ENVIRONMENTAL DECAY AND THE URBAN POOR IN SOUTHEAST ASIA: A STUDY OF THE KLANG RIVER BASIN MALAYSIA

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INTRODUCTION

Urbanization and urban growth has contributed significantly to the rapid transformations of the Malaysian economy (Khairulmaini 2000). The rate and manner by which growth is taking place has caused tremendous stress on the environment thus affecting the well being of the urban dweller. These stresses affect the living comforts and health profiles of the urban dweller and are most severely felt by the urban poor communities (Fauza 1996 and 1997). The urban poor, normally found in marginal areas are generally squatter settlements within the urban areas. They are usually located on unoccupied government lands such as along river and railway corridors, which apart from their overcrowded nature are in general, hazard prone areas (Plate 1). They are also characterized by poor living conditions, lack of sanitation and infrastructure facilities, poor building layout, and problems of overcrowding (Plate 2). In general, the houses are made of cheap building materials thus making them prone to fire and damage from floods, soil erosion and landslides (Plate 3; Khairulmaini 1994). Another key characteristic of such settlements is its lack of ownership of the land parcel on which they have built their houses. The paper examines the impacts of urban growth and the emerging problems of environmental deterioration within the Klang River Basin. It specifically attempts to examine the relationships between environmental decay and the urban poor. The discussion was based on an extensive social impact study carried out at various squatter settlements located in the Klang River Basin (Figure 1). The study was conceptualized as shown in Figure 2.

URBAN GROWTH IN MALAYSIA: TRENDS AND PATTERNS

Urban growth and the process of urbanization in Malaysia are a result of many factors. Amongst the most important are those associated with natural resource development, historical and political events, as well as social and economic transformations? The earliest urban centers in the country were the trading ports like Pengkalan Bujang in Kedah and Kuala Selinsing in Perak which were associated with the Indian traders in earl A.D. These were followed by Malacca in the second half of the 15-century, Penang in the latter 18 century and Singapore in the early 19 century. Following this early development, other urban centers were established

mostly in the western parts of the peninsula. With the discovery of tin and later rubber more nucleated settlements were formed which later evolved into urban centers. By the late 19-century 4 large urban centers were established. These were Penang (85,000), Kuala Lumpur (19,000), Malacca (16,000) and Taiping (13,000). Other new centers include Alor Setar, Kota Bahru, Kuala Terengganu, Ipoh, Klang and Johore Bahru (Reference). The growth of urban centers generally slowed down during the second WW but regenerate after that.

The period between 1947 to 1970 witnessed a rapid growth of urban centers. During this period the number of urban centers had increased five folds from 8 to 49. This trend continues up into the 1990s where the number of urban centers continues to increase. In relation to this each urban center itself experienced internal growth both in terms of population and physical structures.

The spatial patterns of urban growth continue to be concentrated in the western part of the peninsula up to 1970. However with the onset of the New Economic Policy (NEC), inter-regional urbanization leads to the growth of urban centers in other parts of the country especially in the eastern states of Pahang, Terengganu and Kelantan. Since the 1980s Intra-Regional Urbanization saw a changing spatial pattern in urban growth where certain regions experience a more rapid growth resulting in the formation of Mega-Urban Regions. Generally, for Peninsular Malaysia, 3 major Mega-Urban Regions could be recognized, (1) A Northern Mega-Urban Region with Penang as its focus, (2) A Central Mega-Urban Region with Kuala Lumpur as its focus, and (3) A Southern Mega-Urban Region with Johore Bahru as its focus (Figure 3).

THE KLANG RIVER BASIN

The Klang River Basin is the most urbanized and vibrant in the region. The development of the region can be traced back with the historical development of the city of Kuala Lumpur itself. The rapid growth of the Klang River Basin since the past 15 years can be explained primarily by the increase in population. Its population had increased from about 1.2 million in 1970, to 2.0 million in 1980, 3.9 million in 1990 and is expected to be about 5.5 million by the year 2005.

