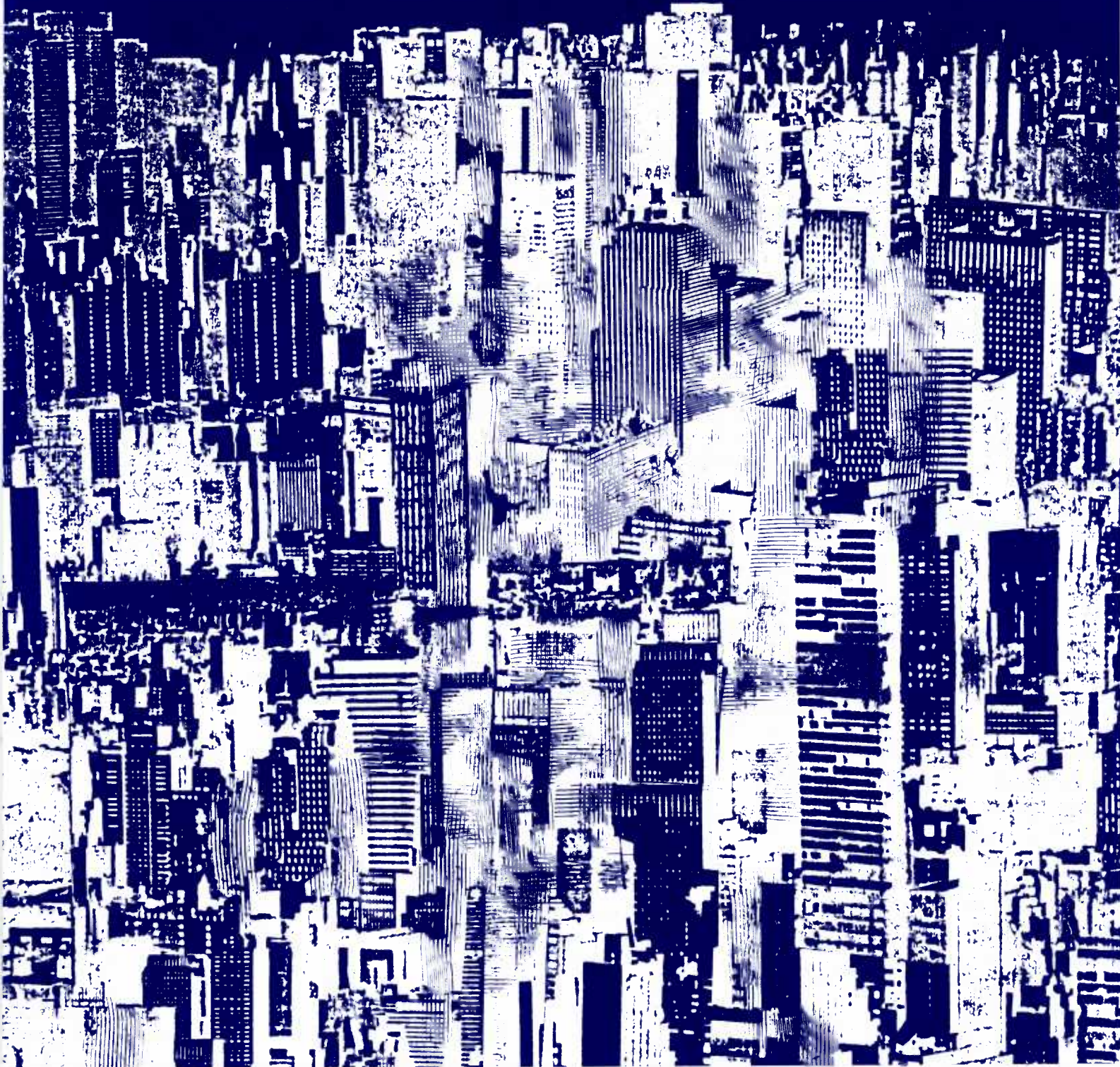




United Nations

Population Growth and Policies in Mega-Cities

BOMBAY



Department of International Economic and Social Affairs

POPULATION POLICY PAPER NO. 6

Population Growth and Policies in Mega-Cities

BOMBAY



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NOTE

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PREFACE

This publication is one in a series of studies being prepared by the Population Division of the Department of International Economic and Social Affairs of the United Nations Secretariat which focus on the population policies and plans of some mega-cities in developing countries, cities that are expected to have populations of at least 8 million inhabitants by the year 2000.

