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MALAYSIA'S EMERGING CONURBATION*

S. ROBERT AIKEN AND COLIN H. LEIGH

ABSTRACT. By 1990 a conurbation will have emerged in the Klang Valley of Peninsular Malaysia with a probable population of more than two million people. Rapid urban growth has already generated physical and social problems. Soil erosion and flooding have increased, and health problems have been created. The persistence of slums and squatter settlements detracts from the quality of urban life.

KEY WORDS: *Erosion, Flooding, Health, Housing, Klang Valley, Malaysia, Urban growth.*

A "superlinear city" is rapidly emerging in the Klang Valley of Peninsular Malaysia.¹ This city, in the industrial hub of the nation and in the center of the Peninsula's tin and rubber belt, will eventually encompass Port Klang (formerly Port Swettenham), Klang, the new towns of Sungei Way-Subang, Subang Jaya, Shah Alam, and Ampang/Ulu Klang, the now almost completed town of Petaling Jaya, and the Federal Capital, Kuala Lumpur (Fig. 1). By 1990 an almost continuous built-up area will extend from Port Klang on the Straits of

Malacca to the foothills east of Kuala Lumpur, a distance of approximately thirty miles (48 km). This paper outlines urban growth trends in the Klang Valley, particularly in the emerging Kuala Lumpur—Port Klang conurbation, and examines some of their implications.

URBANIZATION IN PENINSULAR MALAYSIA

Urbanization in Southeast Asia is essentially an alien phenomenon, tacked onto a rural background, and associated with Chinese or European enterprise, or a combination of the two.² In Peninsular Malaysia both rural-urban migration and natural increase make significant contributions to present urban growth rates.³ Urban growth in the Peninsula outstripped the growth rate for the total population between 1911 and 1970. The most rapid urban growth occurred between 1947 and 1957 (Table 1). This growth resulted from the creation of "new villages" during the Emergency, the migration

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* We should like to thank the Deputy State Secretary of Selangor, Encik Abu Hassan bin Omar, for access to maps in the unpublished Klang Valley Report on which Figure 1 is based; Goh Hock Guan for the plan of Subang Jaya (Fig. 6); the Selangor State Development Corporation for providing the plans which formed the basis for Figures 3, 4, 5, and 7; Mr. Harbans Singh of the Department of Statistics, Kuala Lumpur, for population data; and Encik V. Palani for drafting the maps.

¹ The Klang Valley refers to the Klang Valley urban region. This region is not coincident with the drainage basin of the Klang River, because it includes Rawang to the north and Kajang to the south, both of which are outside the basin. The urban region is equivalent to the Klang Valley as demarcated in the Klang Valley Report (see footnote 23), and as employed by the Federal Department of Statistics, Kuala Lumpur. The Kuala Lumpur—Port Klang axis refers to the existing urban centers between, and including, Kuala Lumpur and Port Klang. In this paper attention is focused on the emerging Kuala Lumpur—Port Klang conurbation, or the "superlinear city," as it is referred to locally (Fig. 1). *The Straits Times*, July 12, 1973. All newspaper citations refer to the Malaysian editions.

² D. W. Fryer, "The 'Million City' in Southeast Asia," *Geographical Review*, Vol. 43 (1953), pp. 474-94; and Norton S. Ginsburg, "Urban Geography and Non-Western Areas," in Philip M. Hauser and Leo P. Schnore, eds., *The Study of Urbanization* (New York: John Wiley and Sons, Inc., 1965), Chapter 9, pp. 311-46.

³ Robin J. Pryor, "Malaysians on the Move: A Study of Internal Migration in West Malaysia," unpublished doctoral dissertation, University of Malaya, Kuala Lumpur, 1972; and *The Straits Times*, November 27, 1973. The *Mid-Term Review of The Second Malaysia Plan 1971-1975* (Kuala Lumpur: Government Printer, 1973), pp. 24-26, noted that a "feature of the trends between the inter-censal years [1957 and 1970] is that the urban population has grown annually by 3.8% and the rural population by 2.4%. A good part of the increase in urban population is explained by migration from rural to urban areas and growth of new urban areas."

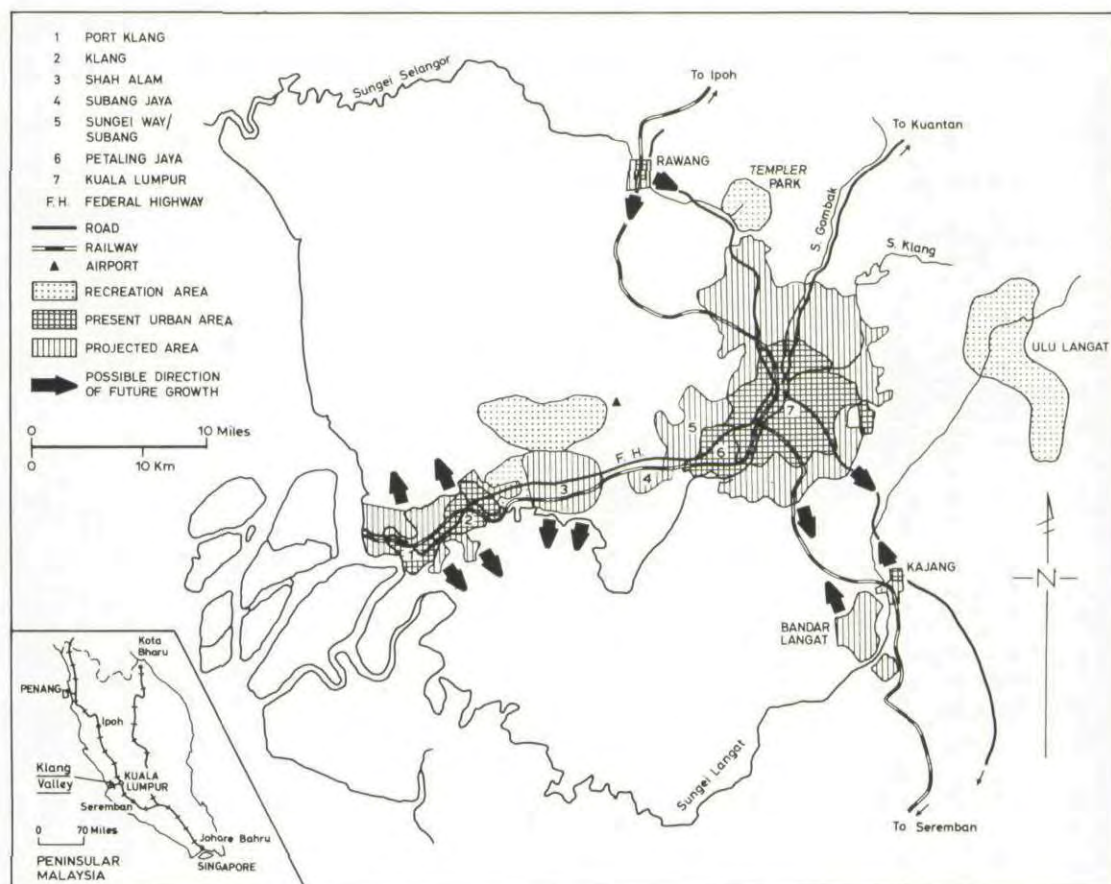


FIG. 1. The emerging Klang Valley conurbation, 1974-1990, from the Klang Valley Report, by permission of Encik Abu Hassan bin Omar.

of substantial numbers of people from dangerous remote rural areas to the relative security of towns, and the growth of most of the large urban agglomerations during the period.⁴ Rural-urban migration rates probably decreased in the period of greater security after the end of the Emergency. Between 1957 and 1970 there was a slight reversal of the rural-urban migration trend as displaced rural dwellers returned to their farms in former terrorist-held areas. This reversal probably accounts for the relatively slow rate of urbanization during the latest intercensal period (Table 1).⁵

The urban centers of the Peninsula have grown unevenly over the past quarter of a century. Between 1947 and 1957 there was a very

rapid increase in the size of small towns, and a much slower rate of growth of large centers. In absolute terms, however, the large centers grew considerably. The growth of small towns decreased dramatically after 1957, whereas the large cities, with the exception of Petaling Jaya,

TABLE 1.—POPULATION OF PENINSULAR MALAYSIA, 1911-1970

	Total	Urban ^a	Percentage urban
1911	2,339,000	250,273	10.7
1921	2,906,691	406,936	14.0
1931	3,787,758	571,951	15.1
1947	4,908,086	929,928	15.9
1957	6,278,758	1,666,300	26.5
1970	6,801,399	2,527,988	28.7

Source: Saw, op. cit., footnote 4.

^a Urban areas are defined as towns of 10,000 or more inhabitants.

⁴ Saw Swee Hock, "Patterns of Urbanization in West Malaysia, 1911-1970," *Malayan Economic Review*, Vol. 17 (1972), p. 115.

⁵ Saw Swee Hock, op. cit., footnote 4, p. 115.

TABLE 2.—THE GROWTH OF URBAN CENTERS IN THE KLANG VALLEY, 1957-1970

	Population			Percentage annual growth rate	
	1947	1957	1970	1947-57	1957-70
<i>Klang Valley</i>					
Kuala Lumpur	175,961	316,230	451,810	8.0	2.8
Klang	33,506	75,649	113,607	12.6	3.1
Petaling Jaya	—	16,575	93,447	—	14.1
<i>Sample of other towns</i>					
Georgetown	189,068	234,930	249,247	2.4	1.1
Ipoh	80,894	125,776	247,969	5.5	5.2
Kuantan	8,084	23,122	43,358	18.6	5.0
Raub	3,616	15,370	18,433	32.5	1.4
Segamat	7,289	18,451	17,796	15.3	-0.3

Source: Saw, op. cit., footnote 4.

continued to grow at moderate rates (Table 2).⁶

The migration tendencies of the three major racial groups in the Peninsula have changed. Between 1947 and 1957 the Chinese exhibited the highest migration propensity, but since 1957 the Malays, followed by the Indians, have shown a greater tendency to migrate than the Chinese.⁷ Urban centers in Peninsular Malaysia, with a few exceptions, are still predominantly Chinese.⁸ In recent years an increasing number of Malays have migrated to urban areas.⁹ In the Klang Valley, Malays have been attracted to urban centers by employment opportunities and promises of government assistance, and urban centers in the Klang Valley now include a sizeable number of Malays and Indians (Table 3).

