



The Aga Khan Program for Islamic Architecture

at Harvard University and the
Massachusetts Institute of Technology

*Room 10-390, M.I.T.
Cambridge, Massachusetts 02139*

*Telephone: (617) 253-1400
Telex: 921473 Cable: MITCAM*

SINGAPORE, National Context and Project Summary Paper

By Felix de Amesti and Wayne Barwise

Prepared for

The Aga Khan Program for Islamic Architecture

SINGAPORE

Primary Information

| | |
|--------------------|--|
| Country: | Republic of Singapore |
| Capital: | Singapore |
| Population: | 2.41 million (1980) |
| Growth Rate: | 1.2% |
| Density: | 3,900 persons per square kilometer |
| Urban: | 100% |
| Area: | 618 square kilometers |
| Geography: | An island nation 125 kilometers north of the equator. The main island is connected to Malaysia by a causeway, and contains most of the developed land and the country's entire urban area. |
| Climate: | Uniformly hot and humid year-round. Average temperature is 29°C. Rainfall averages 220 cm. annually. Northeast monsoon occurs between November and March, occasionally resulting in serious flooding, and southeast monsoon between May and September. |
| Languages: | Four official languages: English Chinese Malay Tamil |
| Religion: | Buddhist, Taoist, Muslim, Hindu |
| Currency: | Singapore dollar (S\$). S\$ 2.19 = US\$ 1.00 |
| Per Capita Income: | US\$ 4,189 (1981) |
| Production: | Industry 48% Services 51% Agriculture 0.5% |

SINGAPORE

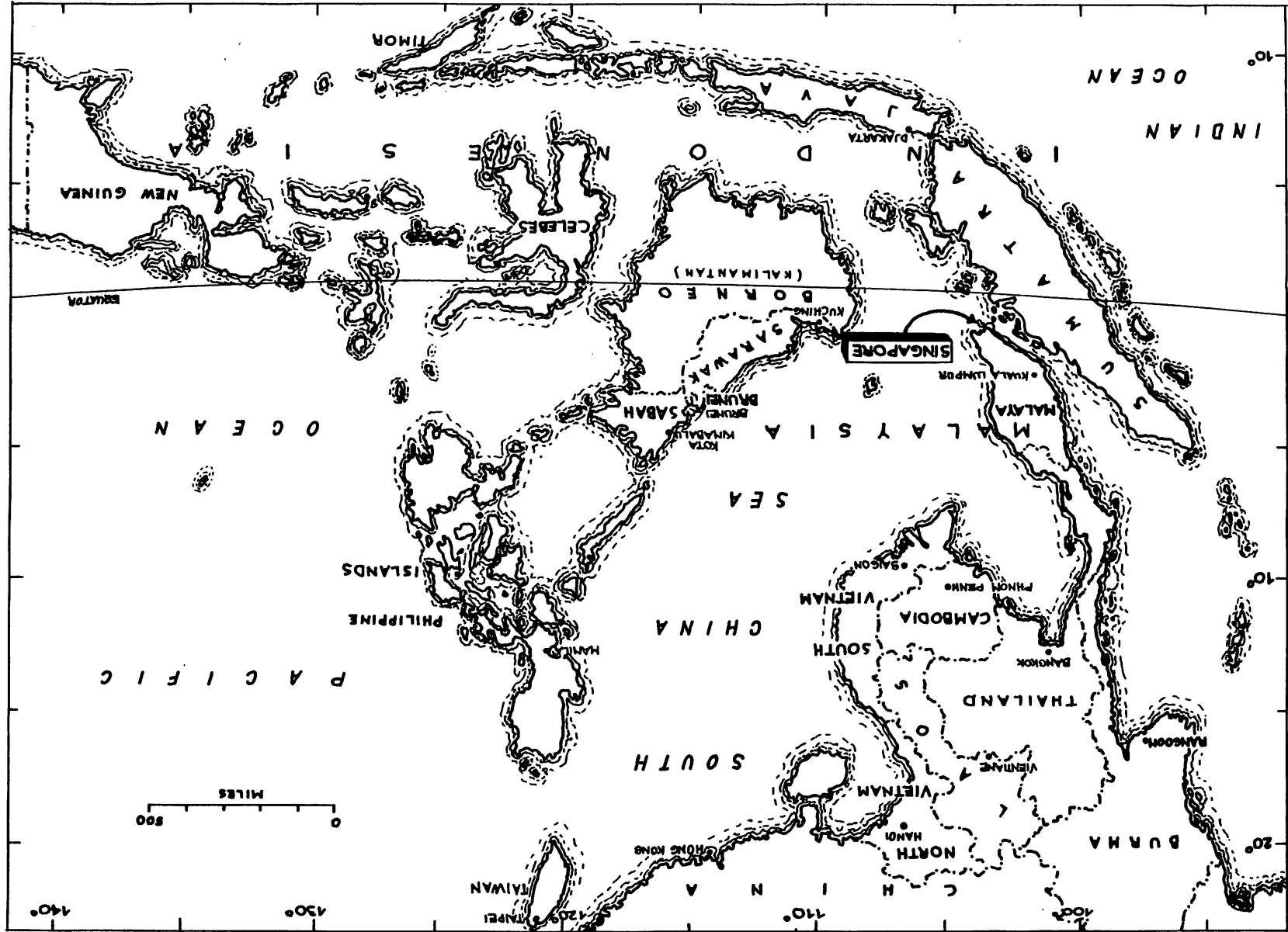
National Context

The Republic of Singapore, an island nation of 618 square kilometers, lies 125 kilometers north of the equator and at the southern extremity of the Malay Peninsula. It encompasses numerous small islands and islets, but the major part of the nation is concentrated on Singapore Island, a diamond-shaped land mass roughly 40 kilometers long, connected to Malaysia by a causeway. Singapore Island occupies approximately 540 square kilometers of land, and contains the country's entire urban area as well as most of the developed land. For all practical purposes, it can be viewed as one urban complex. The islands are mostly flat, but there is a slightly hilly area in the center of the main island which rises to 177 meters above sea level.

Singapore has a uniformly hot and humid climate throughout the year. The average temperature is 29°C, generally varying only a few degrees either way. Rainfall averages 220 cm. annually, and roughly half of the days each year are rainy. A northeast monsoon occurs annually between November and March, and a southwest monsoon occurs sometime between May and September. The combination of high tides and heavy rains during the northeast monsoon occasionally results in serious flooding, and as a consequence flood control projects have been completed or are planned in the affected areas.

HISTORY

Singapore came into existence in 1819, when Great Britain acquired control of the island. The founder, Sir Stamford Raffles, set the basis for Singapore's trading economy, which benefitted from the island's advantageous location, a factor which plays an important role to this day. Trading relations were established with the surrounding islands of Java, Sumatra, and the Celebes, as well as other areas under Dutch control. A policy of free trade permitted goods in bulk to be unloaded free of duties, and small consignments to be exported free of tax. Singapore's early growth responded to the development of the surrounding areas, especially



