin to occupy unused land near the city centre or close to where jobs are available (Hardoy *et al*. 1995). Squatter housing is characterised by their illegality, in that the land is occupied illegally, the site and the building constructed are developed illegally, and the settlements are often in conflict with zoning and building regulations.

Squatters are often categorised as the urban poor because the majority of the city's lower income group live in squatter areas. Squatter areas are often portrayed as villages in the city which are cluttered, lack infrastructure facilities, and are exposed to fire, floods and other natural disasters (Noordin 1996). Continued Rural-urban migration and the acute shortage of low cost houses in the city further aggravates the squatter problem. The British policy in the 1930's which encouraged the people to grow their own produce by the roads and railways tracks was the beginning of the squatters phenomenon. In the 1950's, the emergence of industries which provided job opportunities for those living outside of Kuala Lumpur and the dream of improving their quality of life had seen many migrant labourers from the surrounding states flocking to the city (Ishak 1995). Over the years, with the increase in land prices and lack of housing provisions, these migrant labourers cannot afford to own houses and end up building their homes illegally. Squatter areas have grown in such large size and numbers that it has a strong influence on the

planning of Kuala Lumpur. They live on private land, railways, river and road reserves. Between 1978-1988, about 45,000 families have been relocated by DBKL but today another 40,000 families, which roughly translates to 200,000 people, are still living in squatter areas (Table 6. 5).

Table 6.5: Parliamentary Areas and Squatters Relocated 1978-1988

| **Parliamentary Area** | **Malay** | **Chinese** | **Indians** | **Total** |
|---|---|---|---|---|
| Batu | 3,965 | 3,010 | 3,443 | 10,418 |
| Kepong | 1,429 | 741 | 561 | 2731 |
| Titiwangsa | 7,755 | 1,815 | 599 | 10,169 |
| Seputeh | 323 | 835 | 587 | 1,745 |
| Sungai Besi | 2,212 | 5,000 | 566 | 7,778 |
| Lembah Pantai | 5,634 | 1,761 | 3,066 | 10,461 |
| Bukit Bintang | 643 | 1,164 | 497 | 2,304 |
| **Total** | **21,961** | **14,326** | **9319** | **45606** |

Source: Mohd. Razali 1997

The majority of squatter residents in Kuala Lumpur at present are the Chinese 52%, followed by Malays 33% and Indians 15% (Ibrahim 1996). In terms of income, the Chinese have the highest income earned per household, i.e. RM543 per month, due to the fact that the Chinese have a higher average of household in the house, which is 5.2, compared to a Malay household which is 4.4 (Ishak 1995). Some statistics on squatters can be found in Table 6.5.

DBKL has identified the lack of housing as the main factor in the squatter phenomenon. This became apparent after the introduction of the NEP in 1970. According to the Structure Plan of Kuala Lumpur, between 1981 and 2000, 326,300 housing units need to be built for the lower income group is (DBKL 1984). The increasing population density has led to a keen competition for access to living and activity spaces, thus competition for land results in the lower income being unable to purchase affordable houses (Abdul Samad 1988). The selling of houses by squatters further worsen the situation. The supposedly relocated families have been known to sell or rent their houses to illegal immigrants. As a result, they proceed to other areas in the city and open up illegal settlements hoping to be compensated again (Ibrahim 1996). There have been cases where migrants come to the city in the hope that houses and other facilities will be provided for them if they become squatters. Although DBKL's housing policy is to prioritise the building of low cost houses, there is still inadequate supply of houses to meet the ever-increasing demand. Other

problems include the increase in building costs, difficulties in obtaining permission for landuse change, the lack of land and the current trend of building condominiums and luxury houses.

Another problem related to squatters is the lack of cleanliness in the living area and congested living conditions which result in the squatters living in unhealthy conditions. Due to the lack of sanitation facilities and wastes disposal sites, waste are also thrown into the Klang River and other places. Although 58.9% of squatters have proper sanitation facilities, 41.1% are still using the traditional methods of sanitation. This together with the improper method of waste disposal, puts them at a high risk of contracting infectious diseases. According to DBKL, rubbish from squatter areas amount up to 200 tons a day (Ibrahim 1996). As shown in Table 6.6, squatters dispose of their waste as follows: 49.7% in waste sites allocated, 31.9% by open burning, 6.5% into the river and 5.2% by others means. Many diseases that are endemic among poorer households such as diarrhoea, typhoid, intestinal parasites and food poisoning are common among squatter residents. Also, the cramped conditions in which they live in means that communicable diseases such as influenza and tuberculosis are easily transmitted. Environmental quality is often sacrificed in order to support their day to day living.

