

SUBURBANIZATION AROUND COLOMBO

A Preliminary Survey

by

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I

Introduction

Geographers consider the changes taking place in and around the outer edge of large cities to be of greater importance than those occurring at the city centre itself, since these changes involve more people and a larger land area. Further, they are likely to "give a direct expression of the contemporary urban society and provide a more accurate clue to the nature of the future". (Johnson 1974 p.2) Although the geographical processes operating in and around the outer edge of cities of developed countries have been the subject of a large and growing literature in recent years, there is an urgent need for research on suburban expansion and its attendant problems in developing countries. This paper attempts to analyse the nature of contemporary suburban growth around Colombo, in order to obtain an insight into the causes and consequences of suburbanization occurring around a primate city of a developing country.

II

Characteristics of suburbs

Although suburbs are treated as separate entities, they are in fact constituent parts of a large metropolitan area. Martin (1956) refers to 2 definitive characteristics that differentiate suburbs from non-suburban communities. They are a) (the unique ecological position in relation to the larger city and b) the high rate of commuting to the central city. Although suburbs lie outside the limits of the central city they remain dependent upon it as a source of necessary goods, services and employment. Hence its ecological position is said to differ from those of urban and rural settlements. The second definitive characteristic (the high rate of commuting) is a direct out-growth of the ecological position.

In 1958, Kurtz and Eicher, summarized the characteristics of suburbs and considered the following as typical of a suburban area:

- i.* Location - beyond the limits of the central city although they are frequently contiguous.
- ii.* Land use - usually of a fairly consistent nature. The land use pattern is almost exclusively urban. Unlike the settlements in the rural-urban fringe, the suburbs do not give the appearance of an area in transition.
- iii.* Population density - intermediate between the city and the fringe area.
- iv.* Growth rates - high growth rates take place only at the outskirts since suburbs may have little room for expansion.
- v.* Occupation structure - similar to that of the city.

Suburbanization Around Colombo: A Preliminary Survey

The traditional and popular image of a suburb as that of a dwelling place for commuters who work in the nearby central city, is no longer valid today. Dormitory suburbs are considered to be only one species of suburb. Contemporary suburbs vary in economic function (Harris, 1943, Guest, 1976) location (Hawley, 1956, Zikmund, 1975) and political organisation (Greer and Greer, 1976). Although there is such wide variation among suburbs, social scientists categorize them into two broad types viz: a) residential suburbs that are "suppliers of labour and consumers of commodities" and b) employing suburbs or satellites that are "consumers of labour and suppliers of commodities." Schnore commenting on the role of these two types of suburbs, remarks that

"they represent sources and destinations of the internal circulation of commodities and people that make up the daily rhythm of community activity Goods and services tend to flow out of the employing satellites to other areas (both local and non-local), while persons are attracted into these areas for employment. On the other hand, residential suburbs send out workers and tend to receive an influx of goods and services for consumption by their inhabitants. These are the major components of the daily ebb and flow of movement that gives the whole metropolitan community its temporal organization" (1965, pp. 139 - 140).

The contemporary suburb in the West has therefore, acquired a diversity of urban characteristics that were previously confined to the central city (Masotti, 1975, Berry and Kasarda, 1977, Hamer, 1978, Muller, 1981). Hence the 1950's view of suburbs as faceless, homogeneous, middle class residential communities, functionally dependent upon central cities for jobs, retail activity, services and recreation has given way to emphasis on the "urbanization of suburbs". That is why the core-periphery view of a dominant central city and dependent suburbs is now all but obsolete....." (Gober and Behr 1982).

III

Historical Development of suburbs.

Although suburbs for the upper classes existed around large ancient cities such as the Greek city states, modern mass suburbanization is a recent phenomenon. Europe and the USA experienced large scale suburbanization only during the 19th Century. During the Industrial Revolution, the proliferation of industrial towns and rapid increases in urban population in Western Europe created problems such as environmental pollution and congestion in large cities. Disenchantment with such cities brought about an exodus of the upper classes from the city to outlying areas. Since only the rich could afford the high cost of travel, the suburbs at first catered only to the upper classes. During the latter half of the 19th century, the introduction of workers' railway tickets made it possible for the working classes also to live in the suburbs located near railway stations and commute to the city. After the First World War, more flexible forms of transport such as electric trains, cars and buses triggered a further exodus of urban dwellers to previously inaccessible areas at the edge of the city.

In the U. S. A. the exodus of the upper classes began as early as 1820 but it accelerated only between 1850 and 1930. The availability of cheap mass transportation, cheap land sites, lower taxes, the presence of a more congenial environment and the overwhelming desire for single family homes were some of the factors which encouraged the urbanites to move away from the city to the suburbs. With the intensification of the Federal Housing and Highway programme, even the blue-collar workers could afford to live in the suburbs. After the Second World War, there was a mass movement to suburbs, so that by 1960, 33 per cent of the total population in the USA were living in suburban areas.

At first, the majority of suburbs performed predominantly residential functions but gradually suburbs in the developed countries began to acquire a diversity of urban functions. Push factors operating in the central areas of cities such as the spiralling cost of land, high rents, congestion on roads, lack of parking space etc. have encouraged the decentralization of industries from the central cities to suburbs. A voluntary process of migration of offices away from the traditional locations in the vicinity of peak land-value intersection, is also taking place in many cities. Today in the USA, manufacturing and retail employment in the suburbs (on a per capita basis) is comparable to that of the central cities. Due to this decentralization of employment, the contemporary suburb in the industrially-developed Western countries is less dependent on the central city for jobs. In the 15 largest metropolitan areas in the USA, 72 per cent of suburbanites worked in the suburbs and only 28 per cent commuted to the central city. Hence it is clear that commuting to the central city is no longer a peculiarly suburban characteristic at all. More suburban commuters travel within the suburban zone rather than between zones.

During the early decades of the 20th century, the exodus of wealthy urbanites from large city centres to suburbs became a common occurrence in USSR and China too. Dormitory suburbs of Moscow extend up to the new motorway which encircles the city and its zone of intensive commuting lies within a radius of 50-60 kilo metres from the centre. Today, the policy of industrial decentralization has given rise to new suburban communities known as "goroda sputniki" or satellite towns that perform predominantly industrial functions. Recent labour shortages in Leningrad have created a demand for rural migrant labourers who prefer to live in the suburban low - rise buildings rather than in the densely - populated central city. Its suburban zone extends up to 120 kilo metres and 4 hours travel time to the city. Due to the decentralization of industries, the ring of older suburbs now contain a greater proportion of the industries of Leningrad. Factories are also located on the new suburbs built on reclaimed lands to the West of the city. Therefore inward and out ward-bound journeys take place in the city region.

China has also implemented a policy of industrial decentralization which has transformed the dormitory suburbs by the introduction of factories and housing estates for industrial workers. After 1956, new manufacturing suburbs or satellites specializing in different industries were created round

large cities. Suburban industrial development around Shanghai has occurred in Gaoqiao and Pengpu (oil refining and petro-chemical industries) Gaohezing (precision instruments), Dechang (iron and steel) and Taopu (chemical and allied products).

Suburbanization in the Third World countries has followed a different pattern. Unlike in the developed countries where, the majority of suburban dwellers are rich urbanites who fled from the central city, suburbs in developing countries are populated mainly by rural migrants who could not afford the high land prices and high rents of the central city. During the decade 1951-1961 the bulk of the migrant population who came to Bombay for example, had been diverted to its inner suburbs. These inner suburbs had experienced a comparatively high annual growth rate of 8.5 per cent between 1961 - 1971. After 1971, the outer suburbs began to grow faster than either the central city or the inner suburbs.

A recent trend common to many suburbs in developing countries is the decentralization of industries and offices. Dormitory suburbs around Bombay such as Dombivili, Kalyan and Bassein have recently attracted wollen textiles, electrical engineering, soft drinks and confectionary industries.

In Tunis, although there are mono - functional (residential or 'garden suburbs') on its North and West such as Le Kram, Carthage, La Marse that have attracted the upper and middle - income groups, the suburbs on the Southern side are predominantly industrial in character.

Hence, instead of a strong one-way commuting pattern from the suburbs to the central city, many metropolitan areas in developing countries now exhibit a complex movement viz; from the suburbs to the centre as well as a flow within suburbs. The commuting pattern of Greater Bombay Region indicates that only 22.9 per cent travel from suburbs to the city and 4.64 per cent travel from outer areas to the city. Inter - suburban movement accounts for nearly 13 per cent of the total (Table 1).