LOCATION IN SOUTHEAST ASIA

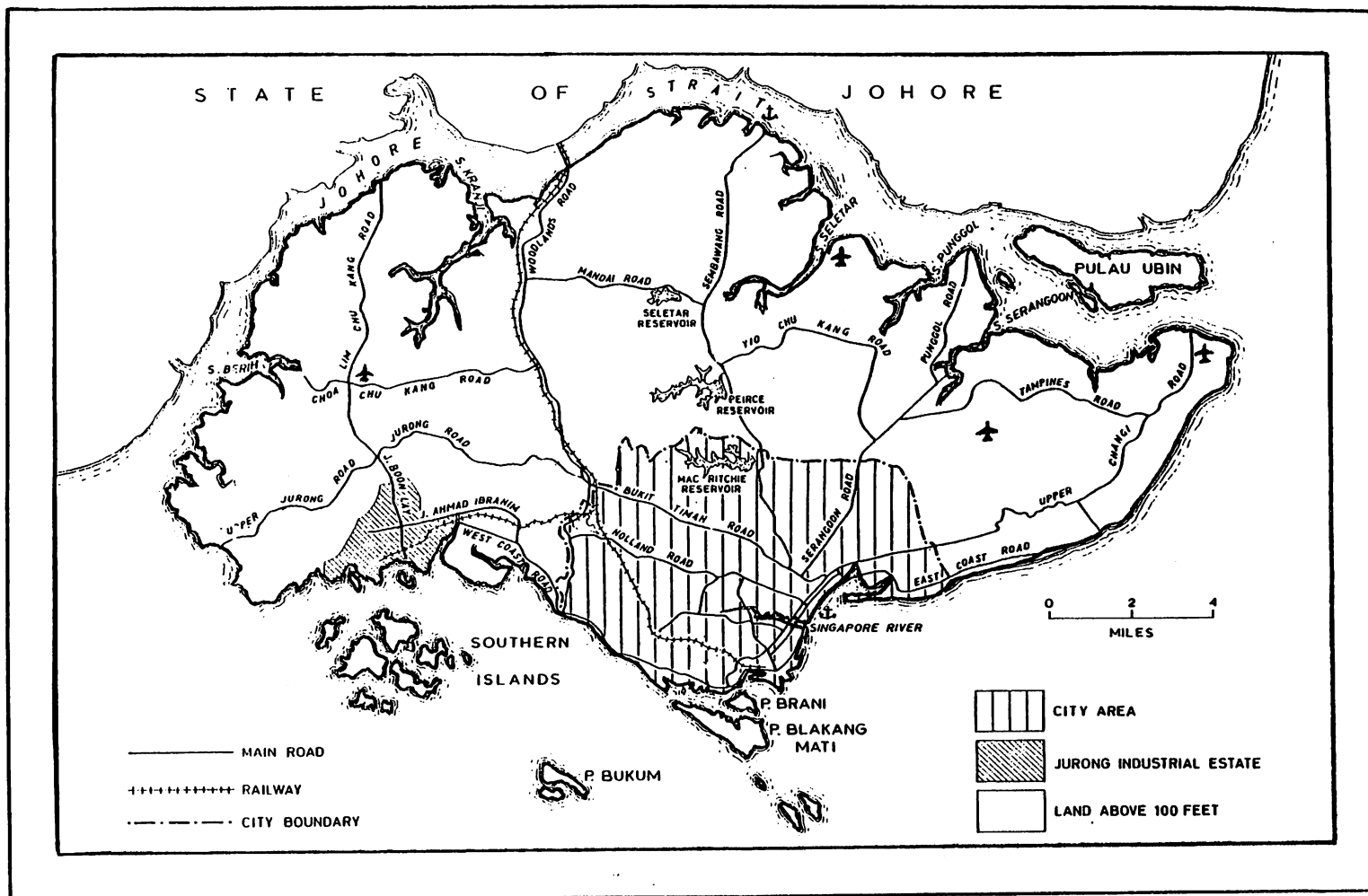
Indonesia. In the early twentieth century, its growth was largely attributable to a flourishing tin and rubber industry based on raw materials imported from the Malay Peninsula.

Town planning in Singapore goes back to the early 1800s, when the town's hills were leveled, lowlands were filled, new roads were laid out, and people were resettled into new residential districts, in houses with uniform facades and special monsoon drains. During the nineteenth century, the city continued to expand, with a burst of growth following the opening of the Suez Canal in 1869. Trade and commerce burgeoned, sailing ships were replaced by steamships, and Singapore became an important coaling station as well as a trading center. It was the gateway for eastern trade, as its deep harbor could accommodate large ocean freighters from Europe and America. Injections of British and foreign capital plus British and immigrant (mainly Chinese) enterprise and skills also contributed to its vigorous economy.

By the turn of the century, Singapore was the seventh-largest port in the world, and its population was growing rapidly. In 1907 the town population was 250,000--crowded into 20,000 buildings under deplorable conditions. By 1923 most of the island was occupied, and by 1930 Singapore had one of the largest trolley bus systems in the world. The population continued to grow, soon passing half a million, but the building stock lagged far behind, with only 37,000 buildings.

In the 1930s, when the worldwide depression crippled Singapore's economic growth, immigration (especially from China) was drastically curtailed by the government. During this period British development of military and naval bases on the island played an important role in keeping the economy intact. The single largest industry on the island, they were still being developed as late as the 1960s.

After World War II, the British introduced a democratic government, and in 1946 Singapore became a Crown Colony. The ravages of the war had destroyed many buildings, and in the aftermath people built dwellings for themselves without water or sanitary facilities. Large squatter settlements developed in peripheral areas. By 1947 the population had risen to 938,000, of which 700,000 lived in 38,500 buildings--creating spot densities of 2,500 persons per hectare. Attempts by the government to alleviate the shortage contributed only 23,000 units between 1927 and 1958.



THE REPUBLIC OF SINGAPORE

Internal self-government was established in 1959 and the city started to recover: the port and trading facilities were reactivated; satellite towns and new industrial estates were developed; the Singapore Housing and Development Board was created; and a massive public housing program was initiated. In 1963 Singapore became a semi-autonomous state of Malaysia, and in 1965 it became an independent republic. Although still an integral part of Southeast Asia, Singapore today has a strong national identity and is a modern, highly-urbanized city-state with characteristics quite distinct from the rest of Southeast Asia.

Singapore is serviced by two major airfields, four seaports, a railroad to Malaysia, and 2,180 kilometers of roadway (of which 80 percent are paved). It has complete international telecommunications services and domestic facilities for broadcasting in four languages.

DEMOGRAPHY

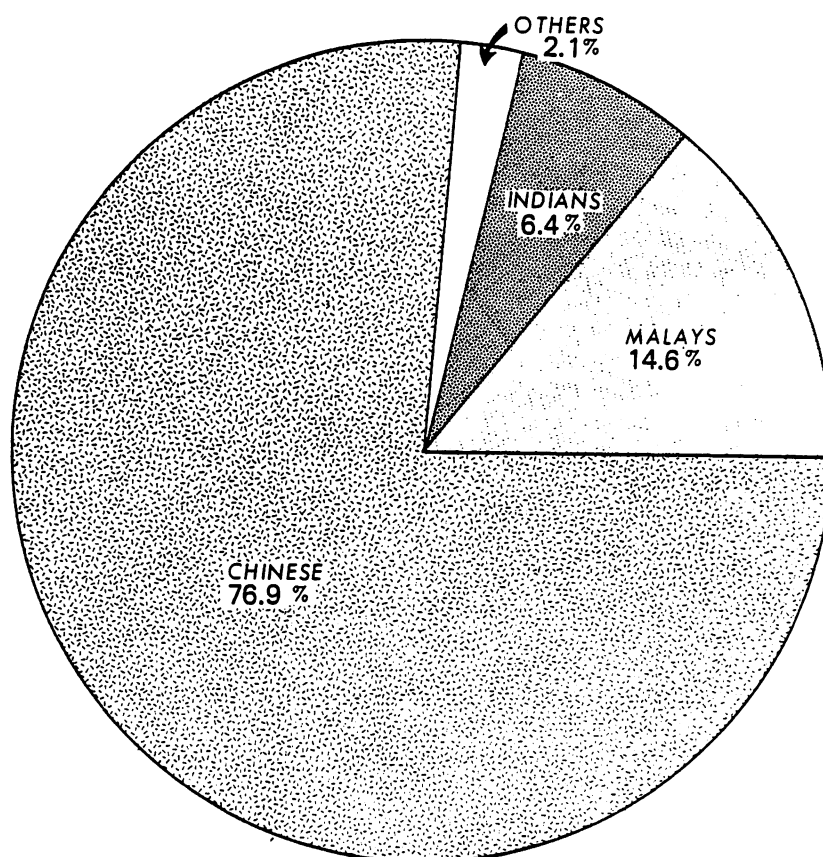
The 1980 census reported a population of 2.4 million, a 16.5 percent increase over the 1970 population; the estimate for 1992 is 3.4 million. Despite a density of 3,900 per square kilometer there is no rural or urban overcrowding. In 1980 there were 509,500 private households, of which 78 percent were of the single family nuclear type. The average household size decreased from 5.6 persons in 1970 to 4.7 in 1980.