THE KUALA LUMPUR—PORT KLANG AXIS

Kuala Lumpur

The most important urban center in the Klang Valley is Kuala Lumpur (Fig. 2). In the mid-nineteenth century it was a tin-mining site at the confluence of the Klang and Gombak

TABLE 3.—ETHNIC GROUPS IN KLANG VALLEY URBAN CENTERS, 1970

	Kuala Lumpur	Klang	Petaling Jaya	Sungei Way-Subang
Malay	113,642	23,680	18,850	2,504
Chinese	247,474	65,990	58,338	3,667
Indian	84,043	23,299	13,216	1,432
Other	6,651	638	3,043	154
Total	451,810	113,607	93,447	7,757
<i>Percentage of total</i>				
Malay	25	21	20	32
Chinese	55	58	63	47
Indian	19	20	14	19
Other	1	1	3	2
Total	100	100	100	100

Source: 1970 Population and Housing Census of Malaysia, Community Groups (Kuala Lumpur: Jabatan Perangkaan Malaysia, 1972).

rivers.¹⁰ One hundred years ago Kuala Lumpur was merely two rows of adobe-built dwellings.¹¹ Before World War II its growth fluctuated with the fortunes of the tin and rubber industries, both of which relied heavily on alien immigrant labor.¹² During the postwar period, and especially since independence, Kuala Lumpur has expanded rapidly as the capital of Malaysia. In 1970 metropolitan Kuala Lumpur contained

⁶ Robin J. Pryor, "The Changing Settlement System of West Malaysia," *Journal of Tropical Geography*, Vol. 37 (1973), pp. 53-67; and Saw Swee Hock, op. cit., footnote 4, p. 117.

⁷ Pryor, op. cit., footnote 3, p. 639.

⁸ T. G. McGee, "The Cultural Role of Cities: A Case Study of Kuala Lumpur," *Journal of Tropical Geography*, Vol. 17 (1963), pp. 178-96; and Hamzah Sendut, "Urbanization," in Wang Gungwu, ed., *Malaysia: A Survey* (New York: Frederick A. Praeger, 1964), pp. 82-96.

⁹ T. G. McGee, *The Southeast Asian City* (London: G. Bell and Sons, Ltd., 1967).

¹⁰ J. M. Gullick, *The Story of Kuala Lumpur* (Singapore: D. Moore, 1965); Hamzah Sendut, "The Structure of Kuala Lumpur: Malaysia's Capital City," *Town Planning Review*, Vol. 36 (1965), pp. 125-38; and George Woodcock, *The British in the Far East* (London: Weidenfeld and Nicholson, 1969).

¹¹ Sir Frank Swettenham, *Stories and Sketches*, selected and introduced by William R. Roff, Oxford in Asia Historical Reprints (Kuala Lumpur: Oxford University Press, 1967), p. 8.

¹² Hamzah Sendut, op. cit., footnote 10, p. 128.

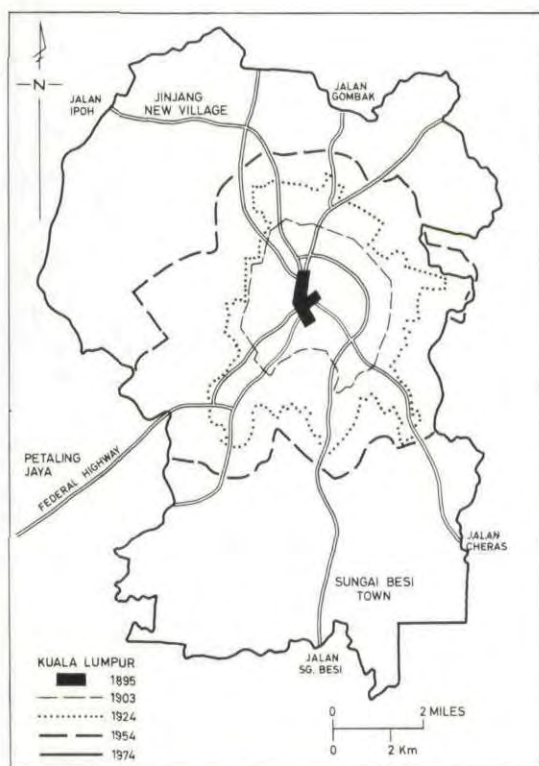


FIG. 2. The growth of Kuala Lumpur, 1895–1974, after Concannon, op. cit., footnote 15, and the Kuala Lumpur Planning Department.

forty-three percent of the population of the State of Selangor, and eight percent of the population of Peninsular Malaysia.¹³ The importance of Kuala Lumpur will probably be accentuated in the near future now that the thirty-six square mile (93 km²) municipal area of the city has been extended into a new ninety-four square mile (243 km²) Federal Territory of Kuala Lumpur.¹⁴

Petaling Jaya

The most rapidly growing urban centers in the Klang Valley are the industrial and dormitory center of Petaling Jaya and the royal town of Klang (Table 2). Petaling Jaya, Malaysia's first new town, was initially designed to accommodate 70,000 people on 3,000 acres (1,330 ha). Development commenced in 1953. The town was designed as a set of interconnected neighborhoods with areas for industry, commerce, recreation, and other private and com-

munity uses.¹⁵ The planners appear to have envisaged a new town similar to those in post-war Britain. The ever increasing demand for suburban housing close to Kuala Lumpur has resulted in the rapid growth of the town.¹⁶ In 1973 Petaling Jaya covered approximately 6,000 acres (2,660 ha), with 700 (300 ha) devoted to some 300 factories. It is one of the most industrialized towns in the Peninsula.¹⁷ The development of Petaling Jaya is now almost complete (Fig. 3).

In twenty years Petaling Jaya has grown into a major dormitory suburb of Kuala Lumpur. Its recent origin is reflected by the fact that in 1966 only approximately thirteen percent of its population was born in the town.¹⁸ Petaling Jaya has grown at the expense of Kuala Lumpur. This fact partly explains the slow growth of Kuala Lumpur between 1957 and 1970 (Table 2). Petaling Jaya can no longer accommodate the growing demand for urban homes close to Kuala Lumpur, and another new town, Sungei Way-Subang, is already taking shape to the west (Fig. 1).

Klang

Klang is thirteen miles (20 km) up the Klang River. Port Swettenham (now Port Klang) and Klang have served as major ports and points of entry to the Klang Valley.¹⁹ Although Klang was a tin exporter during the nineteenth century, and remained the political center in Selangor until the 1870s, it had no significant growth before 1880. The growth of Klang has been closely linked with the growth of the Klang Valley as an exporter of raw materials, and Port Klang has developed as a result of government policy aimed at making it into a

¹⁵ T. A. L. Concannon, "A New Town in Malaya: Petaling Jaya, Kuala Lumpur," *Malayan Journal of Tropical Geography*, Vol. 5 (1955), p. 42.

¹⁶ T. G. McGee and W. D. McTaggart, *Petaling Jaya: A Socio-Economic Survey of a New Town in Selangor, Malaysia*, Pacific Viewpoint Monograph No. 2 (Wellington, New Zealand: Victoria University Department of Geography, 1967), pp. 1–2.

¹⁷ W. D. McTaggart, *Industrialization in West Malaysia, 1968*, Occasional Paper No. 2 (Tempe, Arizona: Center for Asian Studies, Arizona State University, 1972).

¹⁸ Saw Swee Hock, *The Population of Petaling Jaya, 1966*, Studies in Malaysia and Singapore, I (Singapore: University Education Press, 1972), p. 11.

¹⁹ Since 1965 Klang and Port Klang have been administered by the same town council.

¹³ Pryor, op. cit., footnote 6, p. 58.

¹⁴ *The Straits Times*, July 5, 8, and 10, 1973.