The object of the series is to examine the formulation, implementation and evaluation of the population policies of mega-cities from a broad perspective, emphasizing the reciprocal links between population and development in the spirit of the World Population Plan of Action. ^{1/} The development of population policies to improve the standard of living and the quality of life of the inhabitants of the world's largest cities is a highly complex and multifaceted activity. It involves, for example, not only the analysis of migration trends, the preparation of population projections, and the formulation of population distribution strategies but also the provision of cost-effective urban infrastructure (e.g., housing, water, sewerage, transportation, and health and educational facilities), the monitoring and creation of employment, the assembly of urban land for development projects, the improvement of municipal revenue-raising mechanisms and the establishment of effective institutional arrangements for planning and managing urban growth.

Each of the technical papers in this series follows a common format consisting of five major sections. Section I provides basic information on demographic trends and reviews the use of demographic data in planning for rapidly growing urban populations. Section II presents background information on the city's economic base, the spatial structure

^{1/} See Report of the United Nations World Population Conference, 1974, Bucharest, 19-30 August 1974 (United Nations publication, Sales No. E.75.XIII.3), chap. 1, and Report of the International Conference on Population, 1984, Mexico City, 6-14 August 1984 (United Nations publication, Sales No. E.84.XIII.8 and Corr. 1 and 3), chap. I, sect. B.

of the metropolitan region and the sectoral and spatial distribution of jobs, all of which are crucial to a proper understanding of how population distribution strategies operate. Section III reviews early decentralization strategies and how they were evaluated and revised by local planners and then examines current population distribution strategies for the metropolitan region. Section IV deals with a number of key issues and sectors - the labour market, urban land, housing, water supply and so on - from the perspective of planning for rapidly growing urban populations and managing urban growth. Wherever possible, attention is given in that section to the extent to which various sectoral policies may have served as implicit spatial policies that reinforced or perhaps counteracted explicit spatial goals. Finally, section V examines the sectoral distribution of public investment and how that investment has influenced the achievement of spatial goals, how individual cities have generated revenue for municipal projects, and what types of institutional arrangements have been established to plan for and manage urban growth.

To date, reports issued in the Population Growth and Policies in Mega-Cities series are:

CALCUTTA	(ST/ESA/SER.R/61)
SEOUL	(ST/ESA/SER.R/64)
METRO MANILA	(ST/ESA/SER.R/65)

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EXPLANATORY NOTES

Symbols of United Nations documents are composed of capital letters combined with figures. Mention of such a symbol indicates a reference to a United Nations document.

Reference to "dollars" (\$) indicates United States dollars, unless otherwise stated.

The term "billion" signifies a thousand million.

Annual rates of growth or change refer to annual compound rates, unless otherwise stated.

A hyphen between years (e.g., 1984-1985) indicates the full period involved, including the beginning and end years; a slash (e.g., 1984/1985) indicates a financial year, school year or crop year.

A point (.) is used to indicate decimals.

The following symbols have been used in the tables:

Two dots (..) indicate that data are not available or are not separately reported.

A dash (--) indicates that the amount is nil or negligible.

A hyphen (-) indicates that the item is not applicable.

A minus sign (-) before a number indicates a deficit or decrease, except as indicated.

Details and percentages in tables do not necessarily add to totals because of rounding.