Prior to World War II, less than half the population was born in Singapore. As of 1980 nearly 80 percent of the population was born in Singapore; the remainder were mostly from Malaysia, reflecting the close ties between the two nations. Overall ethnic composition in 1980 was 76.9 percent Chinese, 14.6 percent Malay, 6.4 percent Indian, and 2.1 percent others. The Chinese are mostly Buddhist and Taoist, and the Indians Muslim and Hindu.

There are four official languages: Malay, Chinese (Mandarin), Tamil, and English. English is the principal language of business, government, and education.

Education: A non-compulsory system provides free primary school education. Four "streams" of instruction in the four official languages are available; English is the most popular. Literacy was 84 percent in 1980, and 37 percent of the population is literate in more than one language.

ETHNIC GROUPS 1980



POPULATION BY SELECTED CHARACTERISTICS, 1980 AND 1970

| | 1980 | | 1970 | |
|-----------------------------------|-----------|-------|-----------|-------|
| | Number | % | Number | % |
| Age | | | | |
| Total | 2,413,945 | 100.0 | 2,074,507 | 100.0 |
| Less than 15 years | 653,123 | 27.1 | 804,836 | 38.8 |
| 15 to 59 years | 1,587,190 | 65.7 | 1,151,384 | 55.5 |
| 60 years and over | 173,632 | 7.2 | 118,287 | 5.7 |
| Literacy | | | | |
| Total Aged 10 years and over | 1,996,378 | 100.0 | 1,558,518 | 100.0 |
| Literate | 1,676,408 | 84.0 | 1,125,524 | 72.2 |
| In one official language only | 1,039,344 | 52.1 | 904,422 | 58.0 |
| In two or more official languages | 628,789 | 31.5 | 214,751 | 13.8 |
| Not Literate | 319,970 | 16.0 | 432,994 | 27.8 |

Female literacy has increased dramatically--by 63 percent--in the last decade. The rapid development of education over the last 20 years has produced a generation of teenagers and young adults considerably better educated than persons in older age groups.

Health: Infectious and parasitic diseases have been greatly reduced by improved medical facilities since 1950. The infant mortality rate in 1980 was 8.6, and there is no gross malnutrition or dietary deficiencies. Cancer and circulatory diseases have become the most frequent causes of premature death. Life expectancy in 1979 was 72 years for males, and 78 years for females.

URBAN ADMINISTRATION AND GOVERNMENT

The Republic of Singapore has a city-state government structure which manages all economic and urban growth, and has jurisdiction over shelter and services, as well as all other responsibilities normally provided in other nations by various levels of government. The system is based on the British form of parliamentary government, in which cabinet members are drawn from the dominant political party in the legislature. The present administration, under Prime Minister Lee Kuan Yew and the People's Action Party, has been in power since 1959. The government's programs and policies have generally been implemented successfully and smoothly, with minimal political opposition.

The government is divided into legislative, judicial, and executive branches; the executive includes the various government ministries and major statutory bodies such as the Public Utilities Board and the Housing and Development Board (HDB).

Housing and Development Board: In 1960 the government established the HDB as a statutory board under the Ministry of National Development. Singapore's housing program is seen as an integral part of the national development policy. The HDB is responsible for planning, implementing, and managing public housing estates and urban renewal programs. Since its inception, it has significantly altered the country's settlement patterns: through its housing and development policies it has produced 350,000 housing units and has provided decent and affordable accommodations to over 70

percent of Singapore's total population--an impressive achievement.

HDB does not confine itself to providing housing. Its activities include new town planning; design and construction of offices, shops, industrial buildings, sports facilities, parks, and community facilities; the production of basic buildings materials; and land reclamation. It has powers to construct, to redevelop, to clear slums and resettle people. In 1980-81, Housing and Development Board undertakings accounted for five percent of Singapore's GDP--or US\$ 484 million--with 81 percent for buildings, 14 percent for land, and five percent for resettlement.

ECONOMY

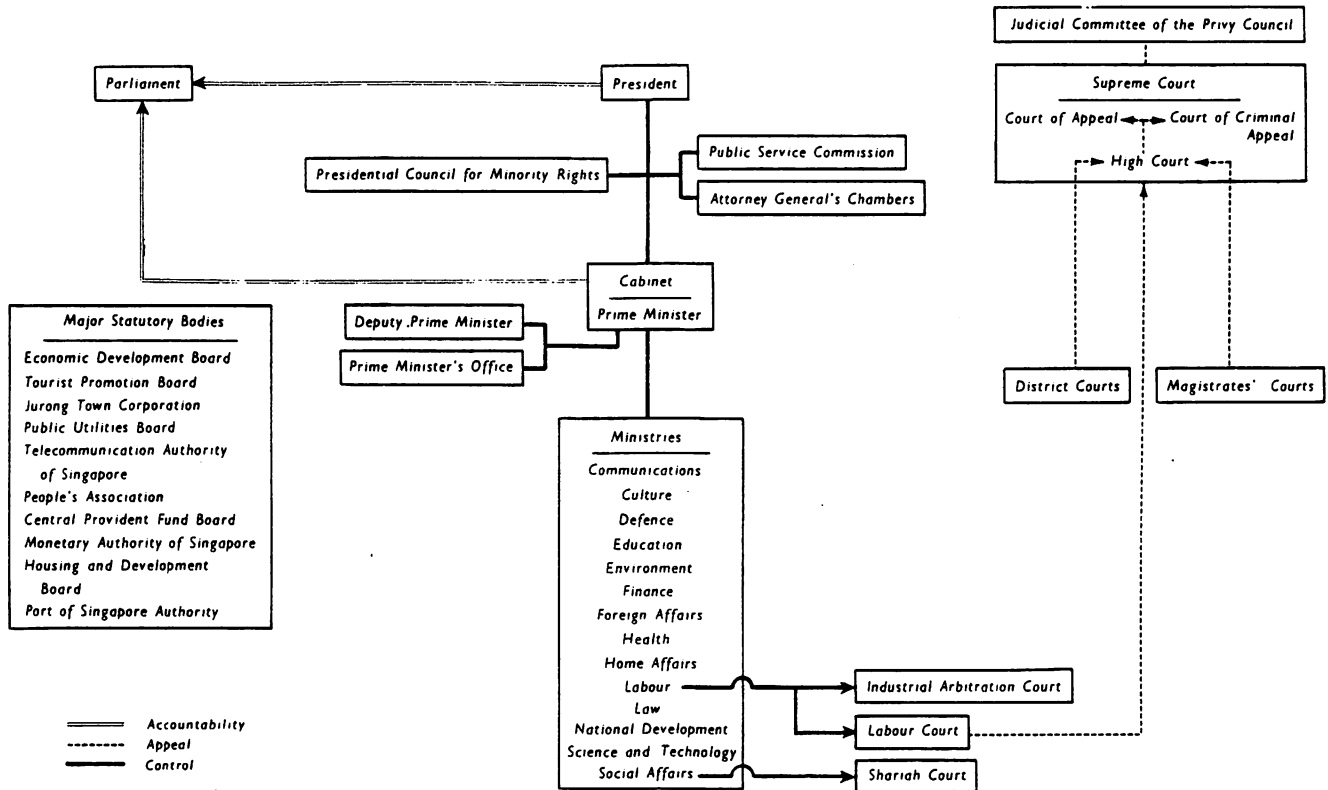
Today Singapore is a modern trading and industrial country, and a major regional economic center. Its principal trading partners are the United States, Malaysia, and Japan. Total external trade in 1979 was US\$ 31,600 million from imports and exports. This represents an increase by a factor of nine between 1960 and 1979. Because of its small size, Singapore is in effect a port with no hinterland, and apart from its geographic location the country has no natural resource of any significance.