Table 1 Commuting Behaviour in the Greater Bombay Region

Cross Patterns of Commuting	Percentage
City to city	23.60
Suburb to suburb	12.99
City to suburb	22.82
Suburb to city	22.90
City to outer areas	04.64
Outer areas to city	04.64
Suburb to outer areas	02.54
Outer areas to suburbs	02.43
Outer areas to outer areas	02.43

Source: Arunachalam, A. B., *Bombay-an Exploding Metropolis in Million Cities of India*, ed. by R. P. Misra, New Delhi, 1978.

Many Third World suburbs originated as mono-functional appendages of the central city populated more by rural migrants than by the exodus of rich urbanites. The diversification of economic activities is a recent phenomenon.

Measurement of Suburban Growth around Colombo

Suburban growth around a city can be measured by comparing

- (a) The population growth rates of the central city with that of the suburban rings
- (b) the share of metropolitan population growth going to the centre and rings
- (c) shift in the proportion of population contained in the metropolitan rings. A negative shift in the suburban rings indicates relative "centralization" whereas a positive shift indicates "decentralization" or "suburbanization". In order to measure the degree and rate of suburbanization around Colombo, the Colombo Metropolitan Area has to be delimited. On the basis of the population density rule advocated by the International Urban Research Division (1959), the Colombo Metropolitan Area (CMA) was defined by the writer in 1973 to measure the degree of suburbanization taking place around Colombo. (Wanasinghe, 1973). The CMA¹ was subdivided into 3 zones viz)
 - i. the Central City
 - ii. Suburban crescents
 - (a) old suburbs
 - (b) new suburbs
 - iii. the rural - urban fringe or the rural crescent. (Fig 1)

Indices of Suburban Growth Around Colombo.

- i. Comparison of the percentage change in population between the centre and crescents.

During the inter - censal decade of 1953 - 1963, the central city grew at the rate of 17 per cent as against the faster growth rates of 66.0 and 35.9 per cent of the suburbs and rural areas. The growth rates for the next inter-censal period for these 3 zones were 10.2, 33.5 and 34.0 per cent respectively. (Table 2).

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1. Colombo Metropolitan Area in 1971 comprised of
 - i. Colombo - Central City
 - ii. Colombo District Revenus Officer's Division, Salpiti Korale, Aluth Kuru Korale (South) Siyane Korale (Adikari Pattuwa) and Hewagama (West) (Fig 1)
In 1953 the CMA covered a smaller area with only Colombo city, Colombo D. R. O. Division and Salpiti Korale.

At a later date the Colombo Metropolitan Area was defined by the Master Plan project (UNDP/Dept. of Town and Country Planning, 1978) and it covers approximately three - fourths of the Western Province.

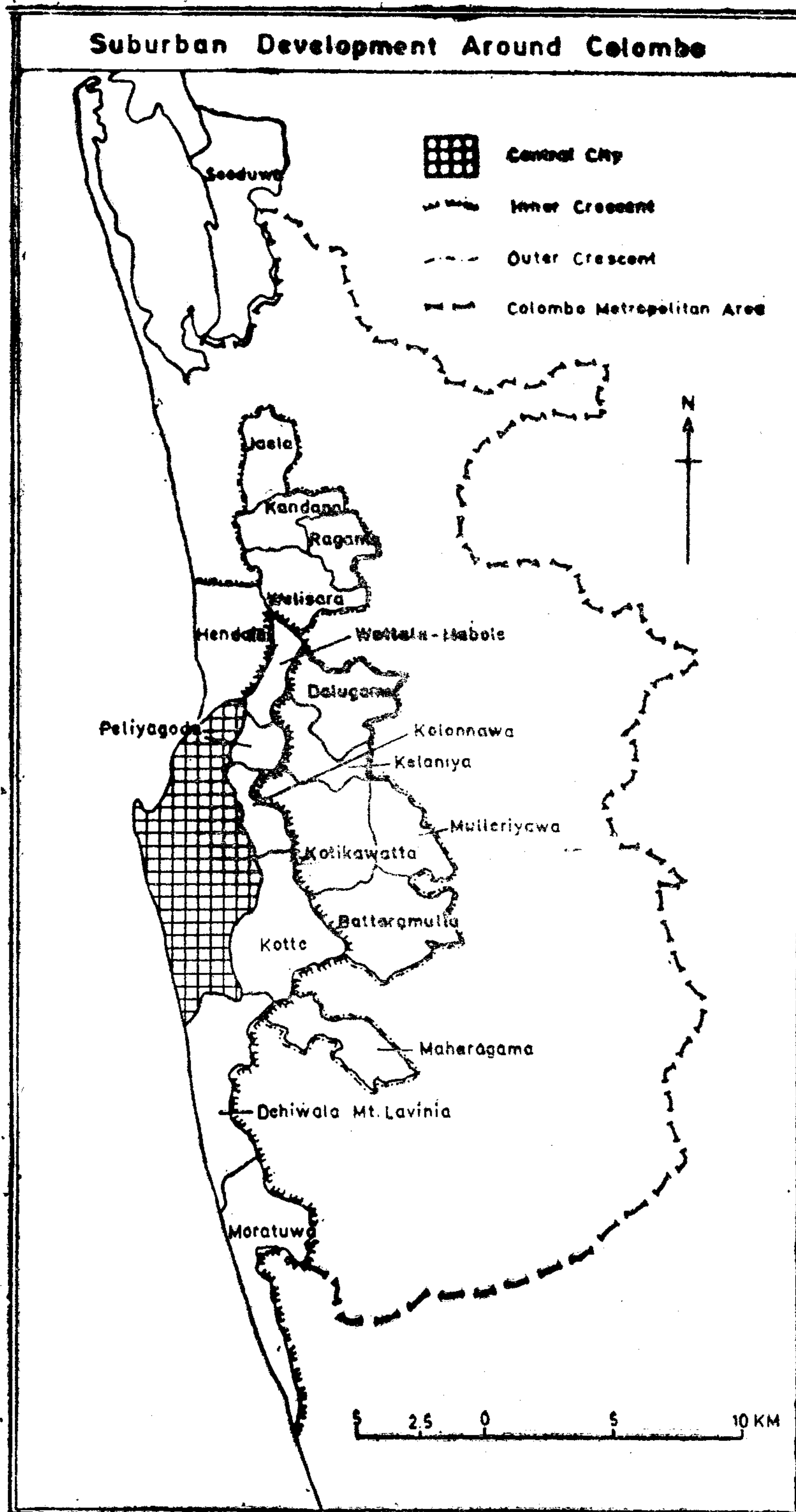


Fig. 1

Table 2 Percentage increase in population

Zones	1953-1963	1963-1971	1971-1981
Central city	17.0	10.2	4.0
Suburban crescent	66.0	33.5a	115.0 c
Rurban crescent	36.0	34.0b	31.0d

a only suburbs of the first crescent included.

b incipient suburbs included in rural crescent.

c suburbs of the first and second crescents included.

d suburbs of the second crescent excluded.

The percentage increases in population for the inter-censal decade of 1971 - 1981 for the larger CMA as defined by the Master Plan Project were as follows:

Zones	Percentage change 1971-1981
Central City	4.1
Suburbs	17.5
(a) inner crescent	10.7
(b) outer crescent	17.7
Rurbanized area	15.8

The higher rates of population increase in suburbs quantify the rapidity of growth at the city's edge.

ii. Share of metropolitan growth

The second index of suburbanization used by the writer indicates absolute decentralization. It provides a clear interpretation of raw population increases and the proportion contained in the different zones. The suburbs and rurbanized areas have increasingly acquired a larger share of the total metropolitan growth since 1953 (Table 3). The proportion of metropolitan increase going to the central city has gradually declined. Between 1971-1981 the rural areas in the smaller CMA have diminished in size.