The following abbreviations have been used:

AFLISP	Affordable Low Income Shelter Programme
BMC	Bombay Metropolitan Corporation
BMR	Bombay Metropolitan Region
BUDP	Bombay Urban Development Project
BMRDA	Bombay Metropolitan Region Development Authority
CIDCO	City and Industrial Development Corporation
MIDCO	Maharashtra Industrial Development Corporation
RIP	Regional Investment Plan
SICOM	State Industrial and Investment Corporation

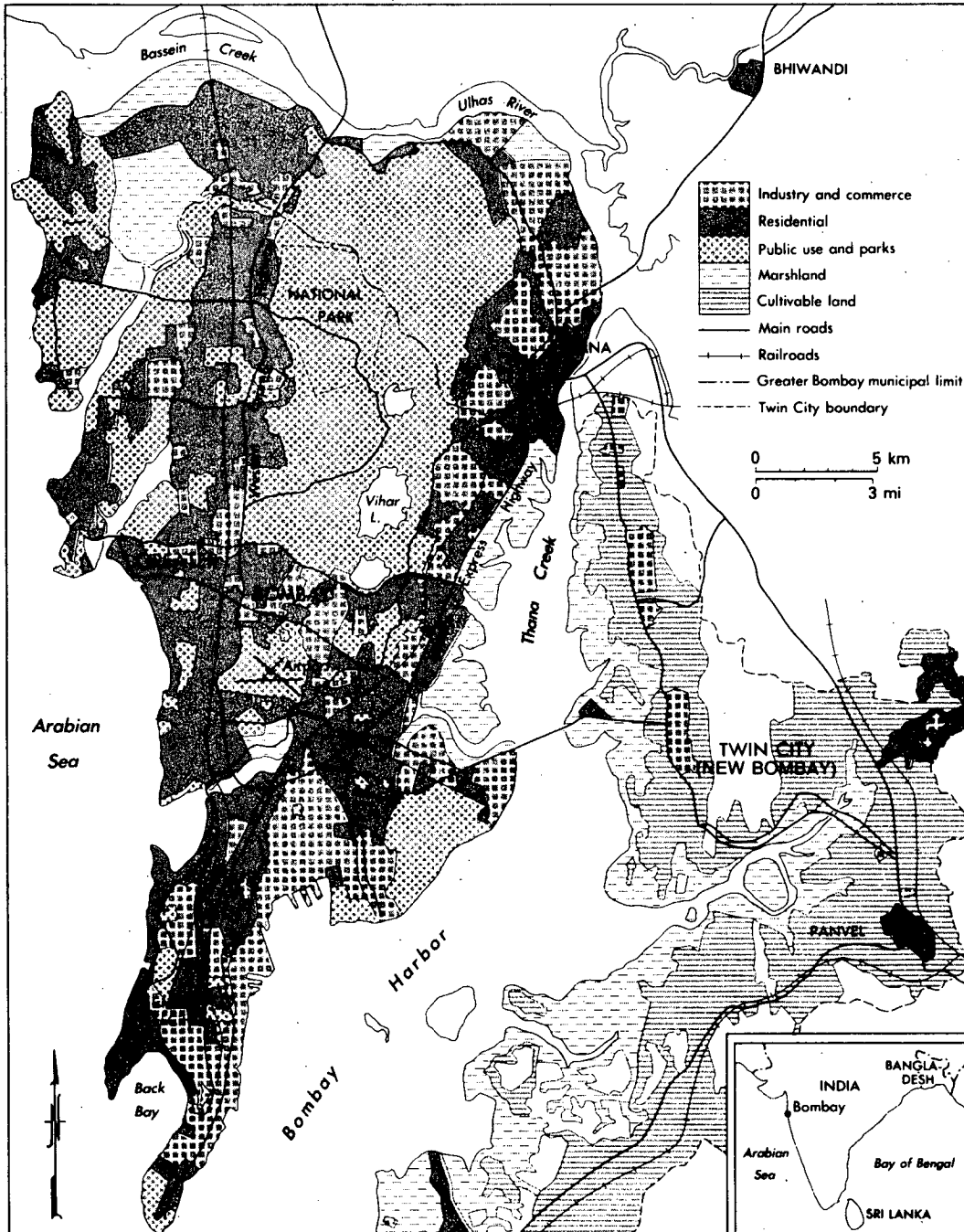
INTRODUCTION

India's major industrial and financial centre and the country's second largest metropolitan area in population size, Greater Bombay had a population of 8,227,000 in 1981, whereas the Bombay Metropolitan Region (BMR) had a population of about 11,033,000. 1/ Greater Bombay's rate of population growth has been decelerating gradually for about three decades and a spontaneous process of decentralization has been under way. There is continuing concern, however, over the effects of congestion in Bombay Island, to the point that there has been discussion of building some sort of barrier at the entry to the island to control the flow of new arrivals. 2/

Although it has the strongest and most diversified economy of any of India's 12 metropolitan cities 3/ and higher levels of income and a lower incidence of poverty, Bombay continues to have serious infrastructure deficits. The housing situation is very critical, with about 50 per cent of the population of Greater Bombay residing in slums that are growing much more rapidly than the city as a whole. Moreover, some 400,000 persons reside in 20,000 deteriorating tenements (chawls) in the southern part of Bombay Island, while there are at least 200,000 pavement dwellers. Efforts to improve the housing situation have been frustrated by the low incomes of the slum dwellers and by the impact of four decades of rent control. 4/ Although legislation was drafted in 1976 with the aim of nationalizing vacant land for development projects, as a result of exemptions, little land has been taken over, and there is considerable speculation in the urban land market. Bombay's water supply network is grossly inadequate, with supply rationed for from two to eight hours daily in many areas of the city. Similarly, planners acknowledge that the sewerage network needs to be modernized and extended beyond Bombay Island.

Concerns over quality-of-life issues in Bombay are hardly new. Since the early 1950s, planners in Bombay have been studying the city's major problems and have proposed plans for the decentralization of the metropolitan region as a means of relieving pressure on basic infrastructure and reducing congestion in Bombay Island. The state of Maharashtra has promoted industrial dispersal in successive plans and statutes since the 1960s, which, on balance, have had a considerable impact. Construction has been under way since the early 1970s in New Bombay, a twin city across the harbour which was designed to accommodate new migrants and even to siphon off some of the population from the southern part of Bombay Island (figure I). Another plan has sought to alleviate congestion in South Bombay by developing a massive market complex (Bandra-Kurla) in the northern part of Bombay Island. Still