Singapore imports nearly all that it consumes--even water supplies must be supplemented from the Malaysian mainland. Consequently, the economy is highly vulnerable to international trends and events. The national policy has been to industrialize the country, encouraging both foreign and local private investment in industry, and to promote tourism.

Singapore has relied successfully on both national savings and foreign capital to finance its growth over the last two decades. National savings are generated by a combination of prudent budgetary and financial policies supplemented by a compulsory personal savings plan. The gross domestic product grew by an average of 13 percent annually between 1966 and 1973; growth dropped to four percent in 1973, rose to six percent in 1975, and is now at eight percent.

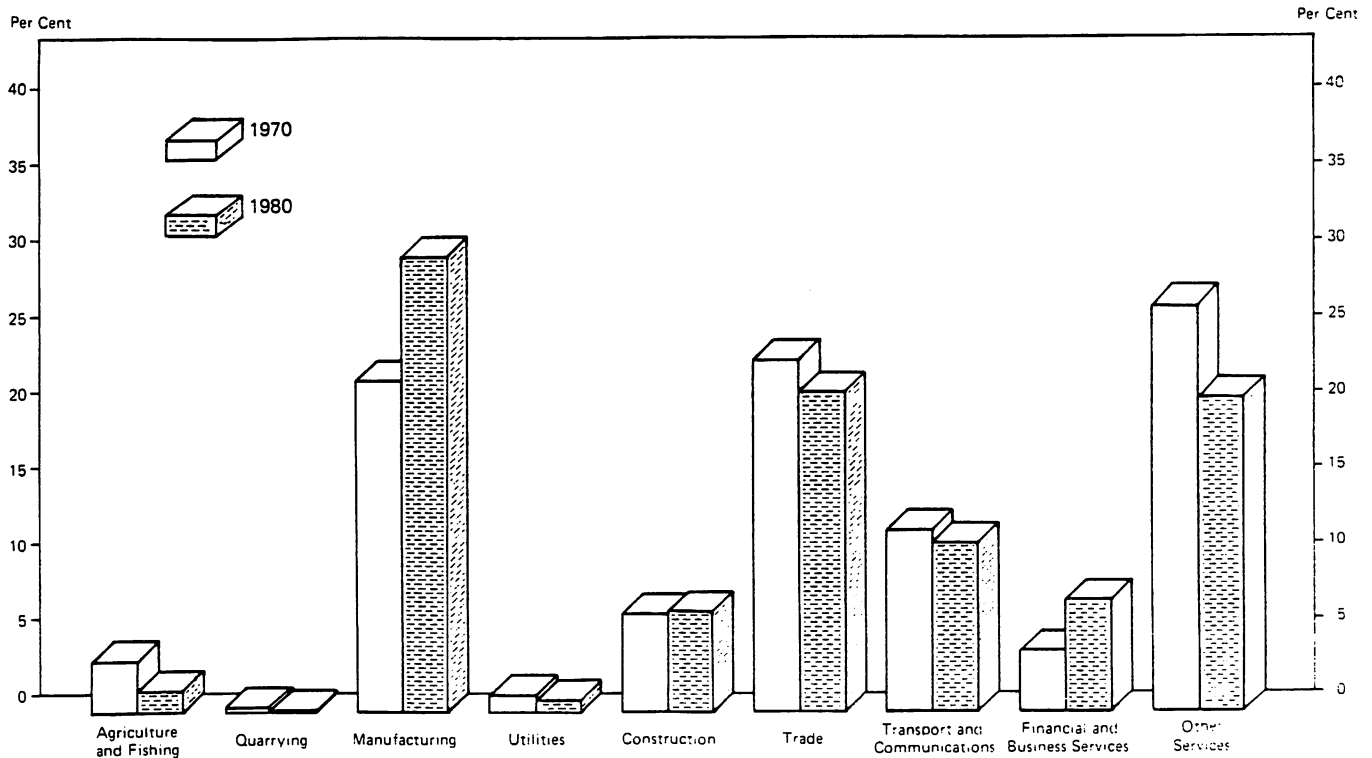
Singapore has the highest per capita income in Southeast Asia (US\$ 2,376 in 1974); in all of Asia it is second only to Japan. The major contributing factors which account for its flourishing economy are: the competitiveness of its export products in world markets; its ability to attract overseas investment; the allocation of resources to productive activities and infrastructure; and the development of a highly sophisticated

FORMAL STRUCTURE OF THE GOVERNMENTAL SYSTEM



1976

WORKING PERSONS AGED 10 YEARS AND OVER BY INDUSTRY, 1970 AND 1980



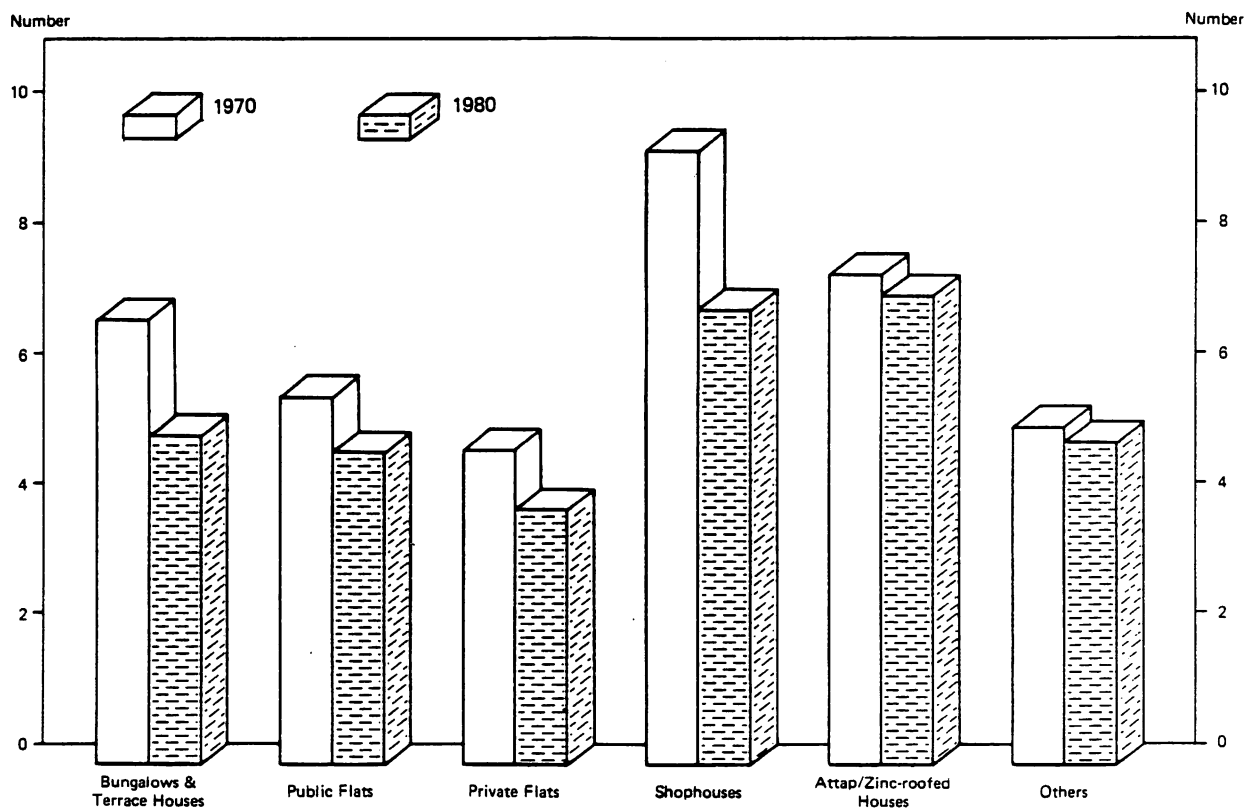
Average Household Income by Flat — Type and Years