Table 3 The Share of Metropolitan Population Growth

Zones	1953-1963	1963-1971	1971-81 (Smaller CMA)	1971-81 (larger CMA)
Central city	11.9	13.5	7.0	5.0
Suburbs			40.1	30.0
a) inner crescent			22.5	16.6
(b) outer crescent	19.5	31.8	17.6	13.4
Rurban crescent	68.6	54.7	52.9	65.0

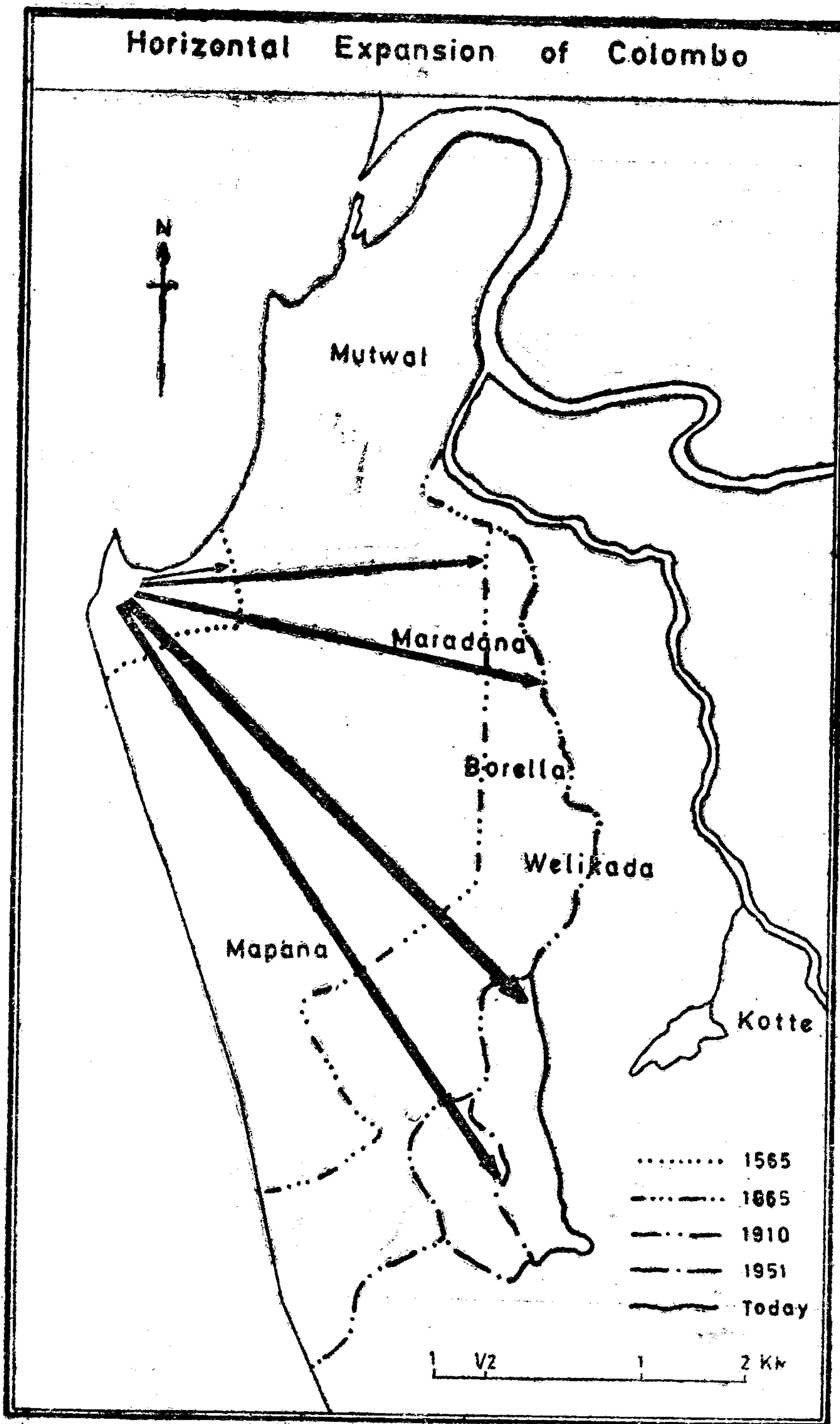


Fig : 2

Suburbanization Around Colombo; A Preliminary Survey

iii Shift in the proportion contained in different zones.

The third measure of suburbanization is based upon the comparison of the proportion of population found in metropolitan rings or crescents at the beginning and at the end of the period. Table 4 indicates a positive shift, in the proportion acquired by the metropolitan crescents since 1953. The three indices used here therefore provide evidence for both a relative and an absolute decentralization that has taken place around Colombo.

Table 4 Shift in the proportion contained in the different zones

Zones	CMA ¹				CMA ²	
	1953	1963	1971	1981	1971	1981
Central City	54.7	34.1	29.9	26.4	17.6	16.1
Suburbs	27.5	23.6	24.7	40.1	23.7	31.2
a) inner crescent				22.5	13.3	13.7
b) outer crescent				17.6	10.5	10.8
Rurban crescent	17.8	42.3	45.4	35.5	58.7	52.7

1. CMA based on density criteria
2. CMA as defined by the Master Plan Project

v

Stages in the Suburbanization of Colombo

i. The pre - suburban phase.

In the mid 17th century, Colombo, which was described as a 'long and straggling town' comprised of only the Fort and Pettah. Separated from it by a weak mud wall and coconut trees were the "suburbs" viz; Mutwal, Gintupitiya (plain of Boralugoda), Wolfendhal, Galle Face- Colpetty (Mapana) Hultsdorpf, Maradana, Suduwella, Borella and Welikada (Fig 2). Gradually these settlements acquired urban characteristics and were annexed to the city proper between 1865 - 1910 (Fig. 2). Even in 1891 the present-day suburbs were rural settlements with predominant primary occupations. The population and the number of dwellings in selected villages around Colombo (these comprise a major part of the suburb of Dehiwela-Mt. Lavinia) in 1891 were as follows :

	Population	Dwellings
Dehiwela	1477	252
Nikape - Nedimale	934	431
Galkissa	3408	666
Ratmalana	3641	595

Source : Census of Ceylon, 1891.

ii The incipient phase - 1900 - 1921.

The presence of low - lying land liable to flooding discouraged heavy concentration of buildings in many areas within city limits and encouraged the horizontal expansion of the built - up areas beyond its boundaries. Hence urban characteristics began to appear in rural settlements around Colombo. In 1911, Sanitary Boards were set up in the immediate suburbs and they were officially recognized as towns at a later date.

In Western countries, this incipient phase of suburbanization is characterized by an increase in the number of out-migrants from the central city; the beginning of regular commuting coupled with an absolute and a relative decline in the agricultural population living in suburbs.

On the other hand, suburbanization around Colombo was marked by the diversion of city - ward migrants from outlying rural areas to the suburbs instead of an influx of wealthy urbanites from Colombo. The changing occupation structure of 'local born' residents in suburbs and the beginning of regular commuting are features common to suburbs in both developed and developing countries. During this phase, more urban land uses encroached on rural areas. Since there was a separation of workplace and residence, commuters had to rely heavily on public transport. These changes in land use, occupation structure and functions gradually transformed the former fishing and agricultural villages into dormitory settlements.

In 1921, Geddes observed that "While in Indian cities people largely crowd inwards towards the bazaars, here in Colombo people seem to preserve their rural spirit and to express this in a love of gardens and flowers." Although the land to the North and North - east of Colombo was undeveloped he predicted that suburbanization would take place in Kelaniya, Wattala, Hunupitiya and Wanawahala and remarked that "suburban life needs only better communications for its further encouragement" (Geddes, 1921, p. 21)

The comparatively high growth rates in population experienced by Colombo between 1901 - 1921 can be attributed to the extension of city limits from 10 to nearly 13 square miles and to the migration of 107,372 people. Yet even during this early phase, suburbs of Dehiwela - Mt. Lavinia, Kolonnawa and Kotte were growing faster than Colombo (Table 5).

Table 5 Inter-censal Population change in Colombo and suburbs (percentage)

	1911-1921	1921-1931	1931-1946	1946-53	1953-63
Colombo	15.5	16.3	27.4	17.6	20.0
Wattala-Mabole-Peliyagoda	8.4	14.2	69.8	28.8	134.8
Dehiwela -Mt. Lavinia	37.2	35.3	65.8	37.5	41.8
Kolonnawa	31.9	11.8	76.5	54.8	28.4
Kotte	42.9	33.7	107.3	35.2	34.8
Moratuwa	4.9	15.3	56.4	18.7	29.2

Source : Census of Ceylon.

Suburbanization Around Colombo; A Preliminary Survey

iii. The developing phase - 1921 to 1971

The distinction between the incipient and the developing phase is one of a) the scale of building; b) the pace of change. At the beginning of this period although 91.8 per cent of the population increase of Colombo was due to in-migration, Dehiwela Mt. Lavinia and Kotte grew faster than the Central city (Table 5).