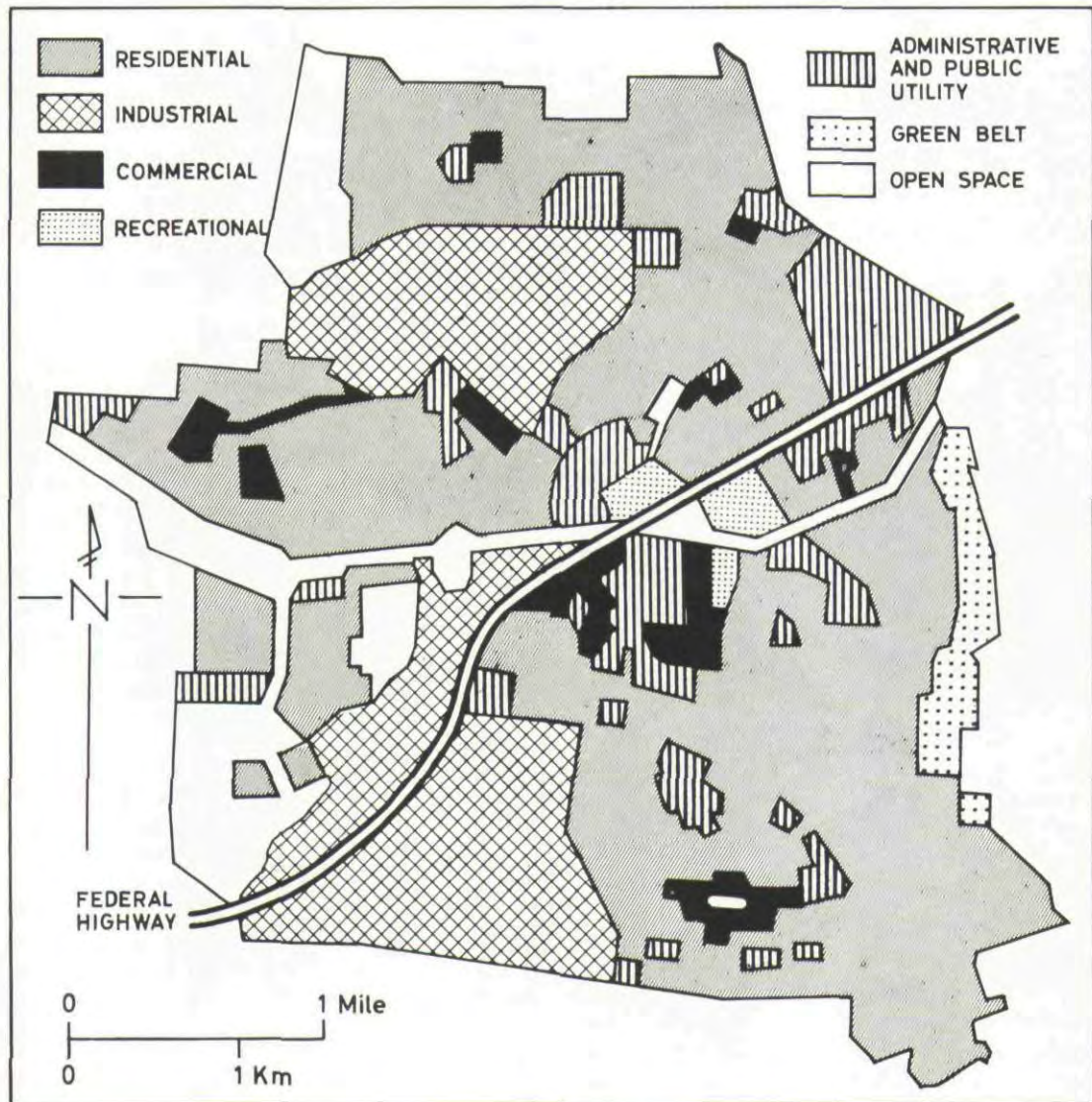


FIG. 3. Land use in Petaling Jaya, 1974, after the Selangor State Development Corporation.

major port on the Straits of Malacca. Klang has greatly expanded its hinterland for rubber, oil palm, tin, coconuts, and other products since the severance of Singapore. Port Klang is the main outlet for the industrial Klang Valley.

Industries have been attracted to Klang because land values are lower than in Kuala Lumpur and Petaling Jaya, and also because of government policy. The demand for homes within easy commuting distance of Kuala Lumpur has resulted in a building boom in Klang and a rapid increase in the town's population over the past few years. One of the largest

schemes envisaged for the Klang Valley is to be put into effect in Port Klang, where 2,155 acres (954 ha) of swampland are being filled in the North Klang Straits for residential, industrial, and port development.²⁰

THE EMERGING CONURBATION

The urban population of the Klang Valley in 1970 was 890,000, or seventy-two percent of the total population of the Valley. Only two urban centers of any size, Kajang and Rawang,

²⁰ *The Sunday Times*, March 10, 1974.

TABLE 4.—URBAN POPULATION CHANGE IN THE KLANG VALLEY, 1957–1990

Urban area	Population (thousands)		
	1957	1970	1990
City of Kuala Lumpur	316.2	451.8	—
Petaling Jaya	16.6	93.4	—
<i>Kuala Lumpur Conurbation^a</i>	<i>419.4</i>	<i>706.9</i>	<i>1,350</i>
Shah Alam	—	—	300
Klang	75.6	113.6	300
Kajang	9.6	22.5	—
Rawang	6.4	6.9	20
Bandar Langat ^b	—	—	80
All urban areas	537.4	891.1	2,050

Source: For 1957 and 1970 data, Department of Statistics, Kuala Lumpur; 1990 data from Klang Valley Report, op. cit., footnote 23.

^a The Kuala Lumpur conurbation of 1990 will include the Federal Territory of Kuala Lumpur, Petaling Jaya, the new towns of Sungai Way-Subang, Subang Jaya, and other satellite towns on the periphery of the present built-up area (Fig. 1).

^b Proposed new town (Fig. 1).

are beyond the limits of the emerging Kuala Lumpur–Port Klang conurbation, and they account for only 2.4 percent of the urban population of the Klang Valley. Most of the Klang Valley's urban population is within the study area of this paper (Table 4).

The population of the Klang Valley in 1990 will approximate two million people if present rates of natural increase are maintained.²¹ If the present rates of in-migration to the State of Selangor continue, however, and there is little reason to assume that they will not, then the figure of two million may well be surpassed.²² A recent long-term plan estimated that the urban population alone will exceed two million in the Klang Valley by the year 1990.²³ Well over ninety percent of the urban population of the Klang Valley will be in the new conurbation stretching from Port Klang in the west to the extremities of the Kuala Lumpur metropolitan area in the east (Table 4, Fig. 1).

By 1990 the population of the Kuala Lumpur metropolitan area will have almost doubled,

²¹ Department of Statistics, Kuala Lumpur, personal communication.

²² Pryor, op. cit., footnote 3, p. 240, has shown the importance of in-migration in Selangor; *The Straits Times*, op. cit., footnote 3; and *Mid-Term Review*, op. cit., footnote 3.

²³ The Klang Valley Report has not yet been made available to the public. We should like to thank the Deputy State Secretary, Selangor, for allowing us to use some of the data in Table 4.

and its area will have been greatly enlarged (Fig. 1). The population of Klang may have almost tripled, to 300,000, and an almost continuous urban agglomeration will connect it with Kuala Lumpur. Four new towns were under construction in 1975. Three of these will be within the metropolitan area of Kuala Lumpur in 1990, and one, Shah Alam, will be in the center of the linear development between Klang and Subang Jaya.

Ampang/Ulu Klang New Town

A self-contained satellite town for 30,000 people is under construction east of Kuala Lumpur. It will cover 1,500 acres (660 ha) when completed. Ampang/Ulu Klang will have a variety of housing types, including apartments, duplexes, and row houses. The town will have two industrial areas. The Selangor State Development Corporation will provide factory

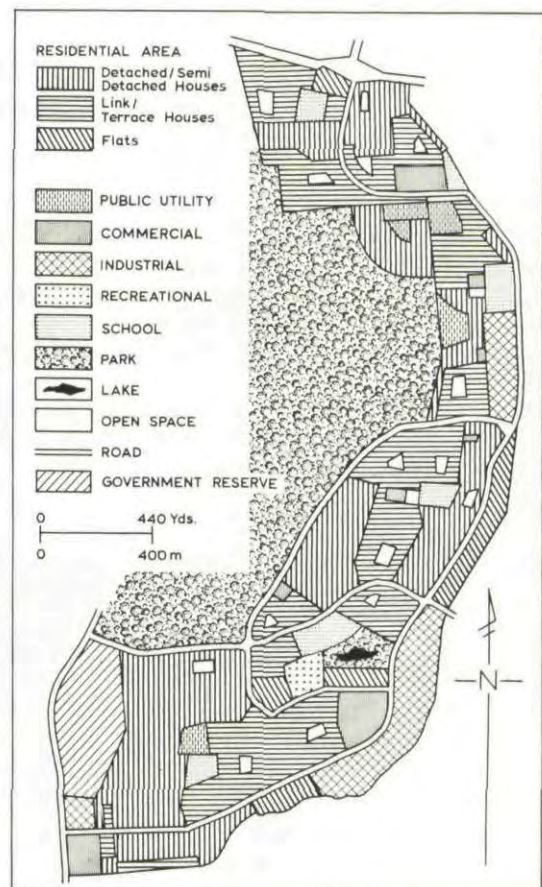


FIG. 4. Generalized pattern of proposed land use in Ampang/Ulu Klang, after the Selangor State Development Corporation.

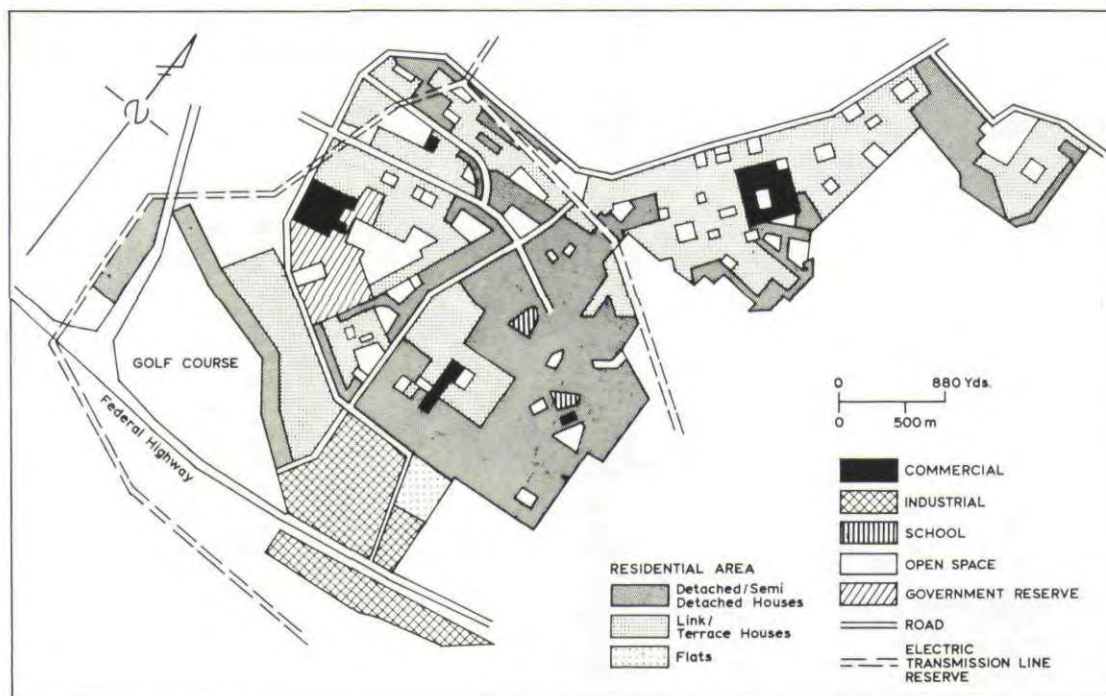


FIG. 5. Generalized pattern of proposed land use in Sungei Way-Subang, after the Selangor State Development Corporation.

buildings for Malays who wish to start small industries. Eventually there will be shopping centers, cinemas, a padang, mosque, and other facilities (Fig. 4). The elongated nature of the area and its division by a major road may produce two fairly distinct small towns north and south of the road.