| Years | 1-room | 2-room | 3-room | 4-room | 5-room | Weighted Average |
|-------|--------|--------|--------|--------|--------|------------------|
| | \$ | \$ | \$ | \$ | \$ | \$ |
| 1968 | 180 | 294 | 447 | | 677 | 318 |
| 1973 | 267 | 400 | 605 | | 900 | 445 |
| 1977 | 398 | 617 | 795 | 1,043 | 1,485 | 681 |
| 1981 | 623 | 842 | 1,113 | 1,522 | 2,168 | 1,111 |

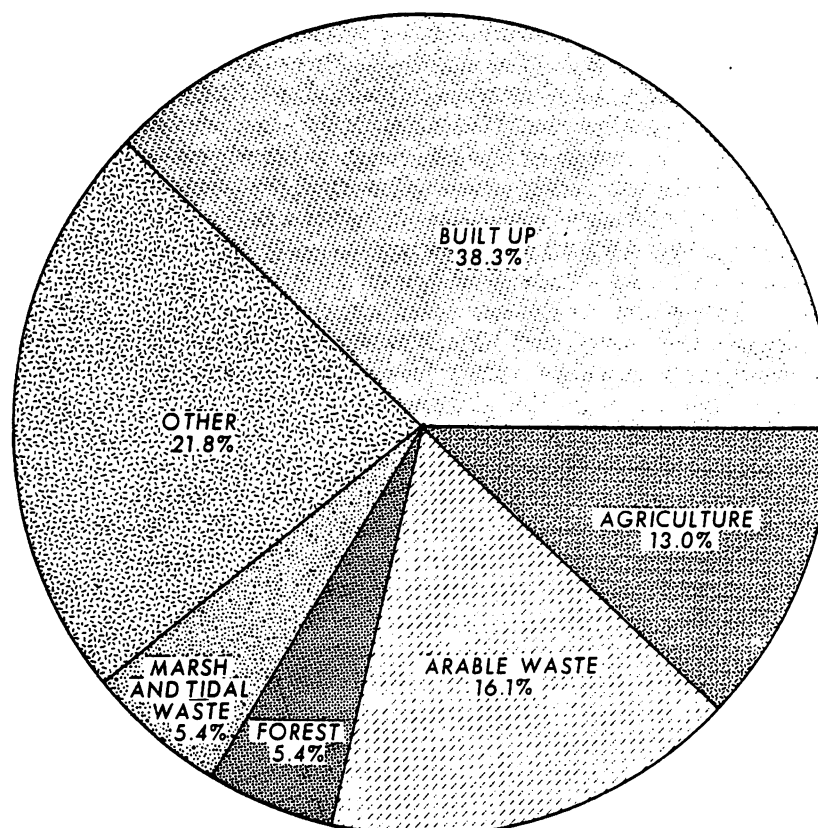
Average Household Size (Persons) by Type of Flat

| Year | 1-room | 2-room | 3-room | 4-room | 5-room | Weighted Average |
|------|--------|--------|--------|--------|--------|------------------|
| 1968 | 5.0 | 6.2 | 7.2 | 8.2 | — | 6.2 |
| 1973 | 4.7 | 5.9 | 6.3 | | 7.1 | 5.7 |
| 1977 | 4.3 | 5.4 | 5.7 | 5.9 | 4.8 | 5.2 |
| 1981 | 3.9 | 4.7 | 5.1 | 5.4 | 4.8 | 4.8 |

AVERAGE NUMBER OF PERSONS PER HOUSE BY TYPE OF HOUSE, 1970 AND 1980



LAND USE 1975



Source: Based on information from *Yearbook of Statistics: Singapore 1975-76*, Singapore, 1976, p. 8.

Census Houses by Type of House, 1970 and 1980

| Type of House | 1980 | | 1970 | | Changes 1970-1980 | |
|----------------------------|---------|----------|---------|----------|-------------------|----------|
| | Number | Per Cent | Number | Per Cent | Number | Per Cent |
| Total | 467,142 | 100.0 | 305,833 | 100.0 | 161,309 | 52.7 |
| Bungalows & Terrace Houses | 43,538 | 9.3 | 39,676 | 13.0 | 3,862 | 9.7 |
| Public Flats | 337,198 | 72.2 | 120,138 | 39.3 | 217,060 | 180.7 |
| Private Flats | 16,321 | 3.5 | 10,008 | 3.3 | 6,313 | 63.1 |
| Shophouses | 13,453 | 2.9 | 19,806 | 6.5 | -6,353 | -32.1 |
| Attap & Zinc-roofed Houses | 50,313 | 10.8 | 104,188 | 34.0 | -53,875 | -51.7 |
| Others | 6,319 | 1.3 | 12,017 | 3.9 | -5,698 | -47.4 |

financial sector. The establishment of the Asian Dollar Market and the upgrading of local financial expertise have also contributed to its economic growth.

The leading sectors in industry are petroleum refining (third-largest capacity in the world), electronics and electrical machinery, shipbuilding and ship repair, rubber processing, and light manufacturing (textiles and timber). Over the last decade, there has been a shift away from agriculture, fishing, trade, transportation, communication, utility, and services into manufacturing, finance, and business services. Manufacturing is the dominant industry, employing over 30 percent of the total work force of 1.1 million (1980). Community services and trade employed 21 percent, personal services 21 percent, transport and communication 11 percent, business services seven percent, and construction seven percent. Agriculture and utilities absorbed the remaining 2.5 percent of the work force.

In 1980, 56 percent of the population aged 10 years and over were economically active, as opposed to 45 percent in 1970. The female labor force has grown significantly in the last decade; today, two out of every five women are in the labor force--a 100 percent increase since 1970. Though household size has decreased, the proportion of households with more than one working person increased from 41 percent in 1970 to 55 percent in 1980. In 1970 only 30 percent of households owned their homes; in 1980 55 percent did.

Unemployment was for a time a serious problem as industries became more capital-intensive, but it has now dropped from 10 percent in 1965 to 3.5 percent in 1980. After the British army--a major employer of Singapore labor--departed in the late 1960s, the military budget was increased to an average of 25 percent of the national budget.

URBANIZATION AND HOUSING

The entire island functions as a single urban network. The island is so compact and densely settled that notions of urban, suburban, and rural populations lose their conventional meanings. As people move from the central city, previously suburban or even rural areas become urbanized.