The growth of urban centers in the region started with the development of Kuala Lumpur in the mid-19 century. In early 1870s Kuala Lumpur was a small trading post serving several tin mines in the Klang River Basin. Other centers than developed as a result of the rapid industrialization taking place within the region. These urban centers include Petaling Jaya, Shah Alam, Klang, Bangi and Kajang. The intra-urbanization process of the 1980s further led to the growth of new centers. These new centers are Subang Jaya, Rawang, Sungai Buloh, Kepong and Puchong. The present trend in urban growth is the development of mega-urban projects in the Klang River Basin such as the recently opened Kuala Lumpur International Airport in Sepang, a new administrative center in Putra Jaya, the city of Cyberjaya, and an Airport City in Salak Tinggi (Figure 4).

Kuala Lumpur itself continues to grow and today still maintains itself as the largest urban center in the Klang River Basin and in the country. The rapid influx and increase in the valley witnesses also a rapid transformation in urban built up areas through various mega urban development projects such as the Kuala Lumpur Commercial Center (KLCC), Kuala Lumpur Telecommunication Tower, the Petronas Twin Towers and communication infrastructures associated with Inter and Intra Cities Commuter Train Communications and the recently launched Light Rail Transit (LRT).

URBAN GROWTH AND THE URBAN POOR

Urbanization is one of the major transformations affecting social change in Malaysia. It is envisage that by the year 2005 the majority of the country's population would be living in some form of an urbanized environment. Urbanization brings fundamental changes in the way people live, the kind of work they do, the housing in which they live in, their living habits and life styles and how they adjust and adapt to such transformations (UNDP 1991). Urbanization also creates the formation of different social classes within the city and between the rich and poor and between the haves and haves not (Amis and Rakodi 1994).

Urbanization also has many negative influences on human comfort and health. For much of the world and especially so in the developing countries, growth in urban populations is synonymous with growth in urban poverty, both in absolute and relative terms. Increasingly urban areas are becoming the world's starkest symbol of maldistribution of resources of resources, both physical and societal (Satterwaite 1993). These inequalities have serious impacts on well-being of urban dwellers everywhere, but even more pronounced amongst poverty stricken areas (Harpham et al 1988). Indisputable evidence ties deteriorating comfort and health to degradation in the quality of the physical environment, including inadequate water and sanitation, overcrowded living conditions, air and water pollution, dangerous work places, uncollected rubbish and hazard prone living conditions (WHO 1995).

In poverty stricken areas, infectious and parasitic diseases related to these deficiencies continue to exact and enormous toll on human comfort and health. In relation to this there is increasing evidence of the role of social factors-including alienation, high rates of unemployment and urban poverty in influencing comfort and health as well. The effects of the urban social environment are by no means independent of physical condition; they are interrelated (Feachem et al 1992).

The political and economic structures within a city fundamentally determine the distribution of and access to the physical, biological and societal benefits the urban areas provide. In other words, the poorest groups within an urban area face the greatest exposure to physical and biological threats and have the least access to protective services not to mention limited resources to overcome the problems themselves. Even among the poor, certain groups are more susceptible to both physical and biological risks than others (Bahgurst et al 1992). The very young and the very

old, for instance, tend to be more susceptible to air and water borne diseases associated with pollution and are more likely to feel greater discomforts and ill health (Needleman et al 1979). Women amongst the urban poor also face increased health risks, largely because of their social and economic roles, which exposed them to greater numbers of environmental hazards (Sims 1994).

Women are usually responsible for taking care of the sick in the family, thus increasing their direct exposure to disease-causing organisms. They usually take primary responsibility for obtaining water and washing laundry-activities that can be hazardous where sanitation is poor, washing facilities are inadequate, and water supplies are contaminated. Furthermore women are not as mobile as their male counterpart, which are away working. The quality of housing is a significant factor affecting their health. Housing quality extends beyond the availability of water or sanitation facilities. Overcrowding, dampness, inadequate insulation from heat and rain, pest infestation, noise, dust, inadequate drainage and insufficient ventilation all contribute to their health risks associated with substandard housing (Packer et al 1994). Women, children and the aged, many of whom spend considerable time in the house, are especially subject to these hazards. Studies of personal exposure and indoor air pollution levels indicate that particulate concentrations are very high in the homes of the urban poor correlating strongly with poor ventilation and the general overcrowding of the houses (Etzel 1995).