Table 6. 6: Percentages of squatter areas who have access to public amenities, methods of sanitation and disposal of waste.

| **Public Amenities** | **%** |
|---|---|
| *paved roads* | 82% |
| *lighted paved roads* | 32% |
| *electricity* | 84% |
| *safe water supply* | 87.7% |
| *pipes in houses* | 59.4% |
| *public water standpipes* | 28.3% |
| **Sanitation** | |
| *concrete septic tank* | 58.9% |
| *open toilets* | 25.1% |
| *use rivers* | 8.9% |
| *others* | 7.1% |
| **Disposal of waste** | |
| *make use of public utility supplied* | 49.7% |
| *open burning* | 31.9% |
| *rivers* | 6.5% |
| *indiscriminate disposal* | 5.2% |

Source: Noordin 1996

**Impact On Culture And Lifestyle**

When the concept of culture is discussed, this does not only involve the fine arts, music and local cultural shows. It also encompasses the way of life, either in the professional or leisure capacity, and the existence of the Malaysian identity. Under the Seventh Malaysia Plan, cultural programmes were stated as "an instrument to improve the quality of life, enhance national identity, promote national integration and unity as well as maintain racial harmony". The problems relating to the preservation of Kuala Lumpur's culture and implementing local cultural programmes which have been identified by DBKL are the influence of mass media in promoting Western cultures, recreational activities which are opposed to local culture and the lack of finance to build necessary infrastructure to house local cultural shows (Ibrahim 1997). Where local physical heritage is concerned, more of the historical buildings and sites in Kuala Lumpur, such as Pudu Jail are being demolished to make way for development. As the city becomes more congested, it

is not only the physical aspects that have to be improved but also the social well-being of its residents. The loss of culture has been associated with other social problems such as drug abuse and loafing among youths which have increased over the past few years in Kuala Lumpur.

Urbanisation has brought about changes in the lifestyles of its residents. The main types of employment in the 1800s were focused on agricultural and mining activities but as Kuala Lumpur grew to be the administrative centre for Malaysia, more professional occupations began to be the new focus for employment. As more opportunities are created to increase their quality of life, the majority of the people working in Kuala Lumpur are now employed in the service sector, and holding administrative and managerial positions (Department of Statistics 1991). With this comes the change in their needs to pursue a better life and be more successful.

A case study carried out in Kampung Baru in Kuala Lumpur, which is predominantly Malay, found that the residents are changing their lifestyles from the traditional to urban modern ethos and values very rapidly. With material values such as money and property accumulation as their main interests, they put extra emphasis on their career development, leisure and privacy and less on others and all this affects the community sentiment (Allaudin 1992). Those who are employed in the city do not become involved in the villlage's activities and have become more distant. The survey revealed that the youths preferred to be away from the village for entertainment and other social activities. The traditional neighbourliness and respect for one another was lost very quickly as Kampung Baru became more urbanised. Community relations are eroded once the social order becomes more complex and urbanisation is rapid. Social change influences the value, institutions, mentality and behaviour or individuals. Secondary organisations and institutional creations, such as those that supply basic amenities, have eroded some of the cultural values like that of *gotong royong*, as people have machines to carry out the work. This creates an impersonal and faceless society.

An inefficient urban public transportation has also had an effect of the lifestyles of those living and working in Kuala Lumpur. The overwhelming impact of the transportation system is on the people's time, which in turn affects family life and health (Mashitoh 1996). They have little time to rest at home and to spend time with their families and friends or be involved in recreational activities. For example, bus commuters and car owners make extraordinary arrangements to cope at the great expense of their well being. People will leave home early to ensure that they have the parking space or a seat on the bus. The car is now considered as a necessity in order to avoid the uncomfortable and inefficient public transport, and the sense of control over timing, route and personal environment are deemed very important.

Environmental, social and health consequences are all interrelated. With the degree of exposure to air and water pollution which their lifestyle entails, people change their behaviour patterns to protect themselves from the environmental conditions and these actions have consequences in turn. Family and community cohesion deteriorate as a result of the long hours people spend away from the house because of traffic conditions and work commitments. Family relationships are also affected by environmental and financial stress suffered by family members. As Kuala Lumpur grows to be more congested, people begin to live outside of the city and are more willing to move further away from their place of work. Townships such as Kajang, Bangi, Subang Jaya and Selayang provide an 'escape' particularly for the middle class people. By living in these townships, they can either benefit from cheaper house and land prices, or escape from the pollution of the city (Abdul Samad 1988).

**Impact On Youth Development**

According to the Department of Statistics, the majority of the city's population are aged between 15-40, which are considered as youths as defined under the National Youth Policy (Table 6.7).

Table 6.7: Population of Kuala Lumpur According to Age 1980 - 1990

| **Year** | **Age** | | | |
|---|---|---|---|---|
| | **0-14** | **15-24** | **25-64** | **65>** |
| 1980 | 299,084 | 234,395 | 358,862 | 27,269 |
| 1990 | 336,375 | 232,905 | 542,055 | 34,007 |

Source: Department of Statistics 1980 and Khoo 1991

Deviant behaviour among youths is increasing and efforts to reduce it must be stepped up. The lack of recreational facilities, open spaces and youth programmes are among some of the contributing factors to youth deviance. The increase of drug related offences among them is a serious problem in Kuala Lumpur. Drug addiction leads to other crimes as the dependency on the drug forces the addict to obtain money to purchase the drugs. According to police statistics, Kuala Lumpur has the highest rate of crime in that 6 out of 1000 are affected by crime as compared to 3.6 in George Town, Penang and 1 in 1000 in Pahang, Kelantan and Kedah (PDRM 1997).