The island master plan, formulated in 1955 and extended with revisions to 1972, originally called for a green belt around the central city, decongestion of the city by one-sixth, and construction of three new towns; it

has since been superseded by a more flexible planning strategy, but it served to establish planning direction and help control private investment. A period of haphazard growth had created vast dilapidated slums, squatter settlements, and inadequate housing. By 1959, there were more than half a million slum dwellers and squatters, and a pattern of fragmented and irregular land ownership added even further to the city's housing problems.

The 1955 master plan was supplemented by the Planning Ordinance of 1959 which prohibited anyone from developing or subdividing land without official permission, and by the Land Acquisition Act of 1966 which empowered the state to acquire land for "any residential, commercial, or industrial purposes." Today, the government owns 70 percent of the land on the island and is legally empowered to acquire other land at 1973 prices.

Public Housing: Housing has been a central element of the national development policy since 1960. The Housing and Development Board has powers of policy formation and implementation. Under the housing development plan launched in the 1960s, 35 percent of the population had been relocated by 1970, 50 percent by 1975, and 70 percent by 1980. This figure is projected to reach 80 percent by 1985 (530,000 housing units). In scale and speed the housing program is a bold experiment notable for its intention to re-house such a large percentage of the population (mostly in high-rise buildings) at such a density.

In an effort to alleviate overcrowding in the central city, public housing construction in the 1970s was concentrated at peripheral locations. As a result of the housing program, living space has generally more than doubled--from just under three square meters per person to over six; and urban relocation and public housing have become the prevailing way of life for Singaporeans. A successful home ownership scheme was launched in 1964, and by the end of 1981 63 percent of the units were sold, thus ensuring that residents would care for the newly constructed housing.

Urban Renewal and New Towns: The Housing and Development Board's recent decision to concentrate its activities in the new towns has resulted in their rapid growth. Six presently have projects ranging from 25,000 to 50,000 residential units, with population ranges of 100,000 to 250,000. Each new town is subdivided into neighborhoods of approximately 20,000 to

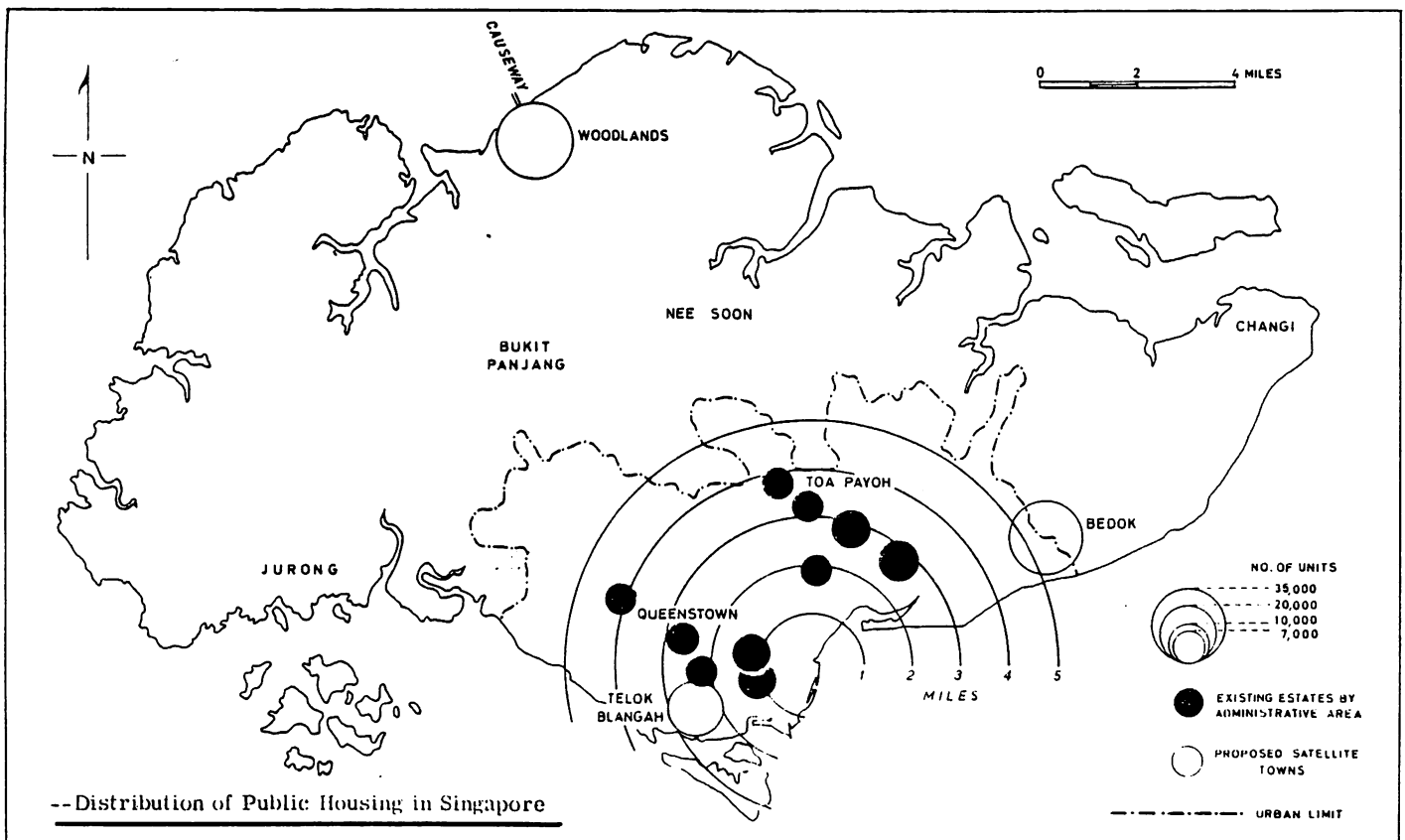
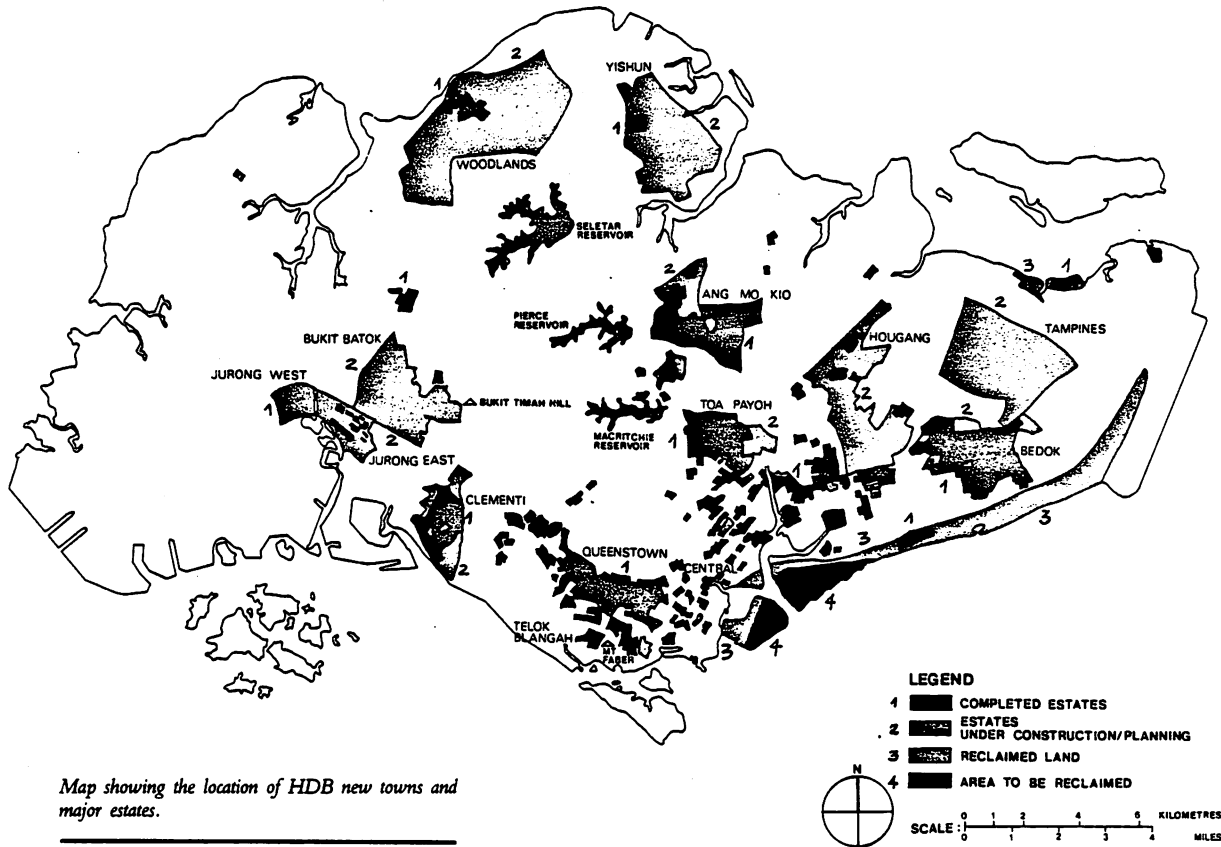
30,000 people. These neighborhood units have been demonstrably successful from the point of view of the resettlement of shopkeepers and merchants in conjunction with the construction of housing; thus, the public housing program and the national marketing system have converged, by virtue of the inclusion of retail services and facilities in the public housing estates.