URBAN GROWTH AND ENVIRONMENTAL DECAY IN THE KLANG RIVER BASIN

The rapid growth of the Klang River Basin in general and of Kuala Lumpur in particular has brought with it tremendous strain on the physical environment. Local climatic and hydrological regimes are been obliterated leading to the occurrence of diverse environmental problems. There are at least 55 environmental issues and problems that have been identified in Malaysia. In general environmental degradation in the Klang River Basin can be related to a decrease in the quality of the surrounding air, water, land and biological subsystems.

The increase in the size of the urban built up areas, has for example affects the local climate and hydrological regimes. Heat Island Effects associated with increase in temperatures during the night are attributed to temperature absorption of urban materials like concrete, glass, asphalt and bitumen during the day and re-radiation effects during the night. Urban built up areas also decreases ground infiltration leading to the frequent occurrence of flash floods respectively. The rapid development and expansion of industries and motor vehicles have led to an increase of pollutant emissions thus affecting air quality. Industrial emissions are further contributors to deteriorating air quality.

Industrial and domestic activities are also the sources for domestic sewage and effluents thus influencing river water quality. The high sediment load arising from upstream developments further deteriorates the water quality. Infrastructure

development has modified the local river flow regime thus intensifying the incidence of flood hazards and riverbank erosion. On land recently cleared for housing and industrial developments, severe erosion and mass movement processes leading to much sediment loss occur (Khairulmaini 1995). These areas when left unattended have the tendency to evolve into degraded landscapes thus decreasing the quality of the environment further.

Urban growth is largely generated by population growth and its sustenance by means of employment, housing, infrastructure, commerce and recreation. Urban growth also brings about it different social status and segregation and is closely related to urban poverty.

In Malaysia, the urban poor are weakly defined as those in the income bracket of less than RM500.00 per month. Due to economic and social reasons, the urban poor population tends to settle themselves in marginal settlements. About 80 percent of the urban poor in the Klang River Basin are found in squatter settlements (Plate 4). The number of these settlements in the region has been increasing. In the Klang River Basin, these settlements have been identified, as been environmental hazardous areas as well as contributing to it. A squatter settlement is here defined as a residential area, which has developed without legal claims to the land/or permission from the concerned authorities to build, as a result of their illegal, or semi-legal status, infrastructure and services are usually inadequate. Such settlements are usually residential areas that are physically and socially deteriorated and in which satisfactory family life is impossible. Bad housing is a major index of squatter conditions. Bad housing refers to dwellings that have inadequate light, air, toilet and bathing facilities, that are in need of repairs, dumping facilities and are improperly heated, that do not afford opportunity for family privacy, that are subjected to fire hazard and overcrowded the land, leaving no space for recreational purposes.

ENVIRONMENTAL DECAY AND THE URBAN POOR: SOME ILLUSTRATIONS FROM SQUATTER AREAS IN THE KLANG RIVER BASIN

The questionnaire survey and ground observations show certain relationships between environmental decay and the urban poor: -

A The Physical and Living Environment

These settlements are usually located at environmentally hazardous areas within the basin. In the present study, the surveyed areas were located at river reserves and on marginal areas bordering the Federal Highways. At the local scale, Kampung Sungai Kayu Ara and Kampung Puah (Plate 5) is flood prone areas whilst Kampung Kerinchi have been subjected to much soil erosion and slope failure processes (Plate 6). However these squatter areas also faced environmental hazards that are generally more widespread that occur within the city boundaries such as air

pollution, water shortage problems and extreme temperature anomalies.

In terms of layout the settlements are not properly planned, with narrow roads, overcrowded dwellings and poor drainage systems. These features tend to exacerbate environmental hazards and become potential sites for environmental decay, fire and health hazards. Overcrowding by itself is unhealthy but the lack of proper drainage worsens the situation. Wastewater from households tends to flow on the ground surface and form breeding grounds for mosquitoes and flies. The chaotic distributions of the houses often sees one's garden or porch next to another kitchen or even a waste dump (see for example Plate 4).