The period after 1931 is very significant since the population growth rates of all the suburbs surpassed that of Colombo (Table 5). There was a drastic reduction of in-migrants to Colombo between 1931 and 1946 and only 21.2 per cent of its total population increase was attributed to migration. Vamadevan's study (1961) indicates that Colombo had a lower in-migration rate of 3.96 per cent between 1946 - 1953 whereas two of its suburbs recorded in-migration rates of 16.12 and 13.40 per cent (Dehiwela-Mt. Lavinia and Kotte). The availability of flat land at low cost for building construction and the introduction of relatively cheap season tickets to Government servants and school children enabled the migrants to live in suburbs and commute to Colombo.

Hence during the inter-censal decade of 1953-1963, suburbs grew at the rate of 6.6 per annum as against a lower growth rate of 1.7 per cent in Colombo. By 1971, the growth rate of Colombo had slowed down considerably as illustrated by Table 6.

Table 6 Inter-censal Population change (percentage)

Town	1963-1971	1971-1981
Colombo	9.9	4.2
Dehiwela - Mt. Lavinia	39.0	12.7
Kotte	27.3	10.3
Moratuwa	23.7	40.0
Kolonnawa	36.3	11.1
Wattala - Mabile	20.0	10.6
Peliyagoda	5.0	1.9

Source : Census of Population, 1971 and 1981.

Population increase in suburbs created a demand for houses. There was a spate of building construction after 1945. Of the total number of housing units constructed in suburbs by 1971 more than 70 per cent were built after 1945 (Table 7).

Table 7 Suburban housing units - age and tenure

Town	Number of housing units and other living quarters		Age (excluding year unspecified)		Tenure Proportion rented	
	1971	Before 1945	1946-1971	1946	1971	
Colombo	83159	47.4	50.1	83.4	66.3	
Dehiwela	25034	25.8	72.1	561.5	52.4	
Moratuwa	15864	28.8	68.2	53.0	35.6	
Kolonnawa	6461	23.8	73.4	73.3	62.5	
Kotte	15032	24.1	73.4	65.3	48.7	
Peliyagoda	4566	22.1	76.0		77.7	
Wattala-Mabole	3080	25.7	73.3	60.0	55.0	

Source : Census of Ceylon - 1946
Census of Sri Lanka - 1971

The construction of houses, factories and other buildings led to the rapid and a haphazard conversion of agricultural land into urban uses. Therefore the proportion of crop land in the Colombo Divisional Revenue Officer's Division which contains the central city and suburbs, declined from 41.6 per cent in 1921 to 29.8 per cent in 1962.

iv. The mature phase.

During the mature phase of suburbanization, suburban growth begins to ease off considerably. Sometimes a "mature employing" suburb may even lose population because employment-providing activities will drive out pre-existent residential uses of land and discourage new construction of dwellings. Employment opportunities begin to multiply so that a mature suburb will attract a significant share of employment. Service facilities reach a level of development comparable to that of the outer areas of the central city.

The inner crescent of suburbs exhibit most of the above characteristics. By 1971 their population growth rates had begun to decline. Of the total migrant population in suburbs only about 50 per cent had arrived after 1966, and many rural migrants were diverted to the outer crescent.

Suburbanization Around Colombo: A Preliminary Survey

Another characteristic feature of a mature suburb is the increase in the number of local job opportunities and the diversification of economic activities available locally. Due to the lower cost of buildable land and low rentals, there has been a decentralization of manufacturing units, offices and commercial establishments to the suburbs. With the exception of Kotte, which provided local job opportunities for only 59 per cent of the total employed, the other older suburbs have gradually been transformed from purely dormitory settlements to "employing" suburbs² (Table 8). Wattala-Mabole-Peliyagoda, Kolonnawa and Dehiwela - Mt. Lavinia had Employment-Residence Ratios of more than 90 even in 1971.

Although the above characteristics reflect maturity, service facilities in suburbs had not reached a standard comparable to that of the central city even by 1971. (Table 9)

v. The incipient phase of new suburbs

The majority of settlements in the second crescent of suburbs are still the incipient stage. At present they are growing faster than either the central city or the other suburbs (Tables 6 and 10)

The decision to shift the administrative capital to Sri Jayawardenepura Kotte and the availability of land for building construction accounts for the high inter-censal change of 31.3 per cent at Battaramulla. Ragama and Hendala are two other fast-growing and accessible new residential suburbs located to the North of Colombo. At Maharagama on the south-east, the highest residential densities and higher population changes were recorded in the more accessible wards that had buildable land for expansion (Table 11). Consequently, conversion of land in these suburbs for urban uses was intensified.

2. Suburbs can be classified as "employing" and "residential" by using the Employment Residence Ratio (ER Ratio). It is computed by the formula - $a/b \times 100$

a— the number of people employed in the suburb in manufacturing, trade, personal business and repair services.

b— the number of employed residents in the suburb.

Employing suburbs have a ratio > 85

Residential suburbs have a ratio < 85

Table 8 Location of Job Opportunities and the Employment - Residence Ratios in Suburbs

Urban Units	Population 1971	No. Employed 1971	Job Opportunities 1971	Surplus of employment by residence 1971	Employment Residence Ratio 1971	Surplus ¹ employed by residence 2001*
Colombo	562.4	178.6	319.2	-140.6	177	-215.5
Dehiwela-Mt. Lavinia	154.2	44.9	41.6	+	91	+
Moratuwa	96.3	25.7	16.9	+	62	+
Kotte	93.7	26.1	15.2	+	56	+
Kolonnawa	37.4	9.1	8.3	+	90	+
Peliyagoda	24.4	6.2	5.8	+	90	-
Wattala -Mabole	18.0	4.6	4.6	+	100	-
Maharagama	41.8	11.7	10.0	+	83	+
Kotikawatta	43.8	9.4	5.1	+	51	+
Mulleriyawa	23.0	5.0	3.6	+	66	+
Battaramulla	44.2	10.8	6.6	+	56	+
Hendala	29.7	6.8	4.3	+	58	+
Dalugama	42.6	9.8	5.1	+	50	+
Kelaniya	32.7	7.6	10.2	-	136	+

Y. A. D. S. Wanasinghe

Source : Colombo Urban Development Plan, Vol. 2.

1 Based on E-R. Ratio.

Suburbanization Around Colombo: A Preliminary Survey

Table 9 Utility standards Extent of Public Services - 1971

Town	(Percentage of population served)			
	Water Supply	Sewerage	Solid Waste Disposal	Electricity
Colombo	95	65	65	50
Dehiwela	70	0	30	53
Moratuwa	65	0	25	36
Kotte	15	0	0	20
Kolonnawa	85	0	35	32
Wattala Mabile	15	0	0	44
Peliyagoda	30	0	0	17

Source : Colombo Urban Area Development Plan, Vol.2.

Table 10 Inter - censal Population change - new suburbs

Name of Suburb	Population 1971	1981	Inter censal Increase	Inter censal Increase (Percentage)
Battaramulla	43,057	55,535	13,478	31.3
Ragama	17,547	22,274	4,727	26.9
Hendala	29,308	36,984	7,676	26.2
Welisara	21,527	26,785	5,258	24.4
Maharagama	40,378	49,984	9,606	23.4
Dalugama	41,200	47,619	6,419	15.6
Kandana	18,980	21,799	2,819	14.9
Jaala	21,737	24,403	2,666	12.3
Kotikawatta	43,764	48,513	4,749	10.9
Kelaniya	34,635	36,683	2,048	5.9
Mulleriyawa	22,515	22,017	-498	-2.2

Source : Census of Sri Lanka.

Table 11 Maharagama Population change and density by wards - 1971 - 1981

Number and Name of ward	1971 Population	Density Per Acre	1981 Population	Density Per Acre	Inter censal Population Increase (%)
1 Jambugasmulla	3524	24	3899	26	7.0
2 Gangodawila	5408	24	7280	33	34.0
3 Navinna	5114	17	6762	22	30.0
4 Maharagama West	4770	21	6017	25	20.0
5 Maharagama North	5057	23	5888	27	16.0
6 Godigamuwa North	8248	16	10296	19	23.0
7 Godigamuwa West	4247	17	5618	22	25.0
8 Pannipitiya	4010	15	4224	16	5.0
Total	40378	20	49984	25	23.4

Source : Maharagama Town Council.