Sungei Way-Subang

The demand for housing close to Kuala Lumpur has produced a new town, Sungei Way-Subang, west of Petaling Jaya. In 1973 there was an average of thirty applicants for every new dwelling unit that became available.²⁴ In 1970 the Sungei Way-Subang Town Board Authority was created under the administrative control of the Selangor State Development Corporation.²⁵ The Town Board, which is now responsible for 3,000 acres (1,330 ha) of the projected urban area, plans to provide a mixture of low-cost and expensive housing units, a health center, public library, town hall, a civic center, and other urban facilities. A free-trade zone, especially designed for manufactur-

ing export-oriented products, was opened in 1973; the factories in this area will eventually employ 1,000 people (Fig. 5).

Subang Jaya

Subang Jaya will be on 1,440 acres (640 ha) eleven miles (18 km) west of Kuala Lumpur and just south of the Federal Highway (Fig. 1). It is hoped that the town will have 15,000 dwelling units and a population of 75,000 by 1979. In late 1973 1,500 new houses and shop-houses were under construction. There were 30,000 applications for the first homes.²⁶ Subang Jaya will be divided into the main town center and the inner-town.²⁷ The town center will follow the Federal Highway. It will serve as a major commercial node for the inhabitants of the town, and as a regional shopping center for the Klang Valley. It will include banking, out-of-town shopping, and entertainment facilities, including a civic auditorium which is ex-

²⁴ *The Sunday Mail*, August 5, 1973.

²⁵ *The Sunday Mail*, July 29, 1973.

²⁶ Goh Hock Guan, architect of Subang Jaya, personal communication; and *The Straits Times*, December 1, 1973.

²⁷ Goh Hock Guan, op. cit., footnote 26; and *The Sunday Mail*, July 15, 1973.

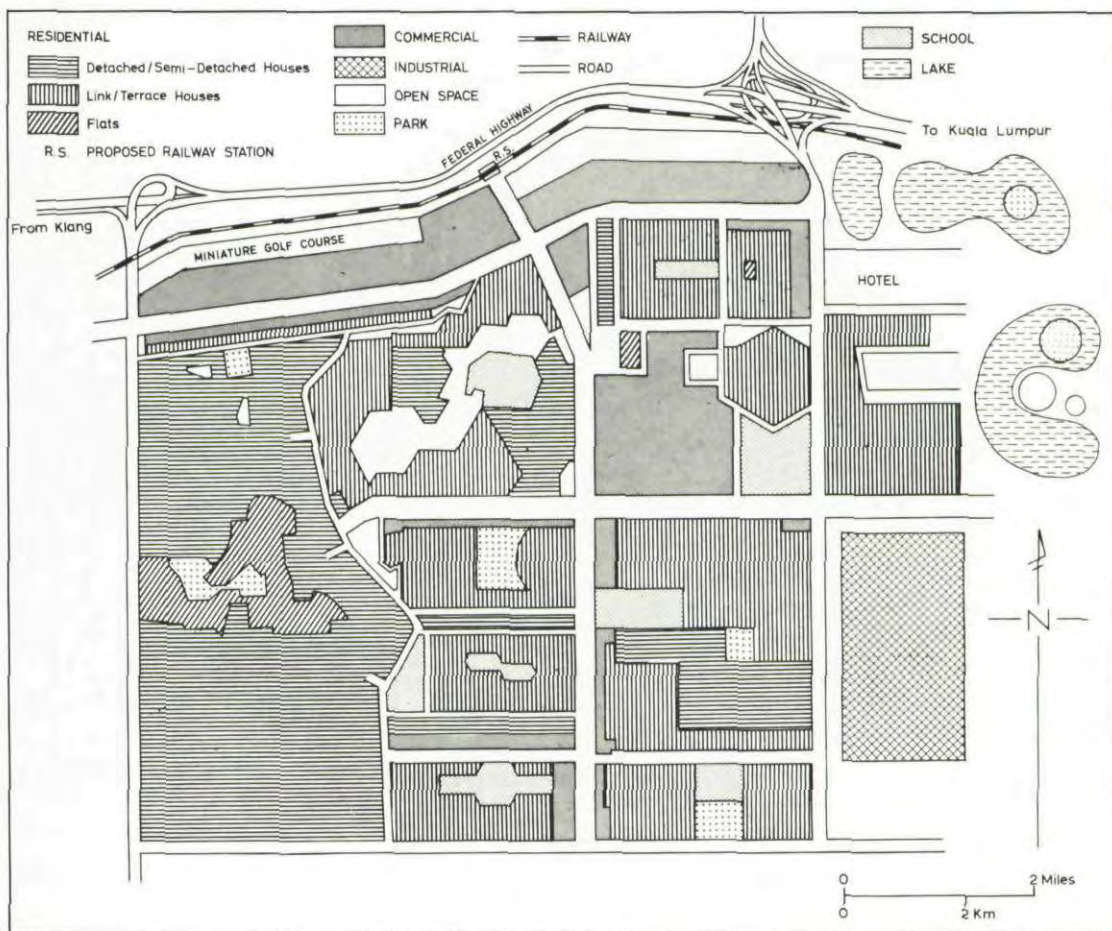


FIG. 6. Generalized pattern of proposed land use in Subang Jaya, after Goh Hock Guan and Associates, architects.

pected to be a regional cultural attraction (Fig. 6).

In the inner-town an attempt will be made to provide adequate open space adjacent to dwelling units. Single family homes will be on the hilly land west of the inner-town center. Further east a number of smaller neighborhoods, each with a school, will contain a variety of housing types close to parks, open space, and neighborhood foot paths. A forty-five acre (20 ha) site in the southeast is planned for industrial development. This area will eventually become part of the industrial belt running from Petaling Jaya to the new town.²⁸

Shah Alam

Shah Alam, the new State capital of Selangor, is between Klang and Subang Jaya. This

town is to be a major industrial center, and a population of 300,000 is planned for 1990. In early 1974 the new town had an area of approximately 7,759 acres (3,430 ha), including an industrial section of about 1,200 acres (530 ha) with 200 factories; work had also begun on the administrative and residential areas.²⁹ The plans for Shah Alam incorporate the principle that the new State capital should reflect the multiracial composition of the Malaysian nation. This principle implies that housing and employment should be allocated on a proportional ethnic basis.

The Federal Highway will divide Shah Alam. The extensive industrial site will be south of the

²⁸ *The Sunday Mail*, op. cit., footnote 27.

²⁹ The Selangor State Development Corporation, personal communication; *The Straits Times*, October 14, 1973; and *The Sunday Mail*, March 10, 1974.

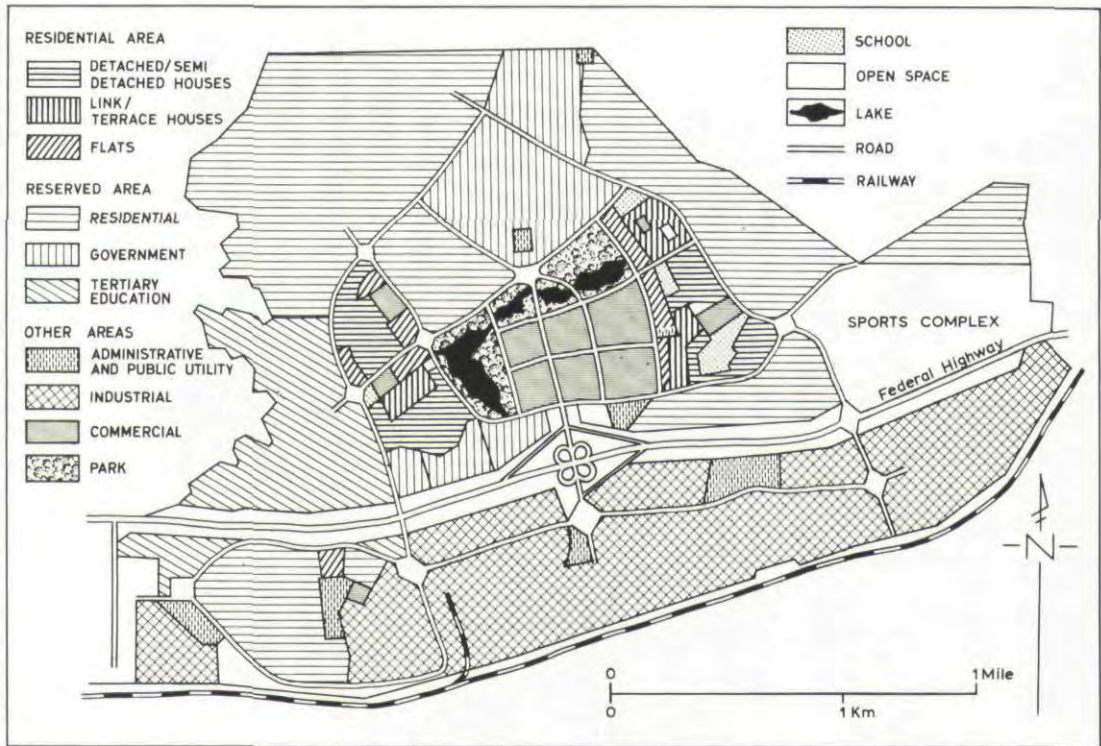


FIG. 7. Generalized pattern of proposed land use in Shah Alam, capital of the State of Selangor, after the Selangor State Development Corporation.

