

THE IMPACT OF ECONOMIC DEVELOPMENT ON THE PHYSICAL ENVIRONMENT OF SINGAPORE

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I. INTRODUCTION

THE REPUBLIC OF SINGAPORE is an island-state of 584.3 square kilometers (225.6 square miles), situated at the southern tip of West Malaysia along the vital sea route of the Malacca Straits. Although it is only about 136 kilometers (85 miles) north of the equator, the climate is equable and pleasant because of the modifying influence of the sea. The average daytime temperature is 30.6°C (87°F) and the annual rainfall averages 2,438 millimeter (96 inches). The total population was about 2.1 million; the population growth rate, about 1.5 per cent per annum; and the population density, about 3,600 persons per square kilometer (9,300 persons per square mile) in 1971. Malay is the national language, while Malay, Chinese (Mandarin), Tamil, and English are the official languages. By ethnic origin, the population is about 76 per cent Chinese, 15 per cent Malay, 7 per cent Indian, and 2 per cent others.

In developing countries the economic development process can only be understood within the context of political changes. The Republic of Singapore is no exception. Very briefly, the recent political history in Singapore can be conveniently separated into three periods: (1) internal political struggle: 1959-63; (2) search for economic viability: 1963-65; and (3) period of economic take-off: 1965-72.

The first period, 1959-63, started with the United Kingdom granting self-government to Singapore. Though Singapore had an elected legislative assembly, the British government maintained complete control of defence and foreign affairs, and partial control of internal security. In May 1959 the People's Action Party (PAP) was elected into power with radical left-wing support. There were many strikes and the investment climate was generally poor. The struggle for power between the present PAP leadership and the radical left soon reached a climax when the basically Chinese-educated left wing of the PAP walked out of the party to form the Barisan Sosialis in 1962. A desperate political struggle was fought, in which many left-wing leaders were arrested, and the battle for constitutional merger with Malaysia was on.

In the second period, 1963-65, the Federation of Malaysia was formed, comprising the Federation of Malaya, Singapore, Sarawak, and British North Borneo. Soekarno's Indonesia decided to cut off trade relations with Singapore because of strong objection to the formation of the Federation of Malaysia. There were many politically motivated strikes and disturbances. To control the internal situation, the government arrested trade unionists and de-registered trade unions. Repeated

and unsuccessful attempts were made by Singapore to work out a common market policy with the central government of Malaysia. However, PAP's political challenge to the central government created sufficient political tension to spark off racial riots in Singapore. This eventually led to the separation of Singapore from the Federation of Malaysia in August 1965.

The third period, 1965-72, found a politically independent Singapore fearful of its economic future. British troop withdrawal and political disturbances in the immediately neighboring countries created additional difficulties. Major attempts to reorientate the economic development strategy of Singapore became necessary. An open-door policy for foreign investment was initiated, together with generous tax concessions and the extensive provision of infrastructure. Legislation was also introduced to provide strict control of wage demands and related conditions.¹ Successful efforts were made by the top political leaders to project Singapore's image of political stability, a disciplined low-wage labor force, excellent infrastructure, an efficient bureaucracy and incorruptible government.

II. IMPACT OF ECONOMIC GROWTH

In 1959, when Singapore had a population of 1.59 million, the gross domestic product (GDP) was S\$1,968 million (U.S.\$787 million) and the per capita income S\$1,240 (U.S.\$500) [10, 1971, p. 273]. The economy of Singapore was mainly supported by the entrepot trade, small domestic industries, and a large British military establishment. Since independence in 1965, Singapore has achieved remarkable economic growth, averaging 13.5 per cent in GDP per annum. Per capita income has increased to S\$1,613 (U.S.\$645) in 1965, and to S\$3,066 (U.S.\$1,226) in 1971 [10, 1972, p. xxiii]. Many industries have been established and the unemployment problem is resolved. In fact, there are at present about one hundred thousand migrant workers from neighboring countries in Singapore, or about 12 per cent of the work force.

During the period 1959-72, Singaporeans have experienced dramatic political changes and economic improvements. In the process, many traditional values have been disrupted, and the physical environment has been changed dramatically. Agriculture has become decreasingly important as an employment and income generator. During the crisis years of the 1960s, political and economic considerations overrode longer-term environmental and sociological considerations. From 1965, political conditions generally have been stabilized. With few exceptions, economic criteria have taken priority in all major decisions in the development process. This single-mindedness in focusing on economic issues can be considered as both admirable and disturbing. Obstructions to the achievement of maximum economic growth are not tolerated, irrespective whether the issues are slum clearance, university autonomy or press freedom. The work ethic must be encouraged: if the sub-culture of the West threatens the work ethic, and if long-hair symbolizes the sub-culture, then long-hair must be forbidden. For similar reasons drugs, pornography, and sex films are also prohibited.