Figure I Greater Bombay, 1976



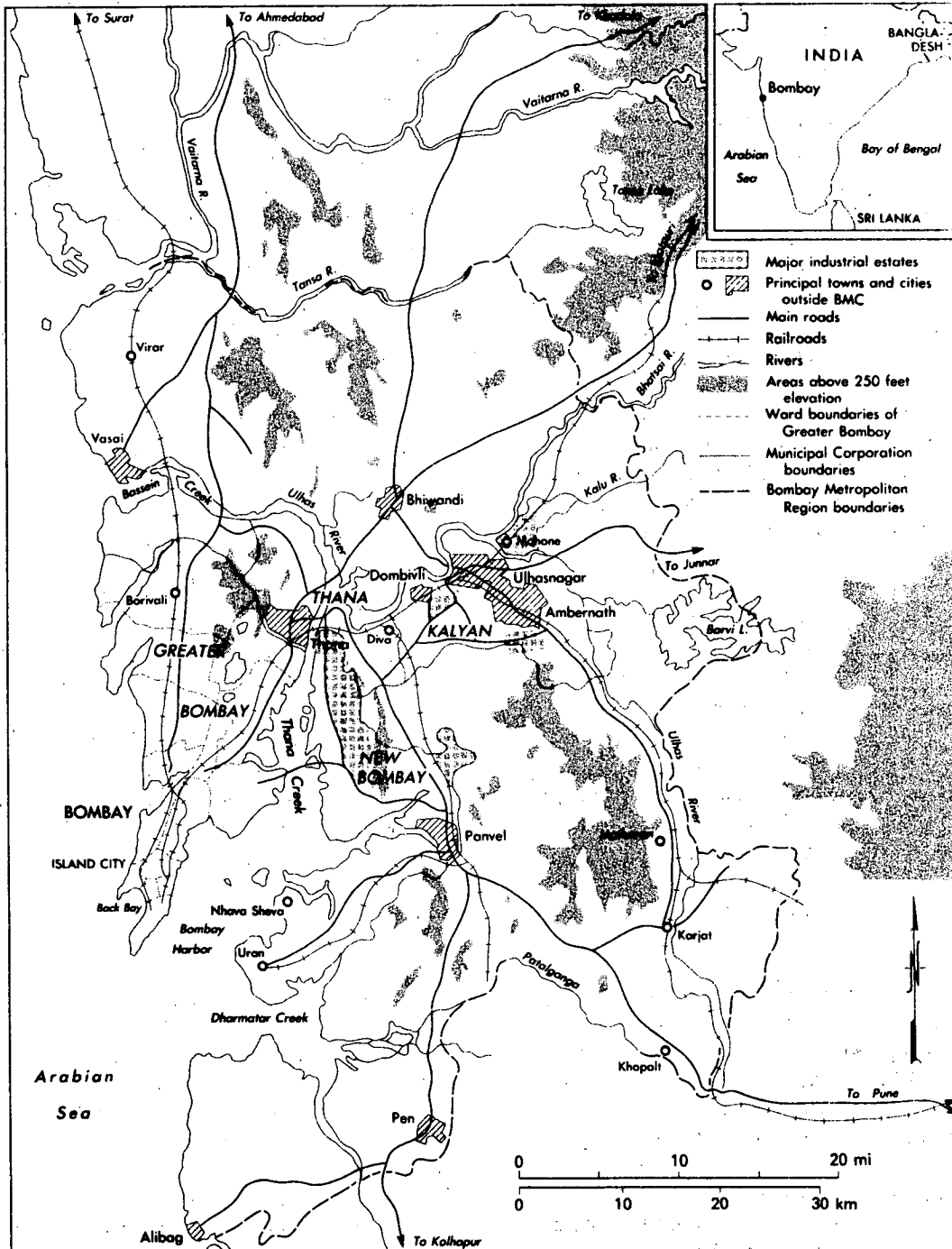
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Source: K.C. Sivaramakrishnan and Leslie Green, *Metropolitan Management, The Asian Experience*, The World Bank / Oxford University Press, 1986.

another plan has aimed at developing a complex of cities, the Kalyan complex, in the northern part of the Bombay Metropolitan Region (figure II).

In the nearly two decades since those plans were formulated, Bombay Island has continued to grow at a moderately rapid rate. New Bombay, which originally had a target population of 2 million inhabitants by 1991, has grown more slowly than anticipated. It is finally beginning to take off, however, and is expected to have a population of about 700,000 in 1991. The Kalyan complex is growing spontaneously, resulting in serious infrastructure lags. Bandra-Kurla, however, remains largely in the blueprint stage.

Figure II Bombay Metropolitan Region, 1983



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Source: K.C. Sivaramakrishnan and Leslie Green, *Metropolitan Management, The Asian Experience*, The World Bank / Oxford University Press, 1986.