As the cost of living increases, so does crime among youths. About 9.17% of the total criminals caught in the Kuala Lumpur area are teenagers. Between 1993-1997, the highest age group committing crime are those between the ages of 16-18 (Table 6.8), with the majority of offenders being Chinese males (Table 6.9). Research and investigation carried out by Polis Di Raja Malaysia (PDRM) found that bad city planning and unbalanced development for some socio-economic sectors in the city, differences in income, in-migration of people into the city influence the crime rate in the city. Many of the young caught are those who have family problems, personal problems and peer pressure which cause them to run away from home, commit truancy, steal and get involved in prostitution and drug related activities (Noordin 1996). For the urban poor, poverty, low education and lack of social opportunities make it easy for them to be involved in criminal activities. Table 6.10 (Rokiah 1995) shows that thefts make up the highest rate of offence committed by the young. This is attributed to the need of the young to own goods which they cannot afford due to peer pressure. One alarming statistic is the high rate of prostitution among the youths. Between 1984-1991, the number has increased from 173 in 1984, with the highest figures being in 1984 and 1986, i.e. 471 and 467 cases, respectively. The majority of those caught are from broken homes and low income group, and have a low education level as well as unstable family relations.

Table 6.8: Juvenile ages for crime activities 1993-1997 in Kuala Lumpur

| **Year** | **Age** | | | **Total** |
|---|---|---|---|---|
| | **10-12** | **13-15** | **16-18** | |
| 1993 | 20 | 58 | 163 | 241 |
| 1994 | 8 | 48 | 151 | 207 |
| 1995 | 12 | 75 | 203 | 290 |
| 1996 | 4 | 34 | 124 | 162 |
| 1997* | 0 | 11 | 22 | 33 |

* Covers the months of January to February only

Source: PDRM 1997

Table 6.9: Ethnic and sex composition of juveniles in Kuala Lumpur 1993-97

| **Year** | **Malay** | **Chinese** | **Indian** | **Others** |
|---|---|---|---|---|

| | M | F | M | F | M | F | M | F |
|---|---|---|---|---|---|---|---|---|
| 1993 | 95 | 5 | 78 | 2 | 55 | 2 | 3 | 0 |
| 1994 | 86 | 2 | 64 | 8 | 34 | 3 | 5 | 5 |
| 1995 | 135 | 9 | 90 | 14 | 30 | 1 | 10 | 2 |
| 1996 | 67 | 8 | 57 | 3 | 14 | 0 | 7 | 1 |
| 1997* | 13 | 0 | 5 | 1 | 12 | 2 | 0 | 0 |

**M**: Male **F**: Female
*Covers the months of January to February only
Source: PDRM 1997

Table 6.10: Juvenile cases in Kuala Lumpur 1984 - 1991

| Year | Thefts | Assault | Gambling | Traffic Offences | Sexual attacks | Prostitution | Others |
|---|---|---|---|---|---|---|---|
| 1981 | 2,535 | 308 | 69 | 40 | 28 | 173 | 533 |
| 1982 | 2,526 | 281 | 55 | 8 | 17 | 176 | 330 |
| 1983 | 2,506 | 275 | 81 | 23 | 31 | 280 | 382 |
| 1984 | 2,732 | 332 | 73 | 10 | 24 | 471 | 502 |
| 1985 | 2,817 | 341 | 94 | 11 | 19 | 320 | 595 |
| 1986 | 2,963 | 256 | 123 | 21 | 31 | 467 | 463 |
| 1987 | 2,945 | 254 | 117 | 30 | 38 | 399 | 668 |
| 1988 | 2,886 | 290 | 164 | 26 | 32 | 212 | 580 |
| 1989 | 3,057 | 282 | 153 | 24 | 48 | 347 | 547 |
| 1990 | 2,831 | 283 | 104 | 29 | 39 | 365 | 590 |
| 1991 | 2,768 | 267 | 120 | 34 | 33 | 254 | 541 |

Source: Rokiah 1995

Many of the urban poor in Kuala Lumpur live in high rise or walk up flats. Based on the American Public Health Association (APHA) standard, families with more than four children should have more than three bedrooms. However, a study carried out in Kuala Lumpur found families of more than four children were living in one or two bedroom flats (Noordin 1996). Children living in crammed and crowded homes have less privacy, are more stressed and in some cases have destructive tendencies. Residents who live in low cost flats suffer from social problems such as drop-out from school, low moral values, divorce, drug addiction, *lepak,*

*bohsia* and collapse of the family structure have often been co-related with the crammed space and uncomfortableness. The lack of recreation areas and public amenities have contributed towards the restlessness of those living in flats (Noordin 1996).

In another study among squatter families and families living in high rise flats in Kuala Lumpur (Halimah 1997), young children were shown to be quite prone to infections such as fever, cold/cough, asthma, skin problems and diarrhoea. The major causes of such ailments are air pollution, unsafe water supply and poor sanitation. In the study, the youths were also asked about their living conditions and they indicated that their uncomfortable home environment was the main reason why they spent most of their time outside their home: 30.6% left home during the day, 9.7% left at night, 26% looked for a place outside the home to study, 39.5% would go out to rest, 30.6% went out for recreation and relaxation and 16.1% said they were often depressed. Many of them felt that they were suffering from problems such as fighting with parents (8.9%), inability to go home (4.8%), disobedience (23.4%), running away from home (3.2%), breaking school rules (22.6%), and theft (2.4%). The rest said they drank, took drugs and were involved in gang fights (Halimah Ahmad 1997).