highway (Fig. 7). It is already occupied by car assembly plants, textile works, plastics and chemical firms, electrical component manufacturers, and a wide range of other industrial concerns. A large commercial sector for the town will be just south of the major intersection on the Federal Highway. The main residential, administrative, and institutional areas will be north of the main highway. A variety of dwelling types will be close to State government buildings, the main town center, and parks and open space (Fig. 7). The first stages in the development of this area are underway. The rubber trees and other vegetation have been removed, and the land has been bulldozed and flattened.

IMPLICATIONS

The rapid growth of urban centers in the Klang Valley has generated a number of problems. Some are common to cities the world over, but others are more typical of cities in tropical or developing countries, or reflect specifically the local physical setting. Problems caused by the modification of natural systems

have been exacerbated by inadequate planning and construction. Imbalances between facilities actually provided, and those required to ensure an adequate standard of living, have created a much wider range of problems.

The implications of recent urban growth in the Klang Valley are often readily apparent, but difficult to verify quantitatively. There is a conspicuous lack of data even for those aspects of environmental quality which lend themselves to measurement. Although this lack may partly reflect a scarcity of resources, it is also probably a consequence of what has been, until recently, a rather indifferent attitude toward pollution and environmental quality in general.

Erosion and Flooding

Erosion and flooding increase, often dramatically, when areas under natural vegetation or agriculture are converted to urban use. The impact of urban development upon stream discharges and suspended sediment loads in temperate areas is relatively well documented, and hydrological models, essential for the design of appropriate structures, have been established

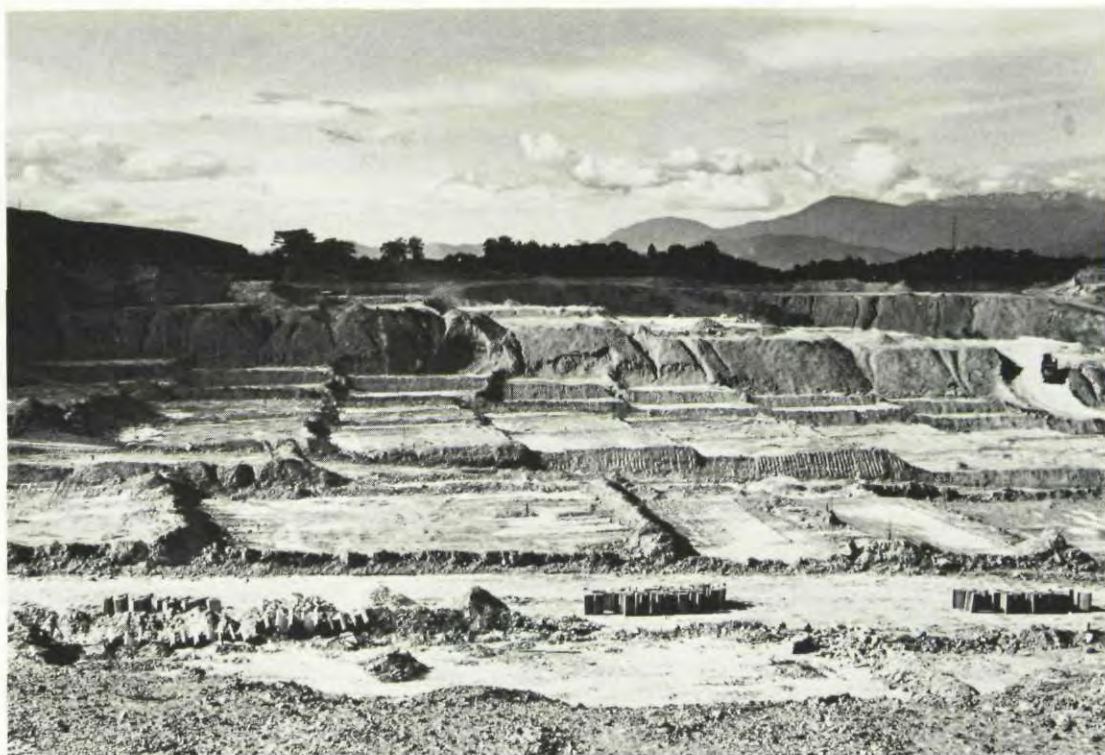


FIG. 8. Part of an extensive area cleared in preparation for urban residential construction at Bandar Raya, Kuala Lumpur. All vegetation has been removed, and several incipient gullies can be seen on the steep cuttings in the middle distance.

for many large urban complexes.³⁰ Comparable data for urban areas in the humid tropics are limited, but the effects of injudicious human activities probably will be more pronounced than in many temperate areas, given deeply weathered regoliths, high rainfall totals, and storms of high intensities.³¹

Agricultural land around Kuala Lumpur and Petaling Jaya, particularly land under rubber, is frequently allowed to deteriorate in anticipation of urban development.³² Small rills and gullies may form when terraces and cover crops

are not maintained. The efficiency of the drainage system is enhanced, and greater quantities of water and sediment reach the rivers after rain. More pronounced changes occur when development begins. It is common practice to remove all vegetation from large tracts of land before construction is commenced (Fig. 8). Erosion need not be serious if sites are prepared carefully and construction proceeds rapidly, but frequently large areas are cleared and left bare for long periods, sometimes exceeding a year. The soil is exposed to the full impact of the rain, and erosion can be severe, even on relatively gentle slopes. Gully formation is often pronounced on steep, deeply weathered slopes, and on unstabilized artificial slopes (Fig. 9), and slumping is not uncommon.³³

³⁰ D. G. Anderson, *Effects of Urban Development on Floods in Northern Virginia*, Water Supply Paper No. 2001-C (Washington, D.C.: United States Geological Survey, 1970); and M. G. Wolman, "A Cycle of Sedimentation and Erosion in Urban River Channels," *Geografiska Annaler*, Vol. 49A (1967), pp. 385-95.

³¹ J. G. Lockwood, "Probable Maximum 24-hour Precipitation over Malaya by Statistical Methods," *Meteorological Magazine*, Vol. 96 (1967), pp. 11-19.

³² I. Douglas, *The Environment Game* (Armidale, Australia: University of New England, 1972), pp. 1-23.

³³ Steep slopes on the deeply weathered schists and shales of the Kenny Hill Formation are particularly prone to slumping. Many houses have been affected by slumping in certain suburbs of Kuala Lumpur, but until early 1975 there was no legislation to regulate construction on steep slopes.

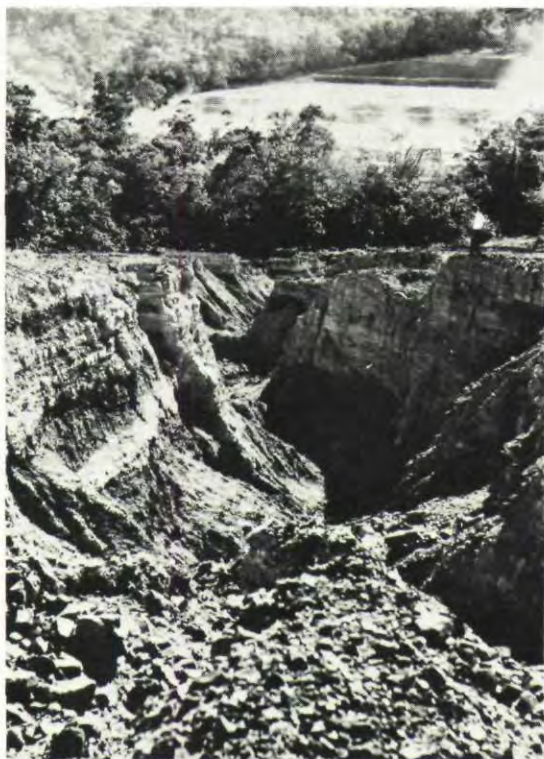


FIG. 9. A gully which has developed on a site cleared for residential construction at Pantai Hills, on the southwestern edge of Kuala Lumpur. The gully, which is more than twenty feet (6 m) deep, has cut through the regolith into the decomposed bedrock beneath.

High sediment loads have been recorded in streams draining areas undergoing development. A small stream draining a housing development area in Bungsar Heights (Kuala Lumpur) had a suspended sediment concentration of 80,000 parts per million at peak discharge following a storm of very high intensity, whereas a nearby tributary draining an area under rubber cultivation had low flow concentrations of less than ten parts per million.³⁴ Suspended sediment loads in the Sungei Renggam, a tributary of the lower Klang, similarly demonstrate the effects of land clearance.³⁵ Concentrations ranging from 1,500 to 3,000 parts per million were recorded over a nine-

month period in the upper reaches of the river, which drains rubber and oil palm estates, whereas samples collected within a development site had loads ranging from 2,000 to 4,500 parts per million. Increases in suspended sediment concentrations in the Sungei Renggam have been associated with an impoverishment of invertebrate fauna and algal flora.