I. DEMOGRAPHIC CHARACTERISTICS

A. Population growth

From a population of about 10,000 inhabitants shortly after its founding in 1661, Bombay reached 644,400 in 1872, the year of India's first census (table 1). The growth of Bombay was very erratic during the last quarter of the nineteenth century, with periodic famine in the hinterland driving rural residents into the city and periodic epidemics (e.g., bubonic plague in 1897 and again in 1900) forcing large numbers of Bombay residents to seek shelter in the countryside (Harris, 1978). Bombay City grew moderately fast - by 2.1 per cent per annum - during 1901-1921, reaching 1,175,900 inhabitants in 1921. Greater Bombay grew by about the same rate, 2.0 per cent per annum, reaching a population of 1,380,000 in 1921. Bombay City had a negative recorded rate of population growth during the 1921-1931 census decade, whereas Greater Bombay grew by only one tenth of a percentage point (this was an artificial result related to the effects of the non-co-operation movement on census enumeration). ^{5/} As expected, there was an increase in the rate of population growth during 1931-1941 - to 2.5 per cent per annum in Bombay City and to 2.6 per cent in Greater Bombay - and their respective populations grew to 1,489,900 and 1,801,000 by 1941 (see figure III). The 1941-1951 census decade was Bombay's period of peak population growth. Because of the influx of refugees following partition, Bombay City grew by 4.6 per cent per annum, reaching 2,329,000, whereas Greater Bombay grew by 5.2 per cent per annum, reaching 2,994,000. The rate of population growth decelerated, however, during 1951-1961. Bombay City grew at an average annual rate of 1.7 per cent per annum, reaching 2,772,000 in 1961, whereas Greater Bombay grew by 3.3 per cent per annum, reaching 4,152,000. In the following two decades, Bombay City's average annual rate of population growth continued to decline: from 1.0 per cent per annum during 1961-1971 to 0.6 per cent per annum during 1971-1981. However, Greater Bombay's population grew by 3.7 per cent per annum during 1961-1971 and by 3.2 per cent per annum during 1971-1981, reaching 8,227,000 in 1981 (table 1).

The Bombay Metropolitan Region (BMR) grew by an average annual rate of 3.8 per cent during 1961-1971, increasing from 5,384,000 to 7,789,000, and by 3.5 per cent during 1971-1981, reaching 11,033,000 (table 1). The rate of population growth has varied considerably, however, for different parts of the BMR. Whereas the population of Bombay City increased by only 6.1 per cent during the decade 1971-1981, the suburbs and extended suburbs increased by 62.6 and 97.2 per cent, respectively (table 2). ^{6/} Although both the eastern and western suburbs have grown at significantly higher rates than Bombay City, their growth has likewise been declining. As for their share of absolute

Table 1. Historical estimates of population of Bombay City, Greater Bombay, and Bombay Metropolitan Region, 1661-1981

Year	<u>Bombay City</u>		<u>Greater Bombay</u>		<u>Bombay Metropolitan Region</u>	
	Population size (thousands)	Average* annual rate of growth	Population size (thousands)	Average* annual rate of growth	Population size (thousands)	Average* annual rate of growth
1661	10	-	-	-	-	-
1716	16	0.8	-	-	-	-
1744	70	0.6	-	-	-	-
1780	114	1.4	-	-	-	-
1814	170	1.2	-	-	-	-
1836	236	1.5	-	-	-	-
1845	556	10.0	-	-	-	-
1864	817	2.0	-	-	-	-
1872	644	2.9	-	-	-	-
1881	733	1.4	-	-	-	-
1891	822	1.2	-	-	-	-
1901	776	2.3	928	-	-	-
1911	974	2.3	1 149	2.2	-	-
1921	1 176	1.9	1 380	1.8	-	-
1931	1 161	-0.1	1 398	0.1	-	-
1941	1 490	2.5	1 801	2.6	-	-
1951	2 329	4.6	2 994	5.2	-	-
1961	2 772	1.7	4 152	3.3	5 384	-
1971	3 072	1.0	5 971	3.7	7 789	3.8
1981	3 258	0.6	8 227	3.2	11 033	3.5

* Average annual rate of growth (exponential rate in percentage) in the period between the given year and the preceding one.