The structure of the dwellings is usually temporary in nature since there is no plan for the buildings. However, there are houses with permanent structures. The materials used for the dwelling are mainly wood, concrete, bamboo, cut boards and zinc. The most common materials for the rooftops are usually zinc. As for the floors, the houses built on stilts uses wood whilst single storey houses uses cement. These building materials and the problem of overcrowding make the settlement prone to fire outbreak. Kuala Lumpur itself in the early part of 2000 experiences over 20 major fires at squatter areas.

The provision of public and social facilities in these settlements is usually limited. Although it cannot be denied that in term of piped and electricity supply, the Malaysian squatters are better off than many such settlements in most developing countries, the availability of such facilities are minimal. For example, in the 3 areas studied, although 60 percent of the households have piped water supply, more than a quarter of them have shared piped water supply from other houses and another quarter from a common public supply. A minor proportion still resort to wells and rivers for their water supply. The situation with regards to electricity supply is similar. Generally the squatter supply in the study areas received their main supply from the National Electricity Board, but a minor proportion of the houses have their own generators and another minor proportion still using gas and kerosene lamps. The latter especially has been a major cause of fires in squatter settlements. In Kampung Kayu Ara, all the houses have electricity supply, but in halve of the 350 households surveyed, the supply is on a shared basis. The Indonesians, which now dominate this settlement, being experienced construction workers have acquired the skill of wiring and in many of the cases it was found that 4-5 houses share a common meter. However, this again constitutes a danger household safety as short circuits are known to occur and fire hazards become an immediate threat at these houses.

The type of toilet facilities available in these settlements are pit toilet, flush toilet and flush-pour toilet, the later being most common. However, at riverine settlements such at Kampung Kayu Ara, the flush and flush-pour toilet systems have no proper sewage disposal system but instead they are been released into the main river there.

One major facilities lacking in these settlements is a proper waste disposal system. In cases where dumping grounds are being provided they are usually insufficient and because these settlements usually also lacks accessibility, the rubbish

in the dumps have not been regularly collected. For example, in the Kampung Kerinchi area, there is a rubbish dump at the entrance of the settlement but the settlers feel that it is too far away from their houses and thus prefer to dump their rubbish in open spaces surrounding their houses (Plate 7). In Kampung Kayu Ara the river there acts as a major rubbish dump. Here although rubbish bins have been provided by the local authorities, they prefer the river because they claim that there rubbish have not been regularly collected by the local authorities. During drier seasons this rubbish collects in the rivers and are manifested with flies other organisms, which could harbour potential diseases. The above are some of the major features of the squatter settlements in the Klang River Basins. These features invariably make the settlements potential sites for environmental decay thus prone to hazards like floods, fires and diseases.

B Environmental Decay and Urban Poverty

The general age structure of the urban poor tends to show a bimodal distribution, which is mainly in the younger age groups (~50%) and also within the middle age groups. The head of households are generally employed in the formal and informal sectors. More than 70% of them have monthly incomes less than RM500.00 and the average household size is between 4 to 6 people. More than 70% of the wives of household heads are unemployed. They stay at home and take care of the aged and children and attend to household chores. Originally the study areas are Malay squatter areas but recently there is a marked tendency for these areas to be occupied by immigrant workers.

The declining state of the environment as a result of the environmental problems mentioned earlier and that aggravated by poor living conditions and the general insensitive attitudes to environmental cleanliness have in general contributed to some deterioration in the settler's health and well being.

Health hazards has not been a major focus in the present study, but in general the study was made aware of the incidences of certain diseases like dengue fever, diseases of the skin and diarrhea. However the squalid nature of the settlements without social facilities and proper infrastructure further aggravates the spread of contagious diseases and known cases of certain diseases such as whooping cough, tetanus, malaria, tuberculosis, as well as hepatitis A and B have been reported to occur. Recently with the incoming of foreign immigrants into these settlements certain new or emerging diseases and also the re-emergence of certain diseases were also reported.