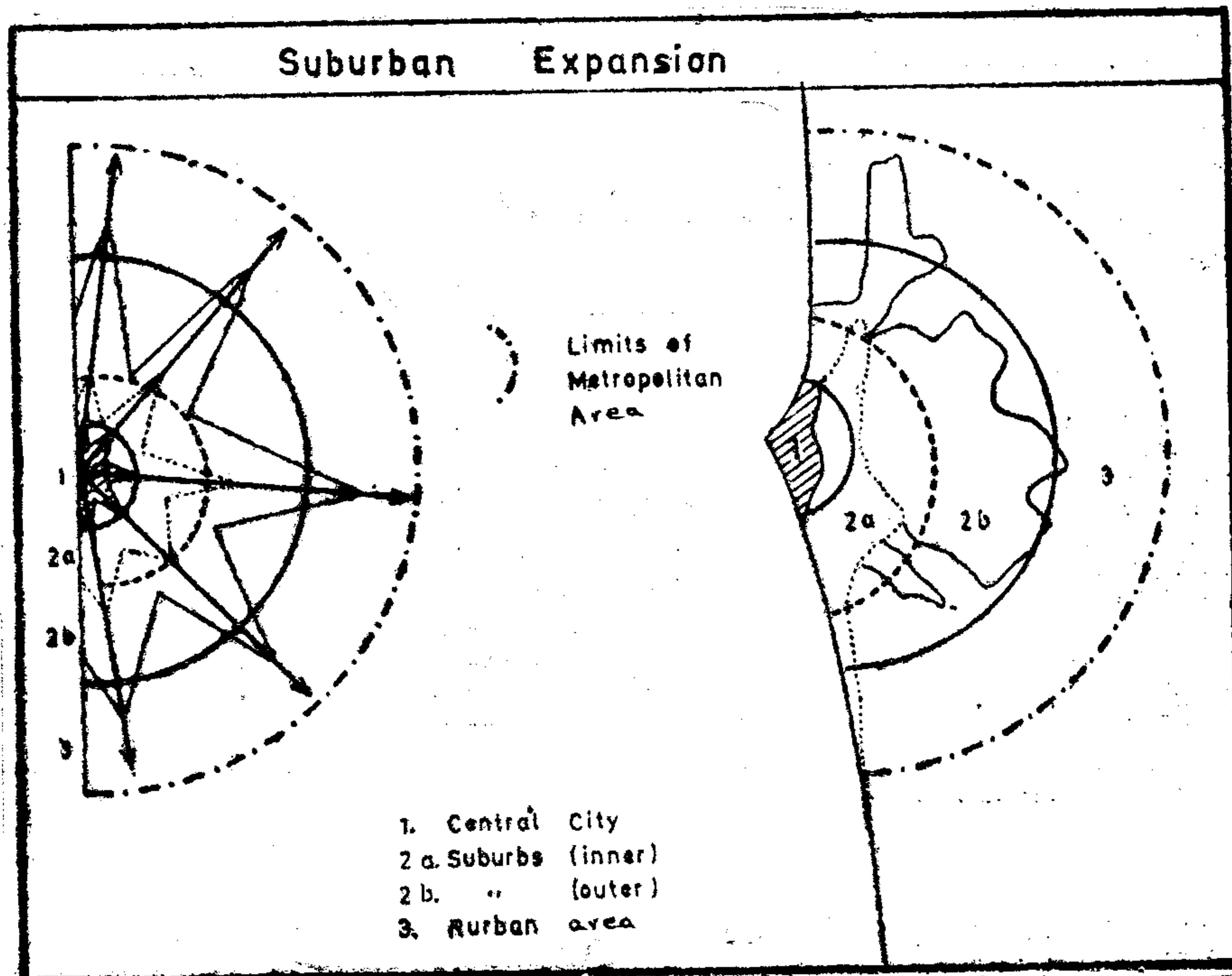


Fig: 3a

Fig: 3b

VI

Causes and Consequences of Suburbanization

Suburban growth around Colombo has accelerated in recent years due to the interplay of demographic, economic, social, technological, political and institutional factors. Demographic factors such as natural increase of population and the diversion of city - ward migrants to suburbs; economic factors such as the spiralling cost of limited land resources in the city and the availability of relatively cheap buildable land in the suburbs as well as technological changes in the fields of transport, power, water supply have been paramount in causing suburbanization around Colombo.

The availability of cut rate season tickets which enabled working class commuters to live in suburban locations accessible by bus or train and the preference of the middle-income groups for low-density better class neighbourhoods have also been contributory factors. Public Intervention has influenced the process of suburban growth which is reflected in many ways viz; ^{a)} the introduction of numerous land policy measures and statutory provisions in order to control land use, increase its supply for urban uses through acquisition and reclamation, and discourage speculative holding of vacant land; ^{b)} the decision to shift the administrative capital to a suburban location; ^{c)} the differences between the levels of local taxation in the city and suburbs. Physical constraints in and around Colombo have also encouraged horizontal expansion. The suburban frontier extends along transport lines while avoiding paddy fields and marshy tracts liable to regular flooding (Fig 3) Ribbon development along roads has generally been followed by the infilling of interstices which has created more compact built-up areas in some of the older suburbs. Only the existence of paddy fields and marshes has prevented the utilization of every available space for urban uses thus providing the suburbanites with the all important "lung space" or "green belts".

The Employment-Residence Ratio which is an index of suburban growth around Colombo shows that the majority of suburbs are predominantly residential in character. Recently there has been a diversification of employment opportunities within suburbs due to the decentralization of industries, offices and commercial establishments. Dehiwela Mt. Lavinia, Peliyagoda, Wattala - Mabile and Kolonnawa had Employment Residence Ratios above 85. (Table 8) Kelaniya (in the outer crescent) had the highest ratio 136. Its high Employment-Residence Ratio can be attributed to the location of several large and medium - scale industries in the public and private sector employing nearly 6600 people. (Tables 12 and 13) Other new suburbs in the Greater Colombo Economic Commission (G. C. E. C.) area such as Ja-ela and Welisara are in the process of being transformed from purely dormitory to employing satellites. Consequently the commuting pattern of some suburbs has changed from simple out - commuting to both out-ward and in-ward commuting.

Table 12 Large Manufacturing & Service Establishments in new suburbs within the G. C. E. C. Area

Locality & Name	Employment Public Sector	
Ja-Ela		
Union Carbide	243	
United Spinning & Weaving	262	
Jewel Arts	300	
C. T. B. Depot	1258	X
C. T. B. Workshop	656	
Wattala		
State Hardware	449	X
Colombo Commercial	452	X
State Fertilizer	475	X
Welisara		
C. W. E. Stores	301	X
Kelaniya		
Dasa Industires	301	
Kelani Cables	223	
Ceylon Match	275	
Elephant Matchbox	343	
Ceylon Petroleum	733	X
State Fertilizer	274	X
Sri Lanka Tyres	1957	X
Wijaya Tiles	263	X
Sri Lanka Jute	518	X
(Research & Production)		

Source : Report on the G. C. E. C. Area, Dattatri G & Dickman L. D.
UDA, 1980.

Suburbanization Around Colombo: A Preliminary Survey

Table 13 Employment in Manufacturing Establishments

Locality	Employment		Total
	Public	Private	
Ja-Ela	1630	1773	3403
Kandana	—	126	126
Welisara	722	—	722
Wattala - Mabile	1946	566	2512
Peliyagoda	1160	166	1326
Ragama	98	61	159
Kelaniya	3949	2660	6609

Source : Report on the G. C. E. C. Area - Dattatri G & Dickman L. D.,
UDA, 1980.

When compared to Colombo, the density of population on suburban residential areas is fairly low (Table 14). The highest residential densities of 244 and 207 persons per hectare were in the older suburbs of Kolonnawa and Peliyagoda respectively. The suburbs of the outer crescent had lower residential densities ranging from 40 in Mulleriyawa to 80 in Kotikawatte.

Table 14

Residential land in selected suburbs - Population, Densities and Area

	1971			1986			2001		
	Population	Density per hectare	Area (hectares)	Population	Density per hectare	Area (hectares)	Population	Density per hectare	Area (hectares)
Central City									
Colombo	562,420	306	1837	600,000	295	2033	600,000	246	2439
Inner Crescent of Suburbs									
1. Dehiweila	154,194	133	1151	220,000	180	1236	274,000	198	1426
2. Kotte	93,700	124	754	127,000	153	860	150,000	163	984
3. Moratuwa	92,267	96	1000	140,000	140	1000	160,000	160	1756
4. Kolonnawa	37,429	244	154	41,000	220	186	50,000	200	257
5. Peliyagoda	24,403	207	117	26,000	230	115	26,000	250	110
6. Wattala - Mabole	18,037	87	208	27,000	110	245	39,000	130	300
Outer Crescent of Suburbs									
1. Maharagama	41,756	68	612	58,000	90	640	87,000	120	730
2. Kotikawatta	43,795	80	545	48,000	95	500	43,000	110	394
3. Mulleriyawa	23,018	40	580	25,000	50	500	32,000	70	452
4. Battaramulla	44,212	45	1042	79,000	63	1100	112,000	83	1253
5. Hendala	29,660	54	552	44,000	80	550	47,000	100	470
6. Dalugama	42,564	77	561	49,000	88	570	57,000	96	590
7. Kelaniya	32,667	78	418	50,000	110	450	60,000	120	507

Y. A. D. S. Wanasinghe

Source : Colombo Urban Area Development Plan, Vol. 2.