At present, approximately 15 percent of Singapore's population still lives in squatter areas. The HDB plans to resettle them toward the end of the 1980s in affordable housing: monthly rental expenditures typically vary between 10 and 19 percent of household income; for those who purchase their homes, this figure may rise to the 24 to 27 percent range.

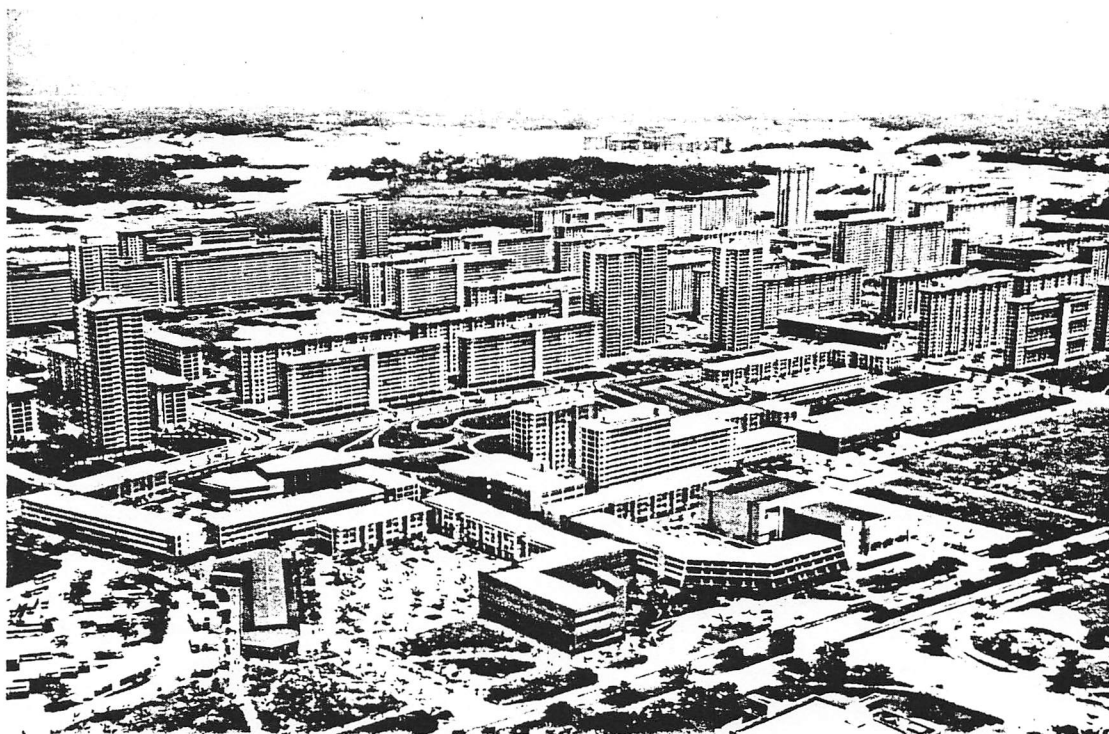
Infrastructure: Concurrent with the housing and urban relocation programs, the entire sewage and water treatment system was expanded and modernized. Although housing estates are served by the sewage system, the remaining areas depend on septic systems.

For its water supply, Singapore continues to depend heavily on Malaysia. In 1975 Singapore had three reservoirs with a retention capacity only sufficient to last the city for two to three months. However, notwithstanding the constraints of water supply and available land, planned urbanization continues to progress.

NEW TOWNS



Bedok New Town



NEW TOWNS

Table New Towns

| New Town | Year of constrn | Area (ha) | Residential Area allocated (ha) | Projected total population | Distance from city centre (km) | Housing units | |
|---------------|-----------------|-----------|---------------------------------|----------------------------|--------------------------------|---------------|---------------------------|
| | | | | | | projected | compl./under construction |
| Queenstown | 1952 | 285 | 140 | 150,000 | 5 — 8 | 28,000 | 28,000 |
| Toa Payoh | 1965 | 325 | 170 | 190,000 | 6 — 8 | 36,600 | 36,600 |
| Woodlands | 1971 | 1000 | 330 | 290,000 | 22 — 25 | 55,000 | 7,200 |
| Telok Blangah | 1972 | 365 | 85 | 70,000 | 5 — 7 | 13,700 | 13,500 |
| Bedok | 1973 | 690 | 300 | 237,500 | 10 — 14 | 47,500 | 46,400 |
| Ang Mo Kio | 1973 | 730 | 310 | 245,000 | 10 — 14 | 49,000 | 49,500 |
| Clementi | 1974 | 425 | 140 | 122,500 | 11 — 13 | 24,500 | 22,500 |
| Yishun | 1976 | 910 | 243 | 200,000 | 19 — 21 | 40,000 | 1,700 |
| Hougang | 1979 | 500 | 160 | 120,000 | 9 — 13 | 22,500 | 5,400 |
| Jurong | 1979 | 390 | 82* 92# | 67,000* 70,000# | 14 — 19* 19 — 21# | 27,400 | 12,600 |
| Tampines | 1980 | 960 | 350 | 225,000 | 14 — 18 | 45,000 | 2,900 |
| Bukit Batok | 1981 | 750 | 180 | 130,000 | 14 — 17 | 26,000 | 500 |

*Jurong East #Jurong West

Source: Housing & Development Board



Ang Mo Kio New Town was begun in 1973, covers 730 hectares and has 49,500 housing units.