The well-being and safety of the settlers are also threatened by other hazards. The study finds out that apart from problems associated with deteriorating air and water quality the settlers also experiences hazards from soil erosion, flash floods and fire. In general the effects are mainly on the security of family members, house maintenance, loss of income and property, and the problems of evacuation and resettlement.

CONCLUSION

This study has shown that urban growth within the Klang River Basin has its negative consequences. The problems have been acknowledged and the government through its various agencies has undertaken many remedial measures both to overcome poverty and the problem of environmental decay. To a certain extent the problems have been reduced through various strategies, which includes provision of low cost housing which involves resettling of the squatters, the provision of social and public facilities in the squatter areas, community based and social intervention projects, upgrading of riverine settlements which involves major engineering works, improving local drainage and the implementation of sound land-scaping and greenery programs which at the same time beautifies the areas concern.

In addition to this basic education and health facilities are made accessible to the urban poor communities. However, problems relating to the environment and the urban poor remain an immense challenge. Poverty and environmental decay as mentioned in the earlier sections are two problems, which are causally related and thus cannot be solved independently. A more comprehensive and integrated approach should be formulated and implemented. Furthermore, both the physical environment and the population are part of the urban system thus needing a more comprehensive development approach.

REFERENCES

1 United Nations Development Programme (UNDP), **Cities, People and Poverty: Urban Development Cooperation For The 1990's,** UNDP, New York, 1991.

2 Amis,P. and Rakodi,C., **Urban Poverty: Issues For Research And Policy,** Journal Of International Development, Vol. 6(5), 1994.

3 Harpham,T., Lusty,T. and Vaughan,P.(eds.), **In The Shadow Of The City: Community Health And The Urban Poor,** Oxford University Press, Oxford, 1988.

4 World Health Organization (WHO), "The World Health Report 1995", Bridging The Gaps, WHO, Geneva, 1995.

5 Etzel, R., **Indoor Air Pollution On Children,** Environmental Health Perspectives, Vol. 103(6), 1995.

6 Datterthwaite, D., **The Impact On Health Of Urban Environments,** Environment and Urbanization. Vol.5(2), 1993.

7 Sims, J. (eds.) **Women, Health and Environment: An Anthology,** WHO, Geneva.

8 Baghurst, P., "Environment Exposure To Lead And Children Intelligence At Age Of Seven Years", New England Journal Of Medicine, Vol. 327(18), 1992.

9 Needleman, H., "Deficits In Psychological And Classroom Performance Of Children With Elevated Dentine Lead Levels", New England Journal Of Medicine, Vol. 300(13), 1979.

10 Staessen, J.A., "Hypertension Caused By Low Level Lead Exposure: Myth Or Fact?"

Journal Of Cardiovascular Risk, Vol.121 (2), 1994.

11 Packer. C.N., Sarah,B. and Sarah E.F., "Damp Housing And Adult Health", Journal Of Epidemology And Community Health, Vol. 48(6), 1994.

12 Feachem,R., Adult Mortality: Levels, Patterns And Causes", in "The Health Of Adults In The Developing World", Feachem, R (ed.), World Bank Publications, Washington, D.C., 1962.

13 Fauza,A.G., "Urban Poverty And Environmental Degradation In The Kelang River Basin", Proceedings Of the 4th ASEAN Geographers Conference, Chiangmai, Thailand, 1996.

14 Fauza, A.G., "Environmental Degradation In Squatter Settlements: Some Insights From Malaysia", Proceedings Of The Conference On Urbanization And Socio-Cultural Transformation, Semarang, Indonesia, 1997.

15 Khairulmaini,O.S., "Perception Of And Adaptation To Flood Hazard- A Preliminary Study", Malaysian Journal Of Tropical Geography, Vol. 25(2), 99-106 pp., 1994.

16 Khairulmaini, O.S., "The Water Erosion And Mass Movement Cascades Of Accelerated Slope Processes As A Result Of Land Resource Exploitations", in Malaysian Natural Resources, Ipor, I.B. et. al. (eds). University Malaysia Sarawak, 1998.