Table 15 Land use pattern in Central City and selected Suburbs

	Year	Total Corporate Area	Dev. area as % of Total	Urban land use as percentage of developed area					
				1	2	3	4	5	6
Colombo	1977	3733	87.2	51.8	6.2	4.6	14.3	18.7	4.4
Dehiwela Mt. Lavinia	1983	2107	85.6	68.6	1.5	8.4	4.5	3.2	11.0
Moratuwa	1982	1731	79.1	66.5	2.3	8.2	10.8	3.7	8.5
Kolonnawa	1981	491	61.0	47.2	2.2	26.3	9.0	0.4	14.8

Land uses

1. Residential
2. Commercial
3. Industrial
4. Public and Semi - public
5. Recreational
6. Circulatory

Source: Menike, M. S. M. G. Comparative Analysis of land use in selected towns in Sri Lanka. Unpublished Dissertation Post - graduate Diploma in Urban Development, University of Moratuwa, 1983.

Table 16 Marshy lands and inland waters in selected suburbs

Name of town	Percentage	Density of population per ha. 1971
Colombo	12.9	146
Suburbs		
(1st crescent)		
Kolonnawa	38.0	76
Wattala - Mabile	29.3	42
Peliyagoda	36.5	67
Kotte	18.8	62
Dehiwela - Mt. Lavinia	03.7	76
Moratuwa	02.0	72
Suburbs		
(2nd crescent)		
Hendala	37.1	26
Dalugama	0.0	44
Kelaniya	0.9	45
Kotikawatta	3.2	48
Battaramulla	1.4	22
Mulleriyawa	0.0	23
Maharagama	18.8	62

Source : Colombo Urban Area Development Plan Vol. 2.

Suburbs around Colombo are characterized by a predominance of urban land uses. Although more than 75 per cent of the corporate area of the older suburbs have already been utilized for urban activities (Table 15) a considerable amount of land within some suburbs (Peliyagoda, Hendala, had been left, under-developed due to physical constraints (Table 16) while incipient "overbounded"³ suburbs such as Ragama have more than 50 per cent of its corporate area still under agricultural uses.

As a result of the upsurge of population, land use in the developed area (land used for urban purposes) of old suburbs is mainly residential except in Kolonnawa where more than half the developed area has been utilized for non - residential urban uses (Table 15). Space demanding activities such as the JB textile factory, Government food stores, the CTB depot Petroleum Corporation, Oil installations and container yards have been attracted to the relatively cheap buildable land at Kolonnawa. Hence the number of industrial units and warehouses at Kolonnawa increased from 75 in 1956 to 163 in 1976.

3. "Over-bounded" towns have a large proportion of agricultural and other rural uses within the town limits.

Suburbanization Around Colombo: A Preliminary Survey

Suburban land prices very often reflect the present land value and its potential use. Jinadasa's study (1982) on suburban land value fluctuations between 1971 - 1981 reflects a) the spiralling cost of land, b) the slight stabilization and decline in prices after 1980 and c) the difference in land values between the more accessible better neighbourhoods and others. For instance there was a 400 per cent increase in the price of land located in the more accessible and favoured residential areas of Kotte between 1976 and 1980 and a 100 per cent increase in the price of less accessible locations.

The private sector has played an important role in the conversion of suburban land for urban uses. Land transactions in the past took place on a personal or informal basis. Recently, real estate developers have entered the land market. Of the 823 private land sales undertaken between 1959 - 1978 by 11 registered property sales and development companies in the Colombo Metropolitan Region, 70 per cent took place in the Colombo Urban Area (this area includes a large number of old and new suburbs). (Jayaratne, 1982).

A comparison of the number of property transactions executed in selected suburbs bring out the following trends : a) the number of land sales have been increasing every year in almost all the suburbs; b) the highest number of land sales occurred in the suburbs of the inner crescent. c) Battaramulla is the only suburb in the outer crescent which had a relatively large number of land sales (Table 17). This is a direct result of the decision to re-locate the administrative capital in a suburb which had plenty of buildable land; d) The already congested and land-hungry suburbs such as Kelaniya and Dalugama had a lesser number of land sales.

Table 17 Number of Property transactions in selected suburbs

Local Authority	1978	1979	1980	1981	1978-1981
1. Dehiwela Mt. Lavinia	884	1024	1021	937	3866
2. Moratuwa	787	966	962	1076	3797
3. Kotte	310	405	604	784	2103
4. Kolonnawa	19	25	18	96	158
5. Battaramulla	284	580	571	572	2007
6. Kotikawatte	42	45	30	146	263
7. Kelaniya	9	40	58	86	193
8. Dalugama	60	90	74	86	310
9. Hendala	37	49	49	70	205

Source : Dayananda, H. M. A Policy Framework for Land Development in the Colombo Urban Area, 1982, Unpublished M. Sc. Dissertation, University of Moratuwa.

Table 18 illustrates the number of land transactions and size of plots sold during a 6-year period in the fast-growing suburb of Maharagama. Plots purchased by the middle-classes for housing are generally 15-20 perches in extent.

3. "Over-bounded" towns have a large proportion of agricultural and other rural uses within the town limits.

Table 18 Land subdivision at Maharagama

Year	Extent (acres)	Number of plots	Average size of plots (perches)
1977	3.0	26	18
1978	1.0	10	16
1979	5.0	41	20
1980	7.0	62	19
1981	12.4	104	19
1982	1.95	18	15
1983	10.65	107	15

Source : Maharagama Town Council.

Land speculation is rampant in suburban areas. Hence a substantial number of the plots that are not utilized immediately, is held for speculation thus forcing the prices beyond the limits possible for residential development. Illegal subdivision of suburban land is also taking place. Gunadasa's research (1983) on land subdivision in Maharagama indicated that although the average size of a plot was above the stipulated size of 6 perches, proper attention had not been paid to the width of streets, road frontages, access roads, open spaces etc. Section 42 of the Urban Development Authority Regulations (Draft) 1982, states that where the original extent of the land to be subdivided exceeds 0.50 hectares, not less than 10 per cent of the area should be reserved for community and recreational uses in appropriate locations. Twenty per cent of the subdivided land at Maharagama were over 0.50 in extent but no provision had been made to reserve land for open spaces.

Public sector agencies such as the National Housing Development Authority (NHDA) and the Urban Development Authority have acquired agricultural and vacant land in the suburbs for housing and other urban activities. Nearly 24 acres in Kolonnawa, Moratuwa, Dehiwela Wattala, Ja-ela and Kelaniya had been subdivided by the National Housing Development Authority recently for aided selfhelp housing schemes. Mad-dumagewatte, Raddoluwa, Wickremasinghepura are some of its middle class housing schemes involving more than 2000 plots. The Urban Development Authority's Integrated Industrial project at Peliyagoda provides land not only for industrial and commercial activities but for residential purposes as well.

Suburban areas have expanded fast but there has not been a corresponding expansion in the provision of utilities to suburban housing units. Even at the beginning of the mature phase of suburbanization of the inner crescent, the percentage of housing units with electricity ranged from 17.3 in Peliyagoda to only 53 in Dehiwela. Water on-tap (inside the housing unit) was available to less than one third of suburban houses.

VII

The Future

Suburban growth around Colombo has occurred in two main stages :

- i.* The growth of a crescent of suburbs contiguous with the central city which has passed the incipient and developing phases and acquired characteristics of maturity.
- ii.* The emergence of an outer crescent of new suburbs by 1971, some of which are in the incipient phase at present.

The causes and consequences of past suburbanization were an outcome of the interplay of several factors mentioned above. The direction and pace of suburban growth in future will be guided more by political and institutional conditions such as the establishment of the administrative capital in a suburb; the implementation of the Development Plan for the Central City; the reclamation of marshes in and around suburbs and the development of industries in the G. C. E. C. Area. Some of these planning measures are already having an impact on suburbanization.