¹ Singapore Employment Act, No. 17 of 1968.

Singapore's rapid rate of economic growth, its establishment as a center for international manufacturing industries and the attainment of full employment are certainly spectacular achievements. To assess the impact of economic development on Singapore's physical environment during this period, it is essential to consider the following governing criteria in the planning process. (1) To make planning an effective tool for economic development, economic criteria generally take command in deciding planning priorities. (2) Well tried planning ideas are preferred, provided these ideas can fulfil specific economic objectives. New alternative models, which may be more attractive in relation to sociological and environmental factors, are not acceptable as no risk should be taken to jeopardize the necessary economic input. (3) Planning decisions are decided by pragmatic economic criteria and implemented by the numerous action-orientated agencies. These agencies are directly answerable to various ministers. The politicians expect and require the physical planners to work within these guidelines.

The Singapore Master Plan of 1955 has continuously been used as the source of general planning guidelines. The master plan is also supplemented by a new concept plan produced by the State & City Planning Department (SCP) from 1967 to 1971. Some efforts have been made to co-ordinate the input of the various agencies, such as the Housing & Development Board (HDB) and the Public Works Department (PWD). However, the planning authority is in no position to control the programs activated by these agencies. It is in this context that we should examine the development of and changes in the physical environment in Singapore.

III. PHYSICAL ENVIRONMENT

During this period, there have been substantial changes in the land-use pattern. In most existing areas, the intensity of development has increased. In the central area, many commercial projects are constructed to a plot ratio of 8 to 10. In public housing estates, the density often approaches one thousand persons per hectare (four hundred persons per acre). Change-of-use has also taken place to meet new demands. Large housing settlements and industrial estates have been completed. Extensive land reclamation has taken place. Many current planning practices have been adopted for implementation. From the sociological and environmental viewpoints, some of these are ineffective and others are distinctly harmful, for example, urban renewal as an instrument of slum clearance, rigid zoning according to classified usages, neighborhood concept as a planning unit, road construction to maximize vehicular accessibility to central areas, and indiscriminate increase in the plot ratio and density.

During the last decade the government built 157,000 units of public housing. In 1960, 9.1 per cent of the population was accommodated in public housing; in 1965, 23.3 per cent; and in 1972, 41.6 per cent [9, p. 13]. Numerous schools, community centers, and health clinics have been constructed. Suitable sites have been provided for the location of industrial plants. Multi-story factories have been built to accommodate labor-intensive industries. Infrastructure for roads and services have greatly improved. Since 1965 there has been increasing investment

in office blocks, shopping centers, and hotels. This process is greatly assisted by the urban renewal program which auctions sites in the central area to private developers. The private sector has responded positively to the prospects and dynamics of economic growth. Investment in the building industry increased from S\$80.5 million (U.S.\$32.5 million) in 1959 to S\$257.9 million (U.S.\$103 million) in 1965 [8, Appendix 1.3], and to S\$1,105 million (U.S.\$442 million) in 1972 [11]. The magnitude of the changes in the physical environment is so great that even casual visitors to Singapore never fail to notice it.

Land values have increased very sharply, particularly in the last two years. At the present income levels, it is estimated that only 10–15 per cent of the local population can afford private housing. At present Singapore has no capital gains tax on profits from added land value. With limited supply and increasing demands, local and foreign land speculators are making enormous profits. If corrective measures are not introduced soon, land prices may soon escalate to even higher levels than those of today. In the long run, the best possible solution to deal with the scarcity of land is for the government to form a comprehensive land policy on an island-wide basis. The policy should attempt to meet short-term demand as well as long-term projections. It is essential that the major economic benefits of increasing land values be returned to society as a whole and not be appropriated by private individuals or companies [4].

IV. TRANSPORTATION AND POLLUTION

Private cars have increased from 57,894 in 1959 to 155,956 cars in 1971 [7, Table 9.12]. The latter figure gives a ratio of one private car to 13.5 persons. Many road improvement projects have been completed, and urban redevelopment has facilitated major improvement schemes in the central area. However, with the completion of more commercial buildings with higher development intensity, traffic in the central area is becoming more congested. Taxi services are cheap and efficient, but notwithstanding the reorganization of bus companies [12], the bus services have continued to deteriorate. It has now become obvious that the conditions of road traffic will continue to deteriorate. After many years of indecision, the proposed mass rapid transit system is now being seriously considered. However, even if the proposal is accepted, it will take many years before it can be operational. In the meantime, temporary remedial solutions are urgently needed.

The most serious air pollution is generated by motor-vehicles and industrial plants. Recently, more stringent regulations have been introduced to control industrial pollution. It will be difficult for Singapore to control pollution generated by motor vehicles. However, legislation can be introduced to restrict private vehicles in certain sections of the central areas to ease traffic as well as to control air pollution. Some major automobile manufacturer have now introduced protective devices to cut down pollution and improve safety standards to conform with the regulations of the more advanced countries.