17 Khairulmaini O.S., "Peranan Malaysia Di Dalam Konteks Pembangunan Mampan", Bab 8, in: Institute Kefahaman Islam Malaysia (IKIM)(Ed), "Pengurusan Bijak Alam Anugerah Tuhan", IKIM, 2000.

Plate 1: Squatter Settlements Are Usually Located On Marginal Lands Such As At (1) Transmission Lines Corridors, (2) River Buffer Zones, and (3) Adjacent To Major Transportation Routes Like Highways & Railway.

Plate 2: Poor Hygience Are Often Associated With The Squatter Settlements. In This Picture Poor Drainage Systems Has Contributed To Water Stagnation. This Encourages In Breeding Of Mosquitoes And Other Water Borne Organisms. The Squatters Are Also Known To Reuse This Water For Cooking And Washing Which Would Further Worsened Their Immediate Hygiene.

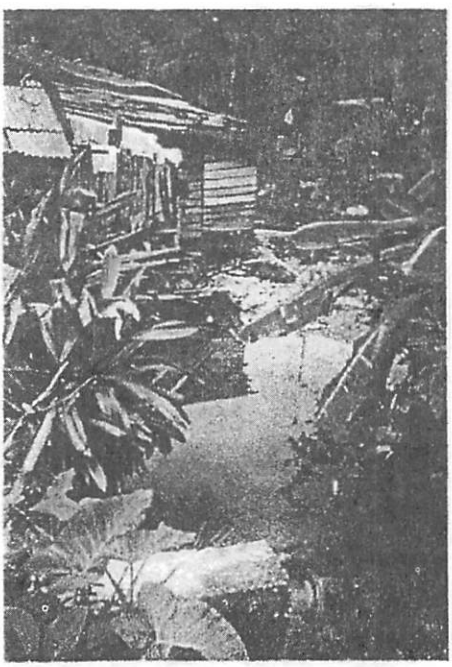


Plate 3: The Squatter Houses Are Usually Built On Cheap Building Materials That Are Usually A Fire Hazard And Aggravates Indoor Pollution. Such Building Materials Are A Common Cause Of Discomfort Amongst The Residents.

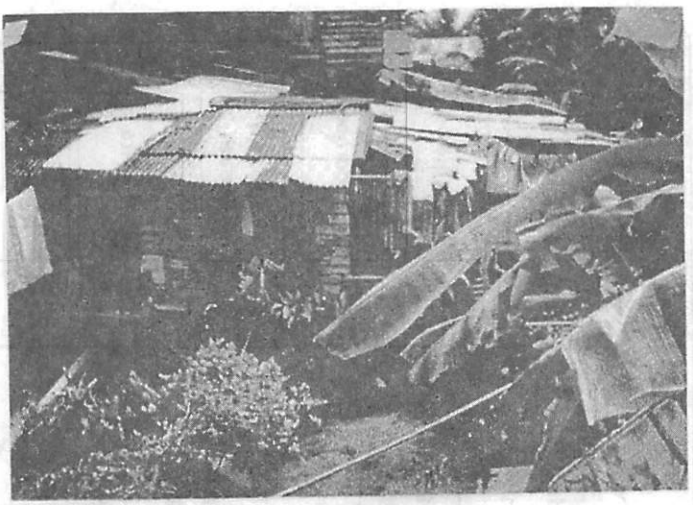
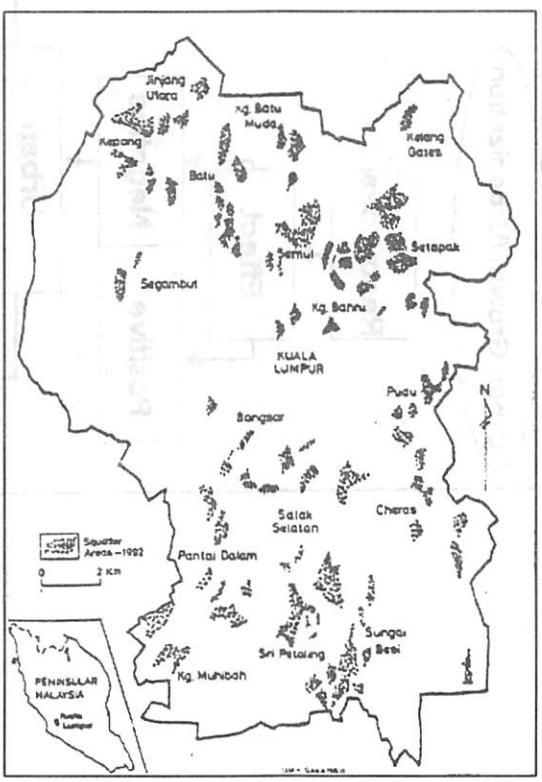