The type of housing and the amount of space a family has is very dependent on family income and affordability. Many from the rich families can afford to build extensions or go away from the city for recreation purposes but their income and lack of recreational activities provided by DBKL restrict many of the activities of the urban poor. Thus, efforts must be intensified to redress this problem.

**CONCLUDING REMARKS**

This chapter has illustrated several socio-economic problems resulting from Kuala Lumpur's remarkable transformation and economic growth over the past few decades. Although the quality of life and the standard of living for the city's residents have improved, the increase in population and their demands for a better life have exerted unprecedented pressures on the city's transportation network, housing and provision of basic amenities. This in turn has consequently created problems related to health, squatters, youth development and a change in the culture and lifestyle for those living and working in Kuala Lumpur in order to adapt to the pressures in life. All these problems are interrelated.

Although the amount of communicable diseases are not of major concern, the rise in non-communicable diseases such as cancer, coronary disease and mental illness that are caused by the change of lifestyle among the city's residents is worrying. Pollution from development

activities and traffic further aggravates health problems in Kuala Lumpur. Squatters continue to become a problem in Kuala Lumpur as land becomes less available and expensive, hindering the building of low cost housing. The rise of negative behaviour among youths, as indicated in the chapter, has also become a worrying trend, which needs to be addressed urgently, since they make up the majority of Kuala Lumpur's population. Co-ordination between the Federal government and DBKL is vital to ensure that these socio-economic problems are adequately addressed. The city's social problems must not be neglected because the development of a city does not only mean to develop just its physical infrastructure but also the well-being of those living and working in the city.

# REFERENCES

Abdul Samad Hadi, 1982. The making of another Malaysian superlinear city. *Nusantara,* 8 , 46-66.

Abdul Samad Hadi 1988. Man and the environment in Kuala Lumpur and the Klang Valley region, Malaysia. in Sham Sani and M. Ahmad Badri (eds.*) Tropical Urban Ecosystems Studies* Vol. 4: Environmental Profiles of Selected Cities in South East Asia. Technical Report, Working Group on Urban Ecosystems, Malaysian National MAB Committee-UNESCO, 157 -168.

Abu Bakar Suleiman 1996. Keynote Address presented at the International Conference on Environment and Public Health, 15-16 July 1996 Kuala Lumpur.

Akbari, H., Rosenfeld, A., Taha, H. 1990. Summer Heat Island, Urban Trees, and White Surfaces. Lawrence Berkeley Laboratory Report LBL - 28308.

Allaudin Sidal 1992. Ikatan kejiranan dan sentimen komuniti bandar: satu kajian kes terhadap golongan kelas menengah Melayu di Kampung Baru, Kuala Lumpur. Latihan Ilmiah Sarjana Muda Antropologi dan Sosiologi, Universiti Kebangsaan Malaysia.

Athiyathavaratnam 1986. Management of urban rivers of Kuala Lumpur. In: *Proc. of COBSEA Workshop on Cleaning up of Urban Rivers* . UNEP, New York.

Armstrong, R.W. 1993. Environmental health as a determinant of socio-economic development: the need to modify contemporary Malaysian strategies. *Akademika,* 42-43, 125-142.

Ayoub, H. 1989. The role of City Hall in improving the quality of urban green in Kuala Lumpur. Paper presented at National Seminar on Green space. Institute of Advanced Studies, University of Malaya, Kuala Lumpur.

Brookfield, H., Abdul Samad Hadi and Zaharah Mahmud, 1991. *The city in the village : the in-situ urbanization of villages, villagers and their land around Kuala Lumpur, Malaysia,* OUP, Singapore.

Bugliarello, G., Alexandre, A., Barnes, J. and Wakstein, C., 1976. The impact of noise pollution. Pergamon Press, New York.

Burch, G., Graetz, D. & Noble, I. 1987. Biological and physical phenomena in land degradation. In: Chisholm, A. & Dumsday, R. (ed.) Land Degradation - Problems and Policies. Cambridge University Press, 27-48.

Chan, N.W. 1997. Degradation of highland areas in Malaysia: effects on water resources. CAP National Conference on Land: Emerging Issues and Challenges. Dec. 12-15, 1997, Penang.

Chandler, T.J. 1965. *The Climate of London, London,* Hutchinson.

Chartres, C. 1987. Australia's land resources at risk. In: Chisholm, A. & Dumsday, R. (ed.) Land Degradation - Problems and Policies. Cambridge University Press, 7-26.

Che Asmah Ibrahim 1997. Using air pollutant index (API) in describing the air quality. *Impak*, 3, 6-7, Ministry of Science, Technology and the Environment, Kuala Lumpur.