Problems of noise pollution are generated by industrial plants and aircraft. In the case of the former, appropriate regulations will soon be introduced. Major plans

to enlarge the existing commercial airport at Paya Lebar are already under way. This extension will adversely affect the large residential population of the Katong area. As the investment in this project is very substantial, it is difficult to envisage a reversal to resite the airport elsewhere. With the increasing frequency and intensity of air transport, this will be an inherent environmental problem for Singapore in many years to come. Sea pollution has become increasingly serious, owing to oil leakage from refineries and tankers. However, there has been some success in keeping the beaches clean. The continuing improvement in reducing pollution of the Singapore River is remarkable, as this river had for many years been used as a rubbish dump.

The many campaigns to improve the environmental quality of Singapore which have been initiated over the years may be considered to be notable exceptions in the generally economic-oriented development programs. These campaigns have been conducted with great energy and efficiency, and include: Keep Singapore Clean (1968), Garden City (1968), Pollution Free (1970), Tree Planting (1970), Don't Waste Water (1972), and Water Pollution (1973). With the close collaboration of community centers and the mass media, results have often been spectacularly successful. Various amenities, such as more public parks and gardens, a bird park, and a new zoo have been provided, or are in the process of being implemented. Also, part of the reclaimed land along the seafront has been reserved for recreational purposes.

V. GLOBAL CITY CONCEPT

By 1972 the atmosphere of economic uncertainty had been replaced by one of optimism and confidence in Singapore's long-term economic viability. Having achieved economic take-off and entered a period of economic consolidation, Singapore is now a developed country subject to certain structural adjustments. Politicians have begun to reformulate and redefine Singapore's role. The most significant contribution in defining the future role of Singapore has been the speech by Singapore's foreign minister, Mr. S. Rajaratnam [6], in which he clearly stated that Singapore will henceforth perform the new role of a global city instead of its traditional role as a regional city. Though Singapore may not have a territorial hinterland of its own, the whole world will become the hinterland for its manufactures and services.

Considerable emphasis has now been given to develop Singapore into an international center for communications, banking, finance, insurance, shipping, and other services. Industries of medium- and high-level technology are positively encouraged. With considerable confidence, the Bank of America has projected for Singapore a real annual growth rate of 11 per cent for the period 1972-77 [1]. One of the disturbing assumptions is the inflow of large numbers of migrant workers. By the year 1977, the projected number of migrant workers will be two hundred thousand, or about 20 per cent of the total labor force. One of our leading economists recently stated that Singapore in the next decade will achieve a minimum annual growth rate of 10 per cent barring unforeseen circumstances [3]. Based on

these assumptions, Singapore can achieve a per capita income of about S\$5,000 (U.S.\$2,000) by 1977 and S\$8,000 (U.S.\$3,200) by 1982.

In the last two years, there has been less obsession with economic growth. More attention has been paid to better income distribution, as it has been openly acknowledged that there is now a large income gap between the elite and the average worker [2]. Various policies are being framed in order to bridge this gap. A leading trade unionist has also questioned the attitudes, value and quality of the new elite [5]. Traditional customs and values are being given more serious attention. The traditional concept of families as a cohesive social unit is openly encouraged. More resources will be allocated to the arts and cultural activities. More recreational facilities will be provided. However, the drive to encourage the work ethic and to achieve rapid economic growth continues. With increasing affluence, the adjustments of values and life styles will become increasingly more challenging. To quote Mr. Rajaratnam:

Laying the economic infrastructure of a Global City may turn out to be the easiest of the many tasks involved in creating such a city. But the political, social and cultural adjustments such a city would require to enable men to live happy and useful lives in them may demand a measure of courage, imagination and intelligence which may or may not be beyond the capacity of its citizens. [6]

VI. CONCLUSION

Against considerable odds, Singapore has now achieved political stability and economic take-off. Continuous economic growth can be envisaged for the coming years. Within the next decade, the island-state will be able to provide to all her citizens adequate work opportunities, reasonable wages, housing, education, medical care, and recreational facilities.

However, a price has to be paid in using physical development as a tool for economic growth. This includes many of the inherent defects of existing cities in developed countries, such as traffic jams, pollution, and long commuting times to work. Corrective measures are no doubt possible and necessary to meet new problems arising from rapidly changing values, the dissatisfactions of mass society and the new awareness of ecology and environment. Unfortunately, physical development has a high degree of permanency. The possibility of achieving a sophisticated environment with new planning models probably will elude Singapore for at least several decades. The city of the future may belong to others who have given higher priority to environmental quality, and perhaps to those who are economically less ambitious. However, as a Singaporean, I am proud of the efforts, courage, and sacrifices of my fellow citizens in achieving this economic progress within so short a period of time.

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