Source: Estimates from 1661 to 1845 from various sources and are quoted in Nigel, Harris. Economic Development, Cities and Planning: The Case of Bombay (Bombay, Oxford University Press, 1978). Estimates for 1864 and after are from Census of India.

Figure III

Growth of Bombay City & Greater Bombay 1901-1981

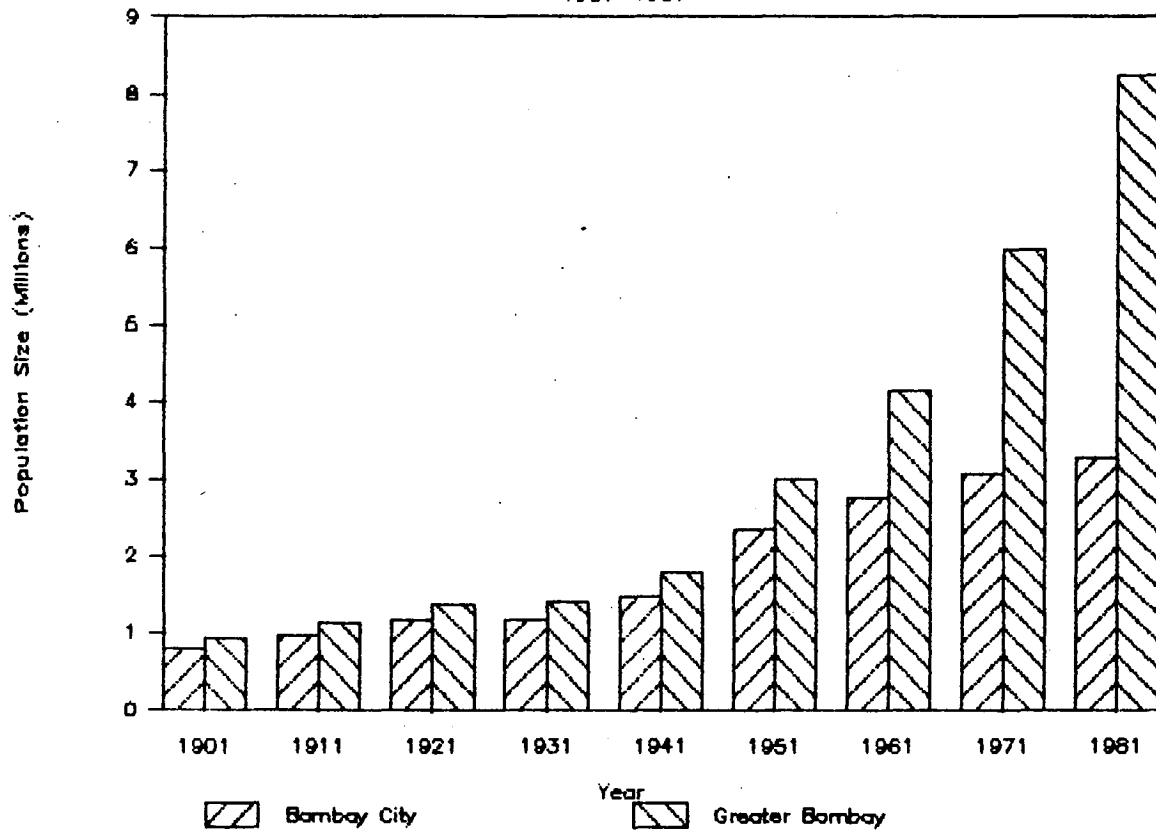


Table 2. Population of Greater Bombay, by ward, and of the western and eastern suburbs, 1961-1981, and density, 1981