Cheang, B.K., Leong, C.P., Ooi, S.H. and Tusin, A.M. 1991. Haze episode of October 1991. Malaysia Meteorological Service Paper No.2.

Chow, K.K. and Lim, J.T. 1984. Monitoring of suspended particulate in Petaling Jaya. In: *Yip, Y.H. and Low, K.S (ed.)*: *Urbanization and Ecodevelopment*, University of Malaya, pp.178-185.

Department of Environment (DOE) 1996 *Environmental quality report 1996*, Kuala Lumpur.

Department of Environment (DOE) 1995a. Guidelines for municipal solid waste and sewage treatment and disposal projects. Ministry of Science, Technology and the Environment, Kuala Lumpur.

Department of Environment (DOE) 1995b. Guidelines for toxic and hazardous waste treatment and disposal projects. Ministry of Science, Technology and the Environment, Kuala Lumpur.

Department of Environment (DOE), 1996. Guidelines for prevention and control of soil erosion and siltation in Malaysia. Penerbit Kementerian Sains, Teknologi & Alam Sekitar, Kuala Lumpur.

Department of Environment (DOE), 1996a. A report on environmental quality data 1992-1995. Penerbit Kementerian Sains, Teknologi & Alam Sekitar, Kuala Lumpur.

Department of Environment (DOE), 1996b. A report on environmental quality data 1996. Penerbit Kementerian Sains, Teknologi & Alam Sekitar, Kuala Lumpur.

Department of Statistics 1980. Banci Penduduk Malaysia. Kuala Lumpur.

Department of Statistics 1991. State Population Report Wilayah Persekutuan Kuala Lumpur

Department of Statistics 1996. Social statistics bulletin Malaysia 1994, Kuala Lumpur.

Dewan Bandaraya Kuala Lumpur (DBKL) 1985. *Annual Report*, Kuala Lumpur.

Dewan Bandaraya Kuala Lumpur (DBKL) 1988. *Annual Report 1988*, Kuala Lumpur.

Dewan Bandaraya Kuala Lumpur (DBKL) 1989. *Annual Report 1989*, Kuala Lumpur.

Dewan Bandaraya Kuala Lumpur (DBKL) 1990. *Annual Report 1990*, Kuala Lumpur.

Dewan Bandaraya Kuala Lumpur (DBKL) 1991. *Annual Report 1991*, Kuala Lumpur.

Dewan Bandaraya Kuala Lumpur (DBKL) 1992. *Annual Report 1992*, Kuala Lumpur.

Dewan Bandaraya Kuala Lumpur (DBKL) 1993. *Annual Report 1993*, Kuala Lumpur.

Dewan Bandaraya Kuala Lumpur (DBKL) 1994. *Annual Report 1994*, Kuala Lumpur.

Dewan Bandaraya Kuala Lumpur 1984. *Pelan Struktur Kuala Lumpur*, Kuala Lumpur

Douglas, I. 1978. The impact of urbanisation on fluvial geomorphology in the humid tropics. *J. Tropical Geography*, 2, 229-242.

Douglas, I. 1984. Water and sediment issues in Kuala Lumpur ecosystem. In: Yip, Y.H. & Low, K.S. (eds.) *Urbanisation and Ecodevelopment with Special Reference to Kuala Lumpur*. Institut Pengajian Tinggi, University of Malaya.

Fricke, T.J. and Lewis, K.V. 1976. Flood estimation for urban areas in Peninsular Malaysia. Malaysia Ministry of Agriculture, Drainage and Irrigation Department *Hydrological Procedure*, no. 16, Kuala Lumpur.

Frier-Simon, V.M. and Khoo, Kay Kim, 1976. The squatters as a problem to urban development - a historical perspective. Paper presented to the Third Economic Convention, Persatuan Ekonomi Malaysia, as quoted from Hairi Abdullah (1987) squatter communities along the Klang River : a general survey. In: Sham, S. (ed.) 1987. *Tropical Urban Ecosystems Studies,* 2 : 74-87.

Gombak District Council 1993. kedudukan kilang-kilang haram di dalam dan di luar Majlis Daerah Gombak. Unpublished Report.

Government of Malaysia 1982. Proposal for Disposal and Treatment Plant of Solid Waste for the City of Kuala Lumpur, Vol. 2 - Technical Documents (Unpubl.). Dewan Bandaraya Kuala Lumpur.

Government of Malaysia (GOM) 1987. Klang Valley environmental improvement project. Asian Development Bank Final Report, Vol. 1 (Unpubl.). Department of Environment, Kuala Lumpur.

Government of Malaysia (GOM) 1996. *Seventh Malaysia Plan 1996 –2000*. Government Printers, Kuala Lumpur:

Gullick, J.M. 1988. *Kuala Lumpur: a city in the making*. Pelanduk Pub., Kuala Lumpur.

Hairi Abdullah, 1987. Squatter communities along the Klang River : a general survey. In: Sham, S. (ed.) 1987. *Tropical Urban Ecosystems Studies,* 2 : 74-87.