Figure 1: The Distribution Of Main Squatter Settlements In The Klang River Basin



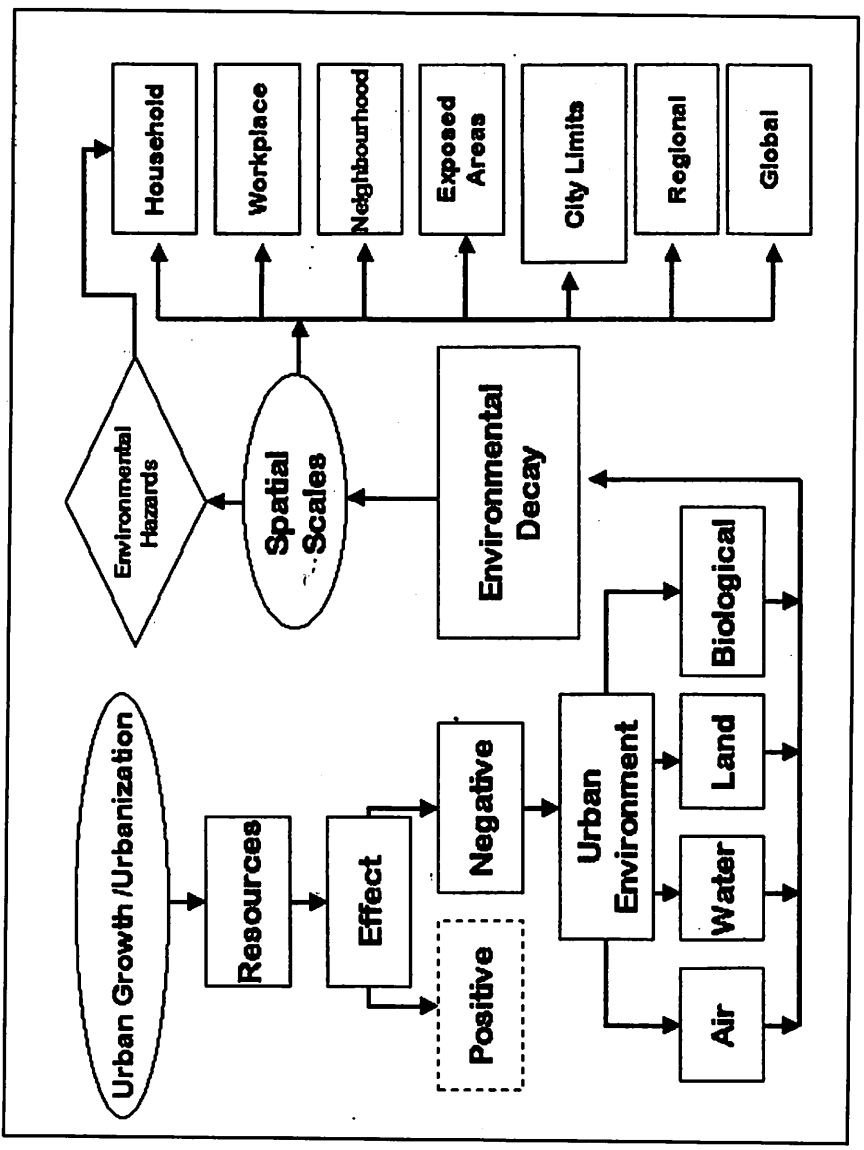


Figure 2: The Relationships Between Urban Growth/Urbanization On The Urban Environmental Subsystems, Environmental Decak, Potential Threat From Environmental Hazards And The Spatial Scales Of Impacts.