The selection of a large suburban area to relocate administrative functions will intensify the rate of suburbanization to the East of Colombo. The new capital Sri Jayawardenepura extends over 12,200 hectares (30,000 acres) of suburban and urban areas it includes the,

- i.* suburbs of the inner crescent - Kolonnawa and Kotte.
- ii.* suburbs of the outer crescent - Maharagama, Kotikawatta, Battaramulla, Mulleriyawa.
- iii.* urban areas administered by Village Councils of Mampe Kesbawa, Kaduwela, Kotte - Galkissa and Aturugiriya. (Fig. 4).

Forty - five per cent of the total area selected for the new capital was under crops, marshes and inland waters. The proposed plan expects to convert more than 90 per cent of this undeveloped area into urban uses. (Table 19) The plan envisages the relocation of administrative functions from Colombo in 3 new administrative complexes at Battaramulla, Pelawatte and Depanama /Pannipitiya (within the new capital). Residential activities will cover only 50 per cent of the area but rural land uses will be reduced to 2 per cent.

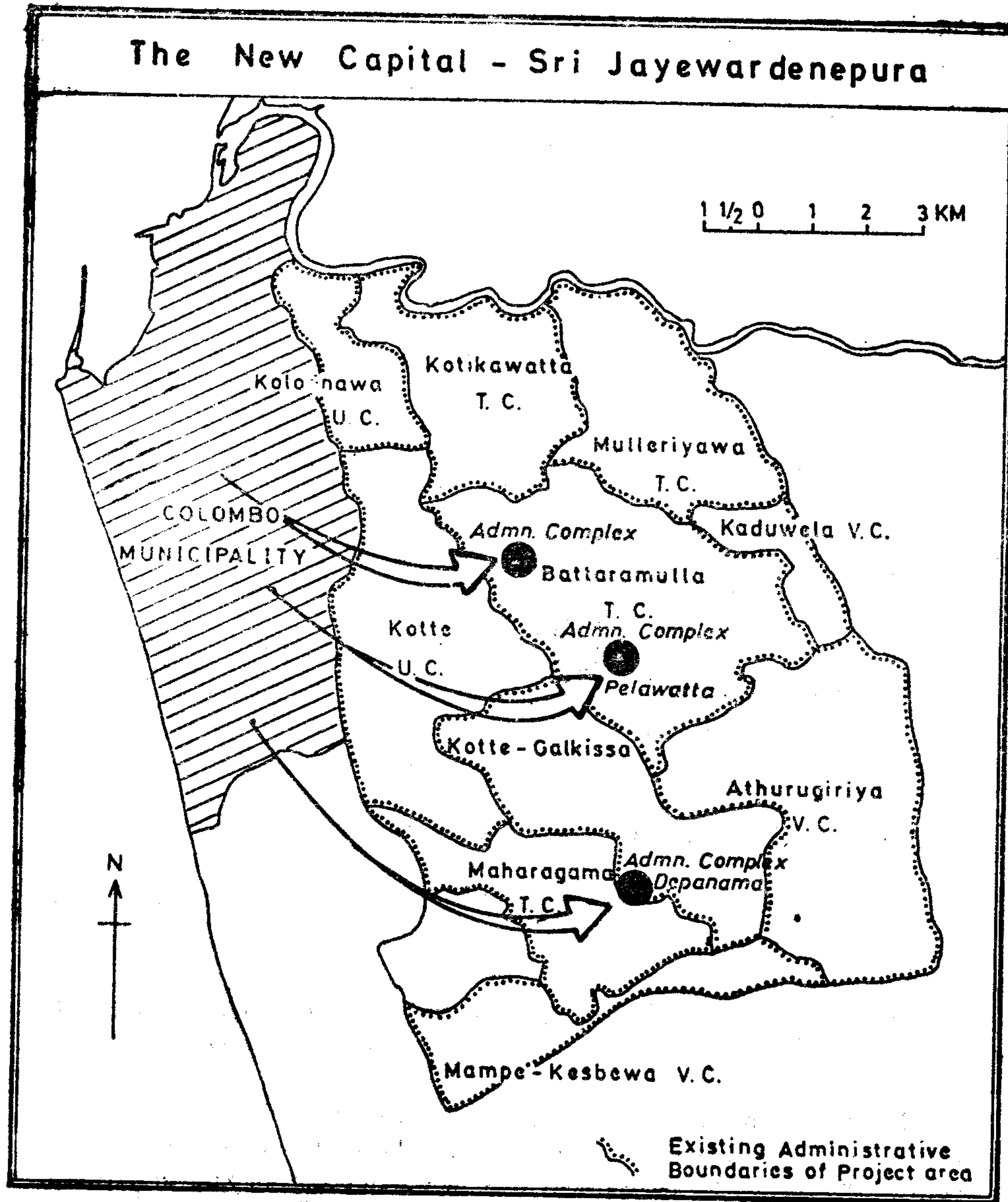


Fig. 4

Table 19 Land Use in Sri Jayawardenepura

Type	Existing (%)	Proposed (%)
1. Residential	44.75	49.60
2. Other urban uses		
<i>i.</i> Schools	0.82	2.00
<i>ii.</i> Wealth, administration and Public Services	0.50	2.20
<i>iii.</i> Religion, Cultural and Social	0.90	1.00
<i>iv.</i> Commercial	0.83	2.70
<i>v.</i> Industrial	0.50	0.50
<i>vi.</i> Parks & open spaces	0.07	25.00
3. Rural land uses		
<i>i.</i> land under crops	38.44	included in 2, vi above
<i>ii.</i> marshes and waterways	7.00	2.00

Source : UDA, Sri Lanka's New Capital - Sri Jayawardenepura (n.d.)

The Development Plan formulated for Colombo city will have an impact on future suburbanization. It aims to rationalize land use by preventing the intrusion of undesirable land uses and shifting space-consuming inappropriate land uses such as warehouses, workshops and container yards located on prime land within the city to suburban locations.

While the public and private sector industrial projects, commercial establishments and housing schemes encroach on suburban agricultural lands, a massive programme of land reclamation in Colombo, Sri Jayawardenepura and other suburbs is being undertaken by the Sri Lanka Land Reclamation and Development Corporation. The lowlying areas in the Colombo Urban Area amounted to 4756 hectares in 1977, of which more than 3600 hectares is expected to be reclaimed for urban and agricultural activities by 2001. Already more than 1500 hectares have been reclaimed for UDA's Industrial and Integrated Development Project at Peliyagoda and also for projects in Kotte, Nawala-Heen Ela area, Gothatuwa, Yakbedda, Madinagoda and Kolonnawa.

The establishment of the Greater Colombo Economic Commission (GCEC) has had an impact on suburbanization North of the Kelani river (Fig 5). The promotion of rapid growth of industries in the two Investment Promotion Zones (Katunayake and Biyagama) with a direct employment capacity of 75,000; the encouragement of other economic activities such as small scale industries and tourism; the provision of infrastructure and services to settlements; the prevention of unplanned ribbon development are some of its objectives which will influence the rate and direction of suburbanization around Colombo.

Urban population in the GCEC area is expected to increase by 412,000. More than 30 percent of the increase will be concentrated in Region 11 where Kelaniya and Dalugama are situated. Since these 2 suburbs are already saturated, future suburban growth is directed towards Mawaramandiya, Kadawata and Biyagama (Fig.5) which means that future suburban development will occur beyond Dalugama.

With the decentralization of some functions from Colombo and the diversification of economic activities in suburbs, job opportunities in Colombo may not increase as rapidly as it did in the past-Yet the city will continue to have an excess of job opportunities. Hence, two kinds of work journeys will take place in the wider suburban area in future viz; the longer journeys to the central city and the shorter journeys within suburbs.

Suburbanization has created many problems and action has been initiated to solve some of the more acute ones. The uncontrolled suburban sprawl will, if unchecked, link the separate entities of Homagama, Piliyandala and Seeduwa with the main suburban mass. Another problem is the haphazard encroachment of urban uses on agricultural lands and the ad-hoc unauthorized reclamation of marshes. Land speculation and the escalation of land values in suburbs have increased the cost of housing construction and has placed a severe strain on low - income and middle income groups which will lead to the proliferation of squatter settlements in suburbs. The illegal subdivision of lands contrary to UDA regulations; the insufficient provision of facilities such as pipe - borne water, sewage and solid waste disposal; traffic congestion and environmental pollution are some of the other problems faced by suburbs.

Suburbanization is a constantly evolving aspect of urban growth. Suburbs around Colombo have fulfilled a positive role and if the above mentioned problems are solved and suburbanization guided along the desired path, suburbs will perform an important role in future too.