Halimah Ahmad 1997. Home, school and community spaces. Paper presented at the National Workshop: The Urban Vision 2020 Initiative: Making Urban Areas Child Friendly 5 July 1997 Kuala Lumpur

Hardroy, J.E., Mitlin, D. and Satterthwaite, D., 1995. *Environmental problems in third world cities*. Earthscan Publications Ltd. , London, 302 pp

Henderson, M. R. 1928. The flowering plants of Kuala Lumpur in the Malay Peninsula. *Gardens Bulletin s.s.* 3 : 211-373

Ibrahim Komoo 1989. Masalah kestabilan cerun di Malaysia. *Pros. Penyelidikan dan Pembangunan Fakulti Sains Fizis & Gunaan*, UKM, 277-293.

Ibrahim Komoo (ed.) 1996. *Urban planning within the context of the environment: the Kuala Lumpur experience*. LESTARI Round Table Dialogues No. 1. Institute for Environment and Development, Bangi. 59 pp

Ibrahim Komoo (ed.) 1997. *Kuala Lumpur: Menjejaki Jiwanya*. LESTARI Round Table Dialogues No. 4. Institute for Environment and Development, Bangi. 37 pp.

Ibrahim Komoo 1997a. Slope failure disasters - a Malaysian predicament. In: Marinos, Koukis, Tsiambaos & Stournaras (eds.) *Engineering Geology and the Environment*, Balkema, Rotterdam, 777-781.

Indah Water 1997a. Developing a modern and efficient sewerage system for Malaysia. Kuala Lumpur.

Indah Water 1997b. A potty history of sewage and its treatment, Kuala Lumpur.

Ishak Shaari 1995. Pembangunan dan kedudukan masyarakat bawahan. In: Hairi Abdullah, 1995 (ed.) *Titian Warna Sejarah Pembangunan dan Perubahan Citra Kuala Lumpur* Penerbitan Sejarah, Kuala Lumpur 153-166

Jabatan Pengairan dan Saliran 1995. Laporan Banjir Semasa Bagi Negeri Selangor: 22-25 Desimber 1995. Unpublished Report.

Katiman Rostam 1995. Perkembangan dan perubahan struktur. In: Hairi Abdullah (ed.) Sejarah Perkembangan dan Perubahan Citra Kuala Lumpur. Sejarah Pub., Kuala Lumpur, 63-84.

Khairuddin Yusof 1984. Urban primary health care. In: Yip Yat Hoong and Low Kwai Sim, 1984 (eds.). *Urbanisation and Ecodevelopment with Special Reference to Kuala Lumpur*. Universiti Malaya Publications, Kuala Lumpur, 41-72.

Khoo, S.G. 1991. Laporan Penduduk mukim. Department of Statistics, Kuala Lumpur.

Khuzaimah, Y. 1989. Kuala Lumpur's experience in the improvement of urban environment through greenery programmes. Paper presented at Asean Seminar on Urban Forestry. Asean Institute of Forest Management, Kuala Lumpur.

Kuala Lumpur Structure Plan 1984. Dewan Bandaraya Kuala Lumpur.

Latiff, A. 1986. Vegetation and plants of Kuala Lumpur : their effects in landscape aesthetics and recreation. In: S. Sham (ed.). *A study of the urban ecosystem of the Klang valley region, Malaysia.* Vol. 1, 128-134.

Leigh, 1982. Urban development and soil erosion in Kuala Lumpur, Malaysia. *Journal of Environmental Management*, 15, 35-45.

Leong, C.P., Lim, S.S. and Lim, J.T., 1989. Lead in dry deposition from selected locations in Malaysia. *MMS Technical Note* No. 41.

Lim, S.F. and Leong, C.P. 1991. Variation of total suspended particulate matter in Petaling Jaya, Malaysian Meteorological Service (unpublished).

Majlis Perbandaran Ampang Jaya 1994. Report of the Technical Committee of Investigation on the Collapse of Block 1, Highland Towers Condominium, Hulu Klang, Selangor.

Malaysian Meteorological Service (MMS) 1995. Report on air quality in Malaysia as monitored by the Malaysian Meteorological Service 1994. *MMS Technical Note* No. 55.

Mashitoh Yaakob 1996. Pembangunan, perbandaran dan masalah persekitaran bandar dalam konteks pembangunan berterusan. M.Sc. Dissertation, Centre for Graduate Studies,

Universiti Kebangsaan Malaysia.

Mohd. Razali Argus 1997. Urban growth, poverty and the squatter phenomenon. In: Jamilah Ariffin, 1997 (ed.) *Kuala Lumpur in Poverty Amidst Plenty - Research Findings and The Gender Dimension in Malaysia* Pelanduk Publications, 127-151.

Mohd. Yusof Kassim 1995. Perkembangan ekonomi selepas 1970. In: Hairi Abdullah, 1995 (ed.) *Titian Warna: Sejarah Pembangunan dan Perubahan Citra Kuala Lumpur* Penerbitan Sejarah, Kuala Lumpur, 117-126.

Mohamad Ali Hasan 1992. Subsidence history and future subsidence in the Batu Arang area, Selangor (abstract). *GSM Warta Geologi*, 18(3), 105.