Figure 3: The Mega Urban Regions In Peninsular Malaysia

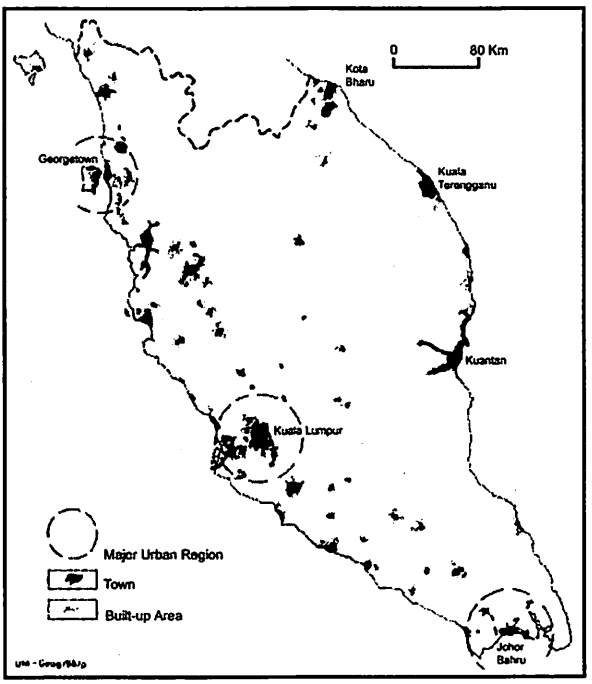


Figure 4: The Growth Of Mega Urban Regions Within The Klang River Basin

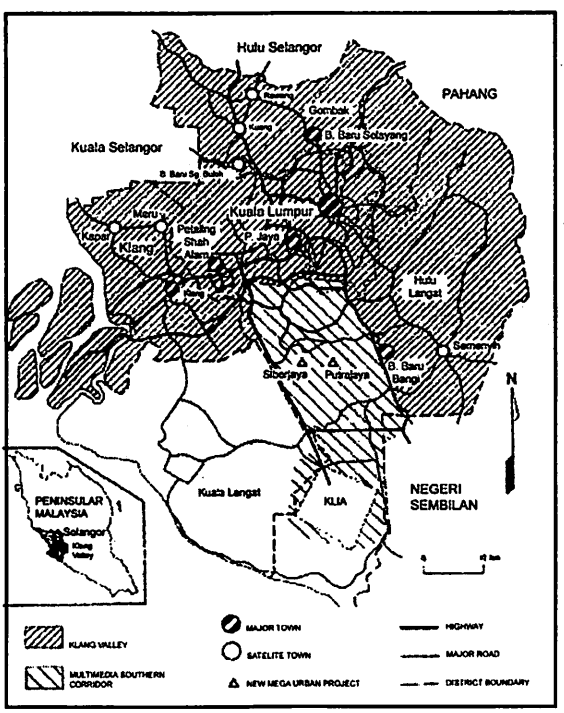


Plate 4: Kampung Abdullah Hukum A Typical Squatter Area Located On Marginal Government Reserve Lands Show Poor Building Materials That Are A Fire Hazard And Over Crowdedness Which Contributes To Poor Living Conditions. Here Poor Ventilation And Drainage Systems Exposes The Residents To Indoor Pollution And Periodic Flash Floods.

Plate 5: The Location Of Kampung Sungai Kayu Ara Near The Ara River Not Only Exposes It To The Immediate Threats Of River Bank Erosin And Water Pollution But Residents Also Contribute Indirectly To Environmental Decay By Disposing Household Refuse Into The River System.

Plate 6: Kampung Kerinchi Is A Typical Squatter Area Located On Marginal Lands Bordering The Hillslopes Of Federal Highways. Here The Problems Of Soil Erosion And Other Mass Movement Processes Contribute To The Threat Of Environmental Hazards.

Plate 7: Poor Waste Disposal Facilities In Squatter Areas Contributes To The Threat Of Environmental Decay. The Picture Shows How Such Waste Disposal Site Contributes To (1) Smell Pollution, (2) Water Pollution, And (3) Inbreeding Of Diseases.