Prior to the introduction of the Municipal and Town Boards (Amendment) Act in early 1975, there were few constraints upon land developers to ensure that erosion from construction sites was minimized, and that drainage ways which had become choked with sediment were cleared.³⁶ This Act requires developers to submit detailed plans to Government appointed bodies before site preparation and construction can commence. Specifications for earthwork designs are to be drafted as by-laws to accompany the amendment.

Runoff from tributary catchments steadily increases as more land is progressively developed for urban use. Runoff values of forty-nine to fifty-two percent have been recorded for four small forested catchments in the upper Langat Valley in Selangor, and runoff is only thirty-three percent of total rainfall in the forested upper Gombak catchment.³⁷ These figures compare with a runoff value of sixty-four percent for the catchment of the Damansara River, a tributary of the lower Klang, in which thirteen percent of the land area is devoted to urban use, and forty-four percent is under rubber cultivation.³⁸ The difference between these values probably underestimates runoff changes induced by development. The Damansara catchment is flat to undulating, whereas the forested catchments have steep slopes. No comparable values for fully urbanized catchments in the Klang Valley are available, but runoff presumably is much higher.

An increase in localized flooding in the Klang Valley can be directly attributed to ur-

³⁶ *Municipal and Town Boards (Amendment) Act*, Federal Act No. 65/1974 (Kuala Lumpur: Government Printer, 1974).

³⁷ K. S. Low and K. C. Goh, "The Water Balance of Five Catchments in Selangor, West Malaysia," *Journal of Tropical Geography*, Vol. 35 (1972), pp. 60-66; and J. B. Kenworthy, "Water and Nutrient Cycling in a Tropical Rain Forest," in J. R. Flenley, ed., *Transactions of the First Aberdeen-Hull Symposium on Malaysian Ecology* (Hull: Department of Geography, University of Hull, 1971), pp. 49-59.

³⁸ Low and Goh, op. cit., footnote 37.

³⁴ Douglas, op. cit., footnote 32, p. 9.

³⁵ S. C. Ho, "A Preliminary Study of the Ecology of a Polluted Stream, the Sungei Renggam," in E. Soepadmo and K. G. Singh, eds., *Proceedings of the Symposium on Biological Resources and National Development* (Kuala Lumpur: Malayan Nature Society, 1973), pp. 85-91.

ban development and to attendant increases in peak discharges. Higher flood peaks exceed the capacity of natural drainage channels and storm drain networks, particularly those which have become choked with sediment and debris. The storm drain network in some new suburban areas is inadequate to cope with storms of high intensity.³⁹

Major flooding in the Klang Valley has been exacerbated by a number of human activities. Excessive siltation caused by indiscriminate tin mining and increased runoff associated with agricultural development necessitated major flood control works on the Klang River in central Kuala Lumpur between 1928 and 1933.⁴⁰ These works proved effective until the late 1950s. Siltation from tin mining continues, but rapid urban expansion has probably been the most significant factor contributing to increased flooding during the past decade. The catastrophic flood of January, 1971, was of greater magnitude than the "Great Flood" of 1926, even though the total rainfall was less.⁴¹ The Government has recently approved a major flood control scheme for the Klang Valley. This scheme will include the construction of a new dam in the upper catchment, the widening and deepening of the Klang and Gombak rivers in Kuala Lumpur, and the improvement of storm drain systems within urban areas.⁴²

Water Pollution

If water pollution is defined as "anything causing or inducing objectionable conditions in any watercourse and affecting adversely any use, or uses, to which the water thereof may be put," the sediment-laden streams and rivers in the Klang Valley are polluted.⁴³ To many people, however, water pollution implies chemical contamination. The two main chemical pollutants in the Klang Valley are raw sewage and industrial effluents.

Certain watercourses in the Klang Valley were chemically polluted even before recent urban expansion. Water samples taken in 1958

and 1959 from the Gombak River in the northern suburbs of Kuala Lumpur showed moderate to severe organic pollution. Biochemical Oxygen Demand (B.O.D.) reached levels as high as 9.6 parts per million, and Dissolved Oxygen content (D.O.) values as low as 3.9 parts per million were recorded.⁴⁴ The upper Gombak, in contrast, consistently gave D.O. values exceeding 4.8 parts per million, and B.O.D. values of less than 1.3 parts per million. Samples taken within the urban area also had a high chloride and ammonia content. Untreated sewage and rubber factory effluent were the major pollutants.

The Klang Valley has little heavy industry of the type usually associated with water pollution, but there are many small industrial premises in Kuala Lumpur, and industry has expanded rapidly in other towns during the past decade. B.O.D. values for the Sungei Renggam, which flows through the Shah Alam industrial estate (Fig. 7), provide evidence of pollution by industrial effluents.⁴⁵ The river is chemically uncontaminated upstream of the industrial area, with B.O.D. values of less than two parts per million. B.O.D. values range from nine to fifteen parts per million within and downstream of the industrial area, where significant concentrations of orthophosphates, detergents, and copper and zinc are present. Pollution-tolerant flora and fauna have proliferated, and clean water species do not reappear downstream. Water pollution by industrial effluents also occurs in other parts of the urban area. In Petaling Jaya ninety percent of the factories discharge wastes directly into the Klang River system.⁴⁶ The Environmental Quality Act of 1974 contains clauses designed to limit water pollution by industry, but these cannot be effectively enforced until water quality standards are specified.⁴⁷

³⁹ H. C. Lee, "Stormwater Drainage of Housing Estates," *Journal, Technical Association of Malaysia*, Vol. 22 (1972), pp. 23-34.

⁴⁰ Drainage and Irrigation Department, *Manual* (Kuala Lumpur: Government Printer, 1959), p. ix.

⁴¹ Douglas, op. cit., footnote 32, p. 15.

⁴² *The Malay Mail*, October 7, 1974.

⁴³ L. Klein, *Aspects of Water Pollution* (London: Butterworths, 1957), p. 18.

⁴⁴ R. C. Norris and J. I. Charlton, *A Chemical and Biological Survey of the Sungei Gombak* (Kuala Lumpur: Government Printer, 1962). Water with a B.O.D. of less than five parts per million is relatively unpolluted, from five to ten parts per million doubtful, and above ten parts per million badly polluted. In relatively unpolluted waters the D.O. content will not fall below four parts per million; L. Klein, *River Pollution III. Control* (London: Butterworths, 1966), pp. 383-86.

⁴⁵ Ho, op. cit., footnote 35, pp. 88-89.

⁴⁶ *The Straits Times*, March 13, 1973.

⁴⁷ *Environmental Quality Act*, Federal Act No. 127/1974 (Kuala Lumpur: Government Printer, 1974).

Watercourses in the Klang Valley have not deteriorated into "open sewers," but sewage from many urban kampungs and squatter settlements is discharged directly into stream courses, or into latrine and cess pits close to watercourses. Only thirty percent of Kuala Lumpur has a sewage system.⁴⁸ Most houses in new estates have septic tanks, but these are not a satisfactory solution to the disposal of water-borne wastes.

Health Hazards

Heavily polluted watercourses are a health hazard. Water polluted by raw sewage can be a source of cholera infection, and it may attract rodents which can act as disease vectors. Although conditions are conducive to outbreaks of cholera, the disease is relatively uncommon in the Klang Valley.⁴⁹ The spread of mosquito-borne disease has been a more significant problem, and one partly associated with rapid urban growth.

The main diseases mosquitoes transmit in urban areas in the tropics are dengue fever and filariasis.⁵⁰ Rural people moving into the cities are particularly vulnerable. They may have developed resistance to diseases transmitted by mosquitoes in their home areas, but may have little resistance to urban variants. Filariasis is not a problem in the urban areas of the Klang Valley, but the conditions in some squatter settlements offer potential breeding sites for the vector, *Culex pipiens fatigans*.⁵¹ Favored larval habitats of this mosquito species are cess pits and organically polluted stagnant water.⁵²

Dengue fever is relatively common in Malaysia, but does not usually cause serious illness.

The more virulent form, dengue hemorrhagic fever (DHF), which is essentially an urban disease, can be more serious, with mortality rates as high as ten percent.⁵³ DHF has spread rapidly to other cities in Southeast Asia since the first verified outbreak in Manila in 1954. It was first reported in Kuala Lumpur in 1963.⁵⁴

The incidence of DHF appears to be directly related to an increase in the populations of the main vector, *Aedes aegypti*.⁵⁵ This mosquito is particularly adapted to densely populated areas. Its preferred larval habitat is standing water. Favored breeding sites in Malaysia include domestic ant-traps and household water storage containers.⁵⁶ In 1974 *Aedes aegypti* was breeding in sixty-eight percent of the houses in the Federal Territory.⁵⁷ Potential breeding sites are particularly common in squatter settlements, where water usually is available only at common standpipes, and storage in containers is necessary. Water which collects in industrial yards, or in refuse on vacant land, provides ideal larval habitats for *Aedes aegypti*.

Although DHF has been recorded in Peninsular Malaysia since the early 1960s, it was not recognized as a serious problem until 1973, when an outbreak occurred in part of the Federal Territory. Statistics for the years 1963 to 1972 do not differentiate between dengue fever and DHF, but a total of 114 cases were reported in Selangor during this period.⁵⁸ In 1973, 449 cases of DHF alone were recorded in Selangor; twenty were fatal. Eighty-five percent of the cases and sixty-five percent of the mortality

⁴⁸ *The Malay Mail*, April 26, 1974.

⁴⁹ R. Bhagwan Singh, "Review of Cholera in Malaysia (1900-1970)," *Medical Journal of Malaya*, Vol. 26 (1972), pp. 149-58. In 1974 only five cases of cholera occurred in the urban areas of the Klang Valley; Ministry of Health, Kuala Lumpur, personal communication.