Nasiman, S. and Nazan, A. 1996. Alluvial aquifer in Selangor: a threatened water resource. *Proc. Seminar Geologi dan Sekitaran: Impak dan Pengauditan*. Jabatan Geologi UKM, Dis. 6-8, 85-101.

Nasir, H. 1992. The criteria for the selection of waste disposal systems in Malaysia. Proceeding National Seminar on Municipal and Industrial Waste Management Technology, Kuala Lumpur, 1-15.

Nasir, H. Rakmi A. R., Kamil Y. and Wan Nor Azmin, 1995. Issues and problems of solid waste management in Malaysia. Presented at National Review of Environmental Quality Management in Malaysia, 10-12 October 1995, Kuala Lumpur.

New Straits Times (NST) 1995. Industries urged to achieve zero occupational accidents. November 17, 1995.

New Straits Times (NST) 1997. Cash in trash. January 17, 1997.

New Straits Times (NST) 1998a. Hulu Langat dumpsite blaze continues unchecked. January 25, 1998.

Ng, F. S. P. 1982. Trees for towns. *Nature Malaysiana* 7(4), 4-15

Nik Anuar Nik Mahmud, 1995. Dalam lipatan sejarah, 1857-1974. In: Hairi Abdullah (ed.). Sejarah Pembangunan dan perubahan citra Kuala Lumpur. Penerbitan Sejarah Kuala Lumpur. Pp. 3-16.

Noordin Razak 1996 Kemiskinan bandar: pengalaman DBKL dalam menanganinya. Paper presented at the Seminar on "Kemiskinan Bandar Peringkat Kebangsaan" 12-13 July 1996, Kuala Lumpur.

Oke, T.R. 1974. Review of urban climatology 1968-73. WMO Technical Note No. 134, Geneva.

Oke, T.R. 1979. Review of urban climatology 1973-76. WMO Technical Note no. 169, Geneva.

Oke, T.R. 1976. In advertent modification of the city atmosphere and the prospects for planned urban climate. In: Proceedings of WMO Symposium on Meteorology as Related to Urban and Regional Land Use Planning, WMO no. 444, Geneva, p. 151-175.

Oong Hak Ching 1995. Pertumbuhan masyarakat majmuk. In: Hairi Abdullah, 1995 (ed.) *Titian Warna Sejarah Pembangunan dan Perubahan Citra Kuala Lumpur* Penerbitan Sejarah, Kuala Lumpur, 17-24.

Osman Ali 1997. Impak kesihatan akibat perindustrian dan pemodenan di Malaysia. In: Osman Ali, Noor Hashim Ismail, Hashami Bohari, Hanafiah Mohd. Salleh, 1997 (eds.) *Isu-isu Kesihatan Masyarakat* Penerbit UKM, Bangi, 9-15.

Pereira, J.J. and Ibrahim Komoo 1997. Sustainable management of the physical component of urban ecosystems - the Malaysian Perspective. Proc. Second International Symposium on Urban Planning and Environment. Gronigen, Holland. 11-14 March 1997.

Polis Di Raja Malaysia (PDRM) 1997. Statistics of juvenile crimes by state 1993-1997

Pryor, R.J. 1973. The Changing settlement system of West Malaysia. *Journal of Tropical Geography*, 37, 53-67.

Rokiah Ismail 1995. Urbanisasi dan kemunculan pola umum penjenayahan dan kenakalan. In: Hairi Abdullah, 1995 (ed.) *Titian Warna Sejarah Pembangunan dan Perubahan Citra Kuala Lumpur* Penerbitan Sejarah, Kuala Lumpur, 291-304.

Saenz, A.L. and Stephens, R.W. 1986. Noise pollution, John Wiley & Sons, New York.

Sham, S. 1973a. Observations on the effects of a city's form and functions on temperature patterns : a case of Kuala Lumpur. *Journal of Tropical Geography*, 36, 60-65.

Sham, S. 1973b. The urban heat island : its concept and application to Kuala Lumpur. *Sains Malaysiana*, 2, 53-64.

Sham, S. 1979. *Aspects of air pollution climatology in a tropical city : a case of Kuala Lumpur - Petaling Jaya, Malaysia*, Penerbit Universiti Kebangsaan Malaysia, Bangi.

Sham, S., 1980. *The climate of Kuala Lumpur - Petaling Jaya area, Malaysia*. Penerbit Universiti Kebangsaan Malaysia, Bangi.

Sham, S. 1981. Winds at the 1000-foot level and air pollution dispersion over the Klang Valley region. *Akademika*, 18 , 37-42.

Sham, S. 1984. Urban development and changing patterns of night-time temperatures in the Kuala Lumpur - Petaling Jaya area, Malaysia. *Teknologi*, 5, 27-36.

Sham, S. 1984a. Suspended particulate air pollution over Petaling Jaya during the September 1982 haze, *Ilmu Alam*. 12&13, 83-90.

Sham, S. 1984b. Air pollution and meteorology in Kelang Valley region Malaysia. Observation and some policy implication. *Proc. Eight International Clean Air Conference*, Melbourne, 97-114.

Sham, S. 1986. The effects of urbanization on climate in Kuala Lumpur and the Klang Valley. In: Sevenko, M.B. (ed.) *Design for High Intensity Development*, Cambridge, Massachusettes, p. 66-74.