PUBLIC HOUSING / NEW TOWNS

**Land Use Table for a Typical New Town
for 40,000 Dwelling Units**

| Land Use | Area (Hectare) | Percentage |
|---------------------------|-------------------|--------------|
| Town Centre | 30 | 4.5 |
| Residential | 270* | 41.0 |
| Schools | 65 | 9.8 |
| Open Space | 25 | 3.8 |
| Sports Complex | 20 | 3.0 |
| Institutions | 25 | 3.8 |
| Industry | 130 | 19.7 |
| Roads | 80 | 12.1 |
| Others | 15 | 2.3 |
| Total | 660 | 100.0 |
| Net Residential Density | | 175 du/ha |
| Gross Residential Density | | 60.6 du/ha |

Key Data on HDB Housing Units

| | 1965 | 1970 | 1975 | 1980 |
|---|--------|---------|---------|---------|
| *Total No. of HDB units (include SIT) | 69,660 | 118,544 | 211,079 | 346,371 |
| % of population in HDB | 23% | 35% | 50% | 68% |
| #Total nett floor area in million m ² | 2.97 | 4.96 | 10.66 | 21.72 |
| #Weighted average size of units in m ² | 42.2 | 41.9 | 50.5 | 62.7 |
| #Weighted average floor space per person in m ² 7.14 | | 7.08 | 9.64 | 13.56 |

Source: *HDB Annual Reports #Estimated figures from Architectural Department, HDB

**Housing Units (5-Year Programme)
Under Management as at March 1981**

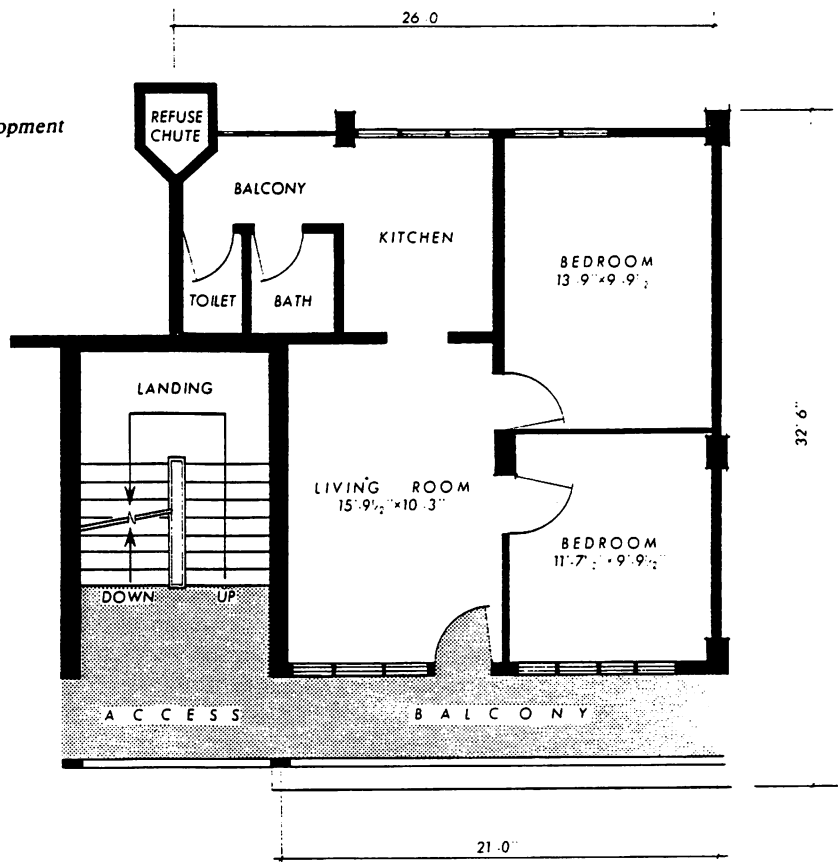
| | |
|--|---------|
| 1-room (Floor area 33m ²) | 66,910 |
| 2-room (Floor area 45m ²) | 42,237 |
| 3-room (Floor area 69m ²) | 162,483 |
| 4-room (Floor area 93m ²) | 53,148 |
| 5-room (Floor area 124m ²) | 19,137 |

Source: Housing & Development Board

Floor Plan of Typical

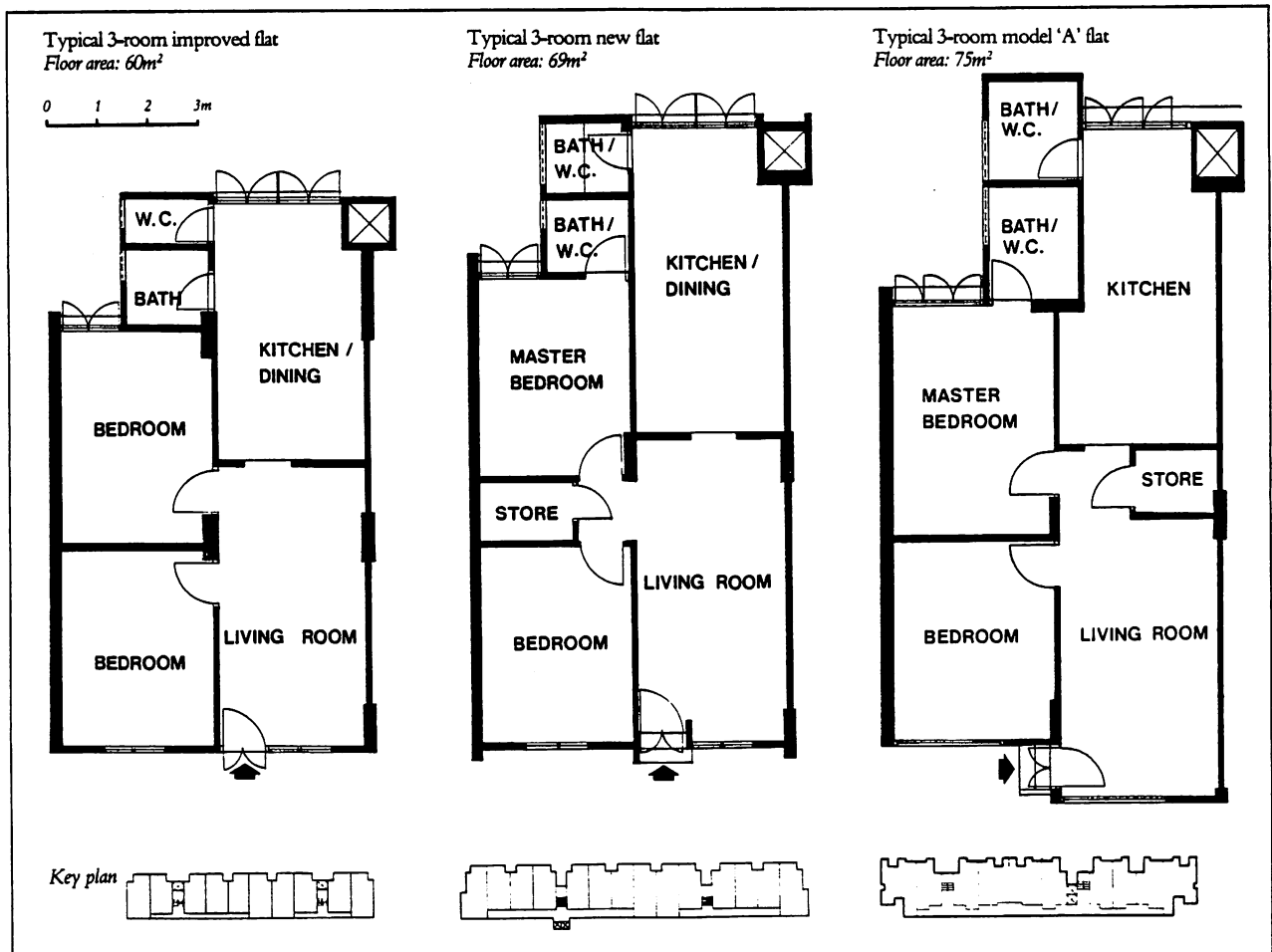
Three-Room Improved Housing and Development
Board Apartment

**HOUSING UNITS
FLOOR PLANS**



Below:

Plans showing the changes in typical 3-room flats built in
the 1960's, 1970's and 1980's.



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