⁵⁰ G. Surtees, "Urbanization and Epidemiology of Mosquito-borne Diseases," *Abstracts on Hygiene*, Vol. 46 (1971), pp. 121-34; N. G. Gratz, "Mosquito-borne Disease Problems in the Urbanization of Tropical Cities," *Critical Reviews in Environmental Control*, Vol. 3 (1973), pp. 455-95; and W. W. MacDonald, "*Aedes aegypti* in Malaya: I—Distribution and Dispersal," *Annals of Tropical Medical Parasitology*, Vol. 50 (1954), pp. 385-98.

⁵¹ Institute of Medical Research, Kuala Lumpur, personal communication.

⁵² Surtees, op. cit., footnote 50, p. 125; and Gratz, op. cit., footnote 50, pp. 462 and 472.

⁵³ A. Rudnick, "*Aedes aegypti* and Haemorrhagic Fever," *Bulletin of the World Health Organization*, Vol. 36 (1967), pp. 528-32.

⁵⁴ DHF was first recorded in Bangkok in 1958, Singapore in 1960, Penang in 1962, Calcutta in 1963, Sri Lanka in 1965, and Burma in 1970; Gratz, op. cit., footnote 50, pp. 479-80; and S. B. Halstead, "Mosquito-borne Haemorrhagic Fevers of South and Southeast Asia," *Bulletin of the World Health Organization*, Vol. 35 (1966), pp. 3-5.

⁵⁵ A. Rudnick, "Studies of the Ecology of Dengue in Malaysia: A Preliminary Report," *Journal of Medical Entomology*, Vol. 2 (1965), p. 207.

⁵⁶ W. H. Cheong, "Preferred *Aedes aegypti* Habitats in Urban Areas," *Bulletin of the World Health Organization*, Vol. 36 (1967), pp. 586-89.

⁵⁷ *The Straits Times*, April 8, 1974.

⁵⁸ Many mild cases of dengue fever would not have been reported to the Ministry of Health.

ties occurred within the urban areas of the Klang Valley.⁵⁹

Mosquito eradication within the Federal Territory is the responsibility of the City Health Department; other towns have a separate State eradication program. Although malaria is not a problem in the urban areas in the Klang Valley, constant surveillance is maintained, and dwellings are sprayed with D.D.T. if necessary.⁶⁰ The malaria eradication program is ineffective in controlling *Aedes* populations because the *Anopheles* and *Aedes* species have different life histories and larval habitats. Eradication of *Aedes aegypti* by systematic house-to-house spraying is not economically feasible, but local areas are sprayed with organophosphorus compounds when outbreaks of DHF occur.⁶¹ More effective control by elimination of potential breeding habitats will require increased public awareness and cooperation.⁶²

HOUSING

Squatters and Slums

One of the most serious consequences of rapid urbanization has been the growth of squatter settlements and the creation of slums.⁶³ Kuala Lumpur has a striking dualism between the modern commercial economy and the traditional bazaar economy.⁶⁴ This dualism is reflected in the contrasts between the living conditions of the poor in slums and squatter settlements, and the homes and property of the few wealthy elite. Squatters are primarily in Kuala Lumpur. Small numbers live in isolated areas of Petaling Jaya and Sungei Way-Subang, along the Federal Highway, and in Port Klang.⁶⁵ The location of squatters is influenced

by the availability of vacant land and a preference for sites close to places of employment.⁶⁶

The number of squatters in Kuala Lumpur has varied between fifty and twenty-five percent of the city's population.⁶⁷ The present number of squatters is between 150,000 and 180,000, which is between thirty-two and thirty-nine percent of Kuala Lumpur's population.⁶⁸ Squatters occupy about twenty-five percent of the total number of dwellings in Kuala Lumpur, and about 3,000 acres (1,330 ha), or thirteen percent of the municipal area.⁶⁹ The large squatter population is the result of high rates of natural increase, rapid rural-urban migration, the inability of the Government to provide squatters with land and adequate housing, and the absence of employment opportunities and hence low incomes.⁷⁰

The three major racial groups are represented. A survey has shown that 67.2 percent are Chinese, 20.4 percent Malays, 11.5 percent Indians, and 0.9 percent Pakistanis and others.⁷¹ Squatters are racially segregated. The Government has established a Community Relations Program to encourage multiracial harmony in the squatter areas.⁷² The majority of squatters are hawkers, petty traders, and industrial and unskilled workers.

Squatters in Kuala Lumpur have high rates of unemployment, poor diet, and limited access to medical facilities. Over fifty percent are unemployed; eighty percent have no electricity; seventy-five percent are without piped water; and thirty percent are without sewage facilities.⁷³ Squatter settlements have a high incidence of disease, death, malnutrition, juvenile delinquency and crime; they pose fire and

⁵⁹ Ministry of Health, Kuala Lumpur, personal communication.

⁶⁰ Institute of Medical Research, Kuala Lumpur, personal communication.

⁶¹ *The Straits Times*, May 31, 1974.

⁶² Halstead, op. cit., footnote 54, p. 13.

⁶³ Squatters are unauthorized residents on state or private land. Some may be relatively "affluent," "own" property, and rent to other squatters. Squatters may be rural or urban. Slum dwellers are legal residents or owners of property. Most of the slum dwellers in the Kuala Lumpur-Port Klang axis are urban. The physical, social, and economic conditions in slums and squatter settlements are often similar.

⁶⁴ McGee, op. cit., footnote 9, pp. 155-70, has discussed this situation with reference to Kuala Lumpur.

⁶⁵ Pryor, op. cit., footnote 3, p. 211, has mapped the distribution of squatter settlements in Kuala Lumpur.

They are along roads, railroads, river banks, on undeveloped land on the periphery, and on vacant land in the city.

⁶⁶ J. C. Jackson, "Urban Squatters in Southeast Asia," *Geography*, Vol. 59 (1974), pp. 24-30, has shown the importance of these locational factors in Kuala Lumpur.

⁶⁷ McGee, op. cit., footnote 9, pp. 146 and 157, quotes figures of approximately 140,000 and 100,000, or about fifty and twenty-five percent of the city's population for 1954 and 1961, respectively.

⁶⁸ *New Straits Times*, November 14, 1974.

⁶⁹ Ministry of Local Government and Housing, personal communication.

⁷⁰ M. K. Sen, personal communication.

⁷¹ Ministry of Local Government and Housing, personal communication.

⁷² *The Malay Mail*, December 22, 1974.

⁷³ Sen, op. cit., footnote 70.

health hazards, and are frequently subject to flooding.⁷⁴ Squatters have complained about rats, mosquitoes, lack of sewage facilities, and their inability to dispose of wastes.⁷⁵ Incomes for most are very low. The squatter problem is a symptom of national economic imbalances, the persistent dual economic system, and the inability of the Government to provide employment opportunities both in rural and in urban areas.⁷⁶ If these issues are not solved, the squatter problem will continue.

Slum dwellers constitute about ten percent of the city's population. Together with the squatter settlers some 250,000 people are living in sub-standard dwellings. Slum dwellers live in mostly prewar buildings in the older sections of Kuala Lumpur.⁷⁷ Densities are much higher than in the squatter areas, and work place and home are frequently combined. The incidence of communicable diseases such as tuberculosis appears higher in the slums than elsewhere in the city.⁷⁸ Slum dwellers have access to electricity, piped water in their homes, and other basic services, but they suffer from many of the same conditions as squatters, including high unemployment, low income, and low standards of living.

Low-Cost Housing

The Government plans to resettle squatters and slum dwellers in low-cost high-rise flats.⁷⁹ Priority will be given to squatters. Between 1953 and 1972 9,809 units were constructed in Kuala Lumpur. It is hoped that an additional 3,876 units will be completed by the end of 1975.⁸⁰ Construction does not keep pace with

current demands and needs. An estimated 5,800 dwelling units will be required annually for mostly low income groups.⁸¹ Current construction falls well below this target, in spite of an expenditure on Kuala Lumpur of almost seventy percent of Peninsular Malaysia's housing budget.⁸² Net densities in high-rise housing schemes range from 400 to 1,000 persons per acre. The schemes have been criticized as mere imitations of Western models, and because densities are not controlled by the Government.⁸³

Low-cost housing estates are provided with shopping facilities, a community center, places of worship, play areas, and sites for food stalls. Some are distant from places of work. Frequently they lack adequate open space and entertainment facilities. Some estates are poorly maintained. Elevators fail to work and are not repaired, garbage disposal is inadequate, and the appearance of the estates is allowed to deteriorate.⁸⁴ Many squatters are unable to pay even subsidized rents.⁸⁵ Chinese and Indians are better adapted to living in high-rise flats than Malays.⁸⁶ The Malays have traditionally placed great importance on land ownership and have until recently been predominantly rural dwellers.

Suburbs

The emerging conurbation has an acute shortage of low and middle income housing. A highly profitable market exists for a few developers who frequently do not provide new suburban areas with adequate services: arterial roads are poorly planned and engineered, are subject to flooding, and in some cases are poorly interconnected; open space and recreation facilities are absent or inadequately maintained; and vegetation which is needed for shade is frequently uprooted, only to be replaced when homes are occupied. In general there is little coordination between the planning of different subdivisions. This situation has led to mounting criticisms in the local press.⁸⁷ The

⁷⁴ Ministry of Local Government and Housing, personal communication.

⁷⁵ Emiel A. Wegelin, *Cost-Benefit Analysis of Resettling Squatters in Klang Valley Area, Kuala Lumpur* (Amsterdam: Economic Institute for the Building Society, n.d.).