Sham, S. 1987a. Suspended particulate air pollution and meteorology in Bangi. In: Sham Sani (ed.): *Tropical Urban Ecosystem Studies*.3, 43-61.

Sham, S. 1987b. Urbanization and the atmospheric environment in the low tropics: experiences for the Klang Valley region, Malaysia. UKM Press, Bangi.

Sham, S. 1994. Urbanization and the environment. In: *Malaysian Development Experience : Changes and Challenges*, National Institute of Public Administration (INTAN) Malaysia, Kuala Lumpur, p. 456-504.

Sham, S., A. Latiff, M. A. Badri, M. Awang and M. I. Yazid. 1983. Urbanisation and biophysical environment of Kuala Lumpur, Malaysia. In: A. Latiff & M. Omar (eds.). *Proceedings of Regional Seminar on development of techniques for analysis of tropical cities on an ecosystem basis*. Universiti Kebangsaan Malaysia. Pp. 3-37.

Sham, S., Cheang, Boon Khean, Chow Peng and Lim, Sze Fook.1991. The August 1990 haze in Malaysia with special reference to Klang Valley region. *Malaysian Meteorological Service*. Technical Note: 49.

Shu, Y.K. 1986. Investigations on land subsidence and sinkhole occurrence in the Klang Valley and Kinta Valley in Peninsular Malaysia. In: Tan, B.K. & Rau, J.L. (ed.) *Proc. Landplan II - Role of Geology in Planning and Development of Urban Centres*. Bankok, Thailand, 15-28.

Soepadmo, E. 1984. The roles of tree planting in urban ecology. In: Y. H. Yip & K. S. Low (eds.). *Urbanisation and ecodevelopment with special reference to Kuala Lumpur*. Institut Pengajian Tinggi, Universiti Malaya. Pp. 233-253

Soleiman, A., Othman, M. and Abdullah, M. 1996a. On the relationship between tsp and meteorological parameters under tropical conditions. The International Commission on Physics education IUPAP Conference on Modern Science and Technology in School Physic Curricula for the 21$^{st}$ Centurty. 16-20 December, Bangkok, Thailand.(In press).

Soleiman, A., Othman, M. and Abdullah, M. 1996b. Dispersion of pollutants in the Klang Valley, Malaysia: case of the wind speed. *Proc. Of the second postgraduate student seminar*. 11 November, Universiti Kebangsaan Malaysia, Malaysia. (In press).

Soleiman, A., Othman, M. and Abdullah, M. 1996c. Effect of rainfall on tsp cencentrations in an urban area: case study in Malaysia. *Proc. Of the National Physics Symposium*. 2-3 December, Universiti Sains Malaysia, Malaysia.(In press).

Soleiman, A., Othman, M. and Abdullah, M. 1997. Least median of squares: an effective analysis tool for the air pollution problems. *Proc. Of the 8$^{th}$ International conference on Environmetrics*. 4-8 August, Innsbruck, Austria. (In publ.).

Sunday Star 1997. Mental Health Foundation launched. November 2, 1997.

Tan, B.K. 1986. Geological and geotechnical problems of urban centres in Malaysia. In: Tan, B.K. & Rau, J.L. (ed.) *Proc. Landplan II - Role of Geology in Planning and Development of Urban Centres*. Bankok, Thailand, 10-14.

Tan, B.K. and Ibrahim Komoo 1990. Urban geology: case study of Kuala Lumpur, Malaysia. *Engineering Geology*, 28, 71-94.

The Star 1995. Chaos reigns - thousands evacuated in Klang Valley floods. December 24, 1995.

The Star 1998. Malaysian urban traffic problem seem "far from hopeless". January 17, 1998.

Tho, Y. P., K. M. Wong, S. K. Yap and K. M. Kochummen. 1983. Towards a uniquely Malaysian urban landscape through an emphasis on the planting of indigenous trees. In : Wan Sabri Mansor et al. (eds.). Rekreasi luar di Malaysia. Pp. 281-297. Universiti Pertanian Malaysia, Serdang.

Tsou, P.C. 1967. *Urban Landscape of Kuala Lumpur : A Geographical Survey*, Institute of Southeast Asia, Singapore, Nanyang University.

World Health Organisation (WHO) 1996. WHO homepage: www.who.org

Yap, S. K. & M. Adnan. 1989. Utilisation of forest trees in urban environment : Prospects and Problems. Paper presented at Asean Seminar on Urban Forestry. Asean Institute of Forest Management, Kuala Lumpur

Zainal Abidin, A., Inouye, R. and Awang, M. 1988. Air quality monitoring in the Klang Valley, Malaysia. In: Abdul Samad Hadi *et al*. (eds.), *Tropical Urban Ecosystem Studies*, Vol. 5, 115-126.

Zainal Abidin, A., Young, W. and Inouye, R. 1993. The occurrence of haze in the Klang Valley, Malaysia-a case study of the October 1991 haze episode. *Proc. Of the International Conference on Regional Environmental and Climate Changes in East Asia*. November 30 - December 3, Taipei, Taiwan.