Suburbanization of North of Kelani River

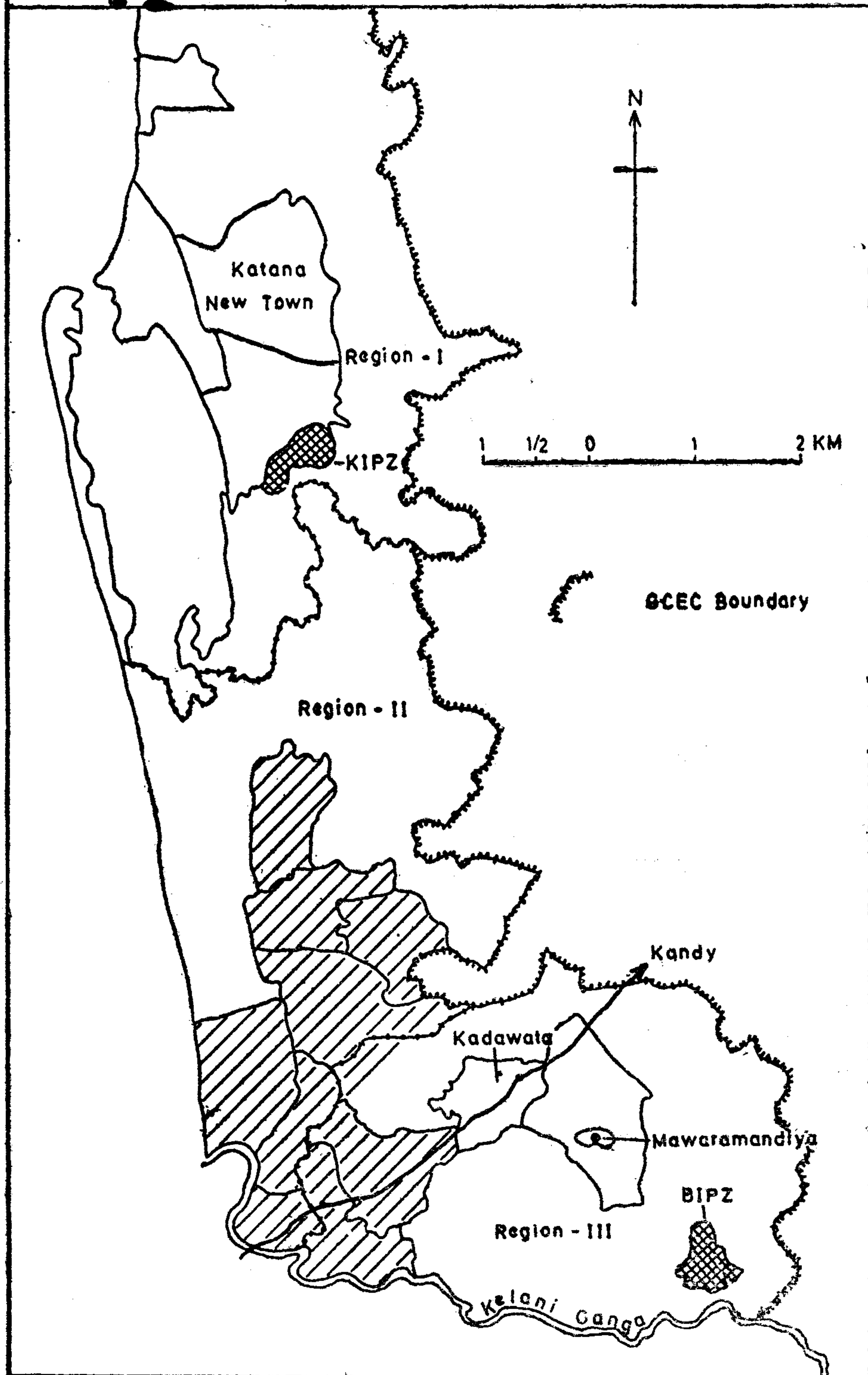


Fig 5

References

- Arunachalam, A. B. (1978) *Bombay : An Exploding Metropolis*, in *Million Cities of India* ed. R. P. Misra, Vikas Publishing House Pvt. Ltd., New Delhi.
- Berry, Brian J. L. and John D. Kasarda, (1977) *Contemporary Urban Ecology*, Mac Millan Publishing Co. Inc. New York.
- Brown, M. A. (1981) "A Typology of Suburbs and Its Public policy Implications" in *Urban Geography*, Vol. 2, pp 288-370.
- Carver, H. (1962) *Cities in the Suburbs*, University of Toronto Press, Canada
- Dayananda, H. M. (1982) *A Policy Framework for Land Development in the Colombo urban Area*, Unpublished M. Sc Dissertation, University of Moratuwa.
- Dattatri, G. and L. D. Dickman (1980) *Report on Planning of the Greater Colombo Economic Commission Area*.
- Department of Census and Statistics, (1982) *Census of Population and Housing, 1981*.
- Geddes, R. (1922) *Town Planning in Colombo*, Sessional paper No. 3 of 1921, Colombo.
- Gober, Patricia and Michelle Behr (1982) "Central Cities and Suburbs as Distinct Place Types : Myth or Fact?" *Economic Geography* Vol. 58, No. 4.
- Greer, S. and A. L. Greer (1976) *Suburban Political Behaviour : A Matter of Trust*, *The Changing Face of Suburbs* ed. E. Schwartz, University of Chicago Press, Chicago.
- Guest, A. M. (1976) "Nighttime and Daytime Populations of Large American Suburbs", *Urban Affairs Quarterly*, Vol. 12, pp 57-82.
- Gunadasa, A. B. M. (1983) *Land Tenure and Land Subdivision : Effect of Urban Planning and Development*, Unpublished Dissertation, Post-graduate Diploma in Urban Development, University of Moratuwa.
- Harris, Chauncy D. (1943) "Suburbs", *American Journal of Sociology*, Vol. 49, July 43, pp. 1-13.
- Hawley, A. H. (1956) *The Changing Shape of Metropolitan America*, The Free Press, Glencoe, Illinois.
- Jayaratne K. A. (1982) *Land Development for Metropolitan Expansion in Colombo: A Case Study on Supply and Price of Land for New Housing Development in the Urban Fringe Area of Colombo*. Unpublished M. Sc. dissertation, A. I. T., Bangkok.
- Jinadasa. M. (1982) *Land Value Changes - 1977-1981 with special reference to Kotte area*, People's Bank Research Dept. Colombo.
- Jones, Victor and Andrew Collver (1959), "Economic Classification of Cities and Metropolitan Areas" in *The Municipal Year Book, 1959* ed Orin F. Nolting and David S. Arnold International City Managers' Association, Chicago.

- Johnson, James H. (1974) *Suburban Growth : Geographical Processes at the Edge of the Western City*, John Wiley and Sons, London.
- Kurtz, Richard A. and Eicher J. B. (1958) "Fringe and Suburb : A Confusion of Concepts", *Social Forces*, Vol. 37 pp 32-37.
- Lineberry, R. L. (1975) "Suburbia and the Metropolitan Turf," *Annals of the American Academy of Political and Social Science* Vol. 422 pp 1-9
- March, Margaret, S. and Samuel Kapla, (1976), "The Lure of Suburbs" in *Suburbs* ed. P. C. Dolce, Anchor Books Anchor Press, Doubleday New York.
- Martin, Walter T., (1956) "The Structuring of Social Relationships Engendered by Suburban Residence," *American Sociological Review*, 21, pp 47-48.
- Masotti, L. H. (ed) (1975) "The Suburban Seventies", *Annals of the American Academy of Political and Social Science* Vol. 422.
- Menike, A. M. S. M. G. (1983) Comparative Analysis of Land Use in selected Towns in Sri Lanka, Unpublished M. Sc. dissertation, postgraduate Diploma in Urban Development, University of Moratuwa.
- Palen, J. J. (1975) *The Urban World*, Mc Graw Hill Book Co., New York
- Schnore, Leo F (1965) *The Urban Scene*, The Free Press, New York.
- UNDP/Dept. of Town and Country Planning, (1978) Colombo Master Plan project, Vols. 1-4.
- Urban Development Authority, Sri Lanka's New Capital - Sri Jayewardenepura (n.d.)
- Vamadevan, S. "(1965) Aspects of Internal Migration in Ceylon," *World Population Conference*, Vol. IV.
- Wanasinghe, Y. A. D. S. (1973) Rural Settlement Changes in the Western Province of Ceylon, Unpublished Ph. D. Thesis, University of London
- Zikmund, J. (1975) "A Theoretical Structure for the Study of Suburban politics" *Annals of the American Academy of Political and Social Science*. Vol. 422 pp. 45-60.