⁷⁶ McGee, op. cit., footnote 9; and David Lim, *Economic Growth and Development in West Malaysia 1947-1970* (Kuala Lumpur: Oxford University Press, 1973).

⁷⁷ M. K. Sen, "Planning Strategy of Greater Kuala Lumpur A.D. 2000," *Majallah Akitek* (Malaysian Institute of Architects), Vol. 6 (1973), pp. 20-30.

⁷⁸ Syed Hussin Aljoofre, "Towards Environmental Planning," *Majallah Akitek* (Malaysian Institute of Architects), Vol. 6 (1973), pp. 30-34.

⁷⁹ *Second Malaysia Plan 1971-1975* (Kuala Lumpur: Government Printer, 1971), pp. 257-59; and *Mid-Term Review*, op. cit., footnote 3, p. 102.

⁸⁰ Sen, op. cit., footnote 70.

⁸¹ Sen, op. cit., footnote 77, p. 21.

⁸² *Second Malaysia Plan*, op. cit., footnote 79, p. 258.

⁸³ Syed Hussin Aljoofre, op. cit., footnote 78, p. 31.

⁸⁴ *New Straits Times*, December 8, 1974.

⁸⁵ Wegelin, op. cit., footnote 75, p. i.

⁸⁶ Lee Boon Thong, "Population Mobility Patterns: A Study of the Jalan Pekeliling Flats, Kuala Lumpur," *Ilmu Alam*, Vol. 2 (1973), pp. 25-34.

⁸⁷ *New Straits Times*, December 19, 1974; and *The Malay Mail*, April 25, 1975.



FIG. 10. Closely spaced terraced housing at Bungsar Baru, Kuala Lumpur. The houses have almost no front yards, and at the back open directly onto narrow lanes. The white scars on the hills in the distance are housing development areas in southeastern Kuala Lumpur.

new subdivisions clearly represent a maximization of profits for a handful of developers. Houses are crammed into every available space, frequently with no concern for site design and the possibilities offered by variations in topography (Fig. 10). A choice of housing, however, does not exist. The demand is great, the supply limited, the number of developers few, and the Government has not controlled the price of homes. The new suburban developments are the major contributor to the expansion of the conurbation.

VEHICULAR CONGESTION

Traffic congestion in the urban areas of the Klang Valley is a product of the rapid increase in the number of road vehicles.⁸⁸ Congestion is most pronounced in the older areas of Kuala Lumpur, which have narrow streets and inade-

quate parking facilities. The Federal Government has commissioned an Urban Transport and Planning Study to propose solutions to traffic problems, and to suggest methods of improving public transport and limiting the number of private vehicles within the city.⁸⁹

The expansion of Petaling Jaya and Sungei Way-Subang has been accompanied by a marked growth in the number of people commuting to and from Kuala Lumpur. Commuters are forced to depend on road transport, and traffic densities have increased, particularly along the Federal Highway, the major route linking Kuala Lumpur and the urban areas west of the city.⁹⁰ In eastern Petaling Jaya, five miles (8 km) from the center of Kuala Lumpur, the average daily flow of vehicles along the Federal Highway increased from approximately 67,000 in 1969 to 80,000 in 1972, and to more than

⁸⁸ Between 1965 and 1973 the number of vehicles registered in the State of Selangor more than doubled; Department of Road Transport, Kuala Lumpur, personal communication.

⁸⁹ *Mid-Term Review*, op. cit., footnote 3, p. 175.

⁹⁰ There is no alternative to private or commercial road transport. The Kuala Lumpur-Klang passenger rail service was discontinued in 1972, although there are plans to reintroduce it.

90,000 in early 1974.⁹¹ This route will probably become more congested with the development of Subang Jaya and Shah Alam, and the continued expansion of Klang and Port Klang. The Federal Highway is being widened to eight lanes between Kuala Lumpur and Petaling Jaya, and to six lanes between Petaling Jaya and Shah Alam.

POLICIES AND ALTERNATIVES

The expansion of Kuala Lumpur has been guided by a master plan which the Malaysian Institute of Planners has criticized as having "no objectives, goals or principles."⁹² It now covers only part of the city as a result of boundary changes, and the Federal Government has commissioned a new plan.⁹³ The growth of the new urban centers, and the expansion of Klang, have been planned by the Selangor State Development Corporation. The planning of these new towns has been influenced by Western, and in particular British, planning practice. The plans incorporate rigid land use and zoning regulations. They have minimal provisions for low-cost housing, but help to meet a pressing demand for middle class suburban housing. The growth of employment opportunities in government, industry, and commerce in the Klang Valley has created an affluent middle class.

Migration to the Klang Valley conurbation from rural areas will probably persist into the foreseeable future.⁹⁴ Many migrants will be poor and unskilled, and they will aggravate the already high rate of unemployment in Kuala Lumpur.⁹⁵ New migrants, and high rates of natural increase, will place mounting demands on an already saturated housing market. These problems, combined with low incomes, will perpetuate slums and squatter settlements.⁹⁶ It

will be possible to rehouse only a small fraction of the urban poor in low-cost housing schemes.⁹⁷ Resettlement and upgrading the quality of existing squatter settlements should be combined with the creation of new job opportunities and the raising of living standards both in rural and in urban areas.⁹⁸

For many years slums and squatter settlements will be more or less permanent. It will therefore be more effective to provide these areas with basic urban services rather than to try to rehouse all the urban poor. Priority should be given to the control and eradication of disease, the provision of piped water, and the installation of adequate sewage systems. Other advantages are to be derived from upgrading at least some squatter settlements: the poor need not be moved from areas to which they may have considerable personal and social attachment; squatters are often close to places of employment and have low transportation costs; rents are low or nonexistent, and squatters are not burdened with the cost of city services; financial resources might be channeled from low-cost housing schemes into modernization; some squatters are capable of helping themselves and of improving the quality of their settlements; self-help programs may incorporate a mixture of traditional and modern values in the city and promote racial and cultural distinctiveness; and political benefits might be gained from enlisting the poor in grass roots decision making.⁹⁹ The squatter can often keep a few chickens, and grow fruit and vegetables to supplement his income; and the squatter settlements offer some opportunity for petty trading and hawking.

Many of these advantages do not exist in high-rise flats. Resettlement is often socially disruptive, often increases transportation costs, rents are higher, and urban services must be

⁹¹ *The Sunday Mail*, April 7, 1974.

⁹² *The Malay Mail*, May 15, 1974.

⁹³ *New Straits Times*, November 20, 1974.

⁹⁴ The Government probably will not discourage rural-urban migration. The Prime Minister noted that it is neither necessary nor practical to prevent migration "because we are in the process of restructuring society;" *The Straits Times*, July 19, 1973.

⁹⁵ *Mid-Term Review*, op. cit., footnote 3, p. 32; and Lim, op. cit., footnote 76, pp. 71-79.

⁹⁶ On income distribution see Lin Lean Lim, *Some Aspects of Income Differentials in West Malaysia*, Monograph Series on Malaysian Economic Affairs (Kuala Lumpur: Faculty of Economics and Administration, University of Malaya, 1971); and *Mid-Term Review*, op. cit., footnote 3, pp. 2-5.

⁹⁷ Sen, op. cit., footnote 77, p. 21, noted that "the population of Kuala Lumpur is increasing at a faster rate than provision can be made for them in the shape of land, accommodation, employment and community services."

⁹⁸ *Mid-Term Review*, op. cit., footnote 3, pp. 1-21, outlined the Government's "New Economic Policy," which has as its major objective the promotion of national unity. This unity is to be achieved by raising income levels and increasing employment opportunities both in rural and in urban areas.

⁹⁹ Sen, op. cit., footnote 70, noted roads, drains, bridges, new houses, and other facilities constructed by squatters in self-help community organizations.

paid for. Excessive financial burdens are placed on the unemployed and those with very low incomes.¹⁰⁰ Burdens are also placed on the Government, because land in sufficient quantities is often difficult to assemble. The Government has declared that squatter settlements are unsightly and that they tarnish the image of the capital city both at home and abroad.¹⁰¹

Malaysian planners have stressed the need for coordinated development in the Klang Valley, and a master plan (the Klang Valley Report) has been prepared for the Government.¹⁰² The Report includes plans for projected urban growth up to 1990, and suggests lines of expansion after that date (Fig. 1). It proposes the expansion of Rawang into a small town center and the establishment of a new town of 80,000 people, Bandar Langat, south of Kuala Lumpur, in addition to planned growth along the Kuala Lumpur-Port Klang axis. The Federal and State Governments have

not yet accepted the Report, and it has not been released.

CONCLUSIONS

Rural-urban migration and natural population increases have resulted in rapid urbanization in the Klang Valley. Expansion will continue, and by 1990 a conurbation will have emerged between Kuala Lumpur and Port Klang. A projected population of two million people may well be exceeded. Many problems have resulted from rapid urban growth, but Government action will probably alleviate some of them. A major flood control scheme is to be implemented in the Klang Valley, and there are plans to improve urban drainage. The potential dangers of dengue hemorrhagic fever have been recognized, and it is hoped that they will be contained. Many problems persist with no immediate solutions in sight. Water pollution and traffic congestion are becoming more acute. Large numbers of people continue to reside in substandard dwellings in slums and squatter settlements. The housing problem is a symptom of national and regional economic imbalances. *Inadequate official policies* have aggravated some problems.

¹⁰⁰ Wegelin, op. cit., footnote 75, p. i; and Jackson, op. cit., footnote 66, p. 29.

¹⁰¹ Ministry of Local Government and Housing, personal communication; and McGee, op. cit., footnote 9, p. 169, with reference to Kuala Lumpur.

¹⁰² Sen, op. cit., footnote 77, pp. 20-30; and Syed Hussin Aljoofre, op. cit., footnote 78, p. 33.

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