Section/ward	Population			Percentage growth over		Density per hectare
	1961	1971	1981	1961-1971	1971-1981	
<u>Section</u>						
I City (A-G)	2 771 933	3 070 378	3 258 117	10.7	6.1	474
II Western suburbs (H,K,P,R)	877 951	1 705 494	2 872 582	94.2	68.4	136
III Eastern suburbs (L,M,N,T)	502 161	1 194 703	2 096 633	137.9	75.4	132
Greater Bombay (I-III)	4 152 045	5 970 575	8 227 332	43.8	37.8	188
<u>Ward</u>						
City	2 771 933	3 070 378	3 258 117	10.7	6.1	474
Ward A	195 668	184 104	189 367	-6.0	2.9	181
Ward B	175 056	175 131	146 049	0.01	-16.7	596
Ward C	339 452	312 472	248 536	-8.0	-20.5	1 396
Ward D	414 414	382 547	383 338	-7.7	0.2	578
Ward E	438 046	528 736	515 818	20.7	-2.5	696
Ward F	549 120	662 516	793 981	20.7	19.8	375
Ward G	660 177	824 677	981 028	24.9	18.9	550
Suburbs	1 036 104	2 166 864	3 522 520	109.1	62.6	183
Ward H	290 271	523 633	724 644	80.3	38.3	289
Ward K	302 548	573 693	923 354	89.6	60.9	195
Ward L	142 056	273 507	433 571	92.5	58.5	325
Ward M	135 667	316 371	567 625	133.1	79.4	103
Ward N	165 562	479 660	873 326	189.7	82.0	158
Extended suburbs	344 008	733 333	1 446 698	113.1	97.2	82
Ward P	167 741	372 335	663 246	121.9	78.1	103
Ward R	117 391	235 833	561 338	100.8	138.0	75
Ward T	58 876	125 165	222 114	112.5	77.4	64

Source: Bombay Metropolitan Region Development Authority, Population of Bombay Metropolitan Region, 1981.

growth, the suburbs absorbed 60 per cent of the additional population of 2,260,000, whereas the extended suburbs absorbed 32 per cent and Bombay City only 8 per cent.

In recent years, the rate of natural increase in Greater Bombay has declined from around 19 per thousand in 1979 to 15 per thousand in 1983; the crude birth rate declined from 29.2 per thousand (1979) to 23.4 per thousand (1983), whereas the crude death rate declined from 10.3 to 8.2 per thousand (People, 1984b). On the basis of registration data, the crude death rate in Greater Bombay was 7.8 per thousand in 1984 and 7.6 per thousand in 1985, whereas the crude birth rate was 22.6 and 22.2 per thousand, respectively (BMC, 1985).

B. Migration

The growth of industry during the nineteenth century resulted in high rates of in-migration to the Bombay region. The proportion of native born fell from 31 per cent of the population of Bombay City in 1872 to 16 per cent by 1931. Even by 1961, only 36 per cent of the population of Greater Bombay had been born there. Of the rest, 27 per cent were born in the state of Maharashtra (44 per cent in the poor arid district of Ratnagiri) while two thirds of those born outside Maharashtra came from the three states of Gujarat, Uttar Pradesh and Mysore.

Migration still contributes a greater share than natural increase to population growth in Greater Bombay. Of the absolute increase of 2,260,000 persons during 1971-1981, it is estimated that net migration contributed about 1,400,000. The continuing migration of unskilled workers to the Bombay region - at an average rate of about 350 migrants per day 7/ - continues to be a highly sensitive political and social issue that has been tackled at times with forceful policy measures. For example, following a large-scale clearance of squatter settlements during 1981, migrants were given one-way railway tickets and returned to their villages (People, 1984b).

C. Population projections

During the late 1960s, as an input to the Regional Plan for Bombay Metropolitan Region (1970-1991), the Demography Study Group of the Bombay Metropolitan Region Planning Board prepared a series of population projections for Greater Bombay, based on the extrapolation of past demographic trends. The high-variant projection was based on the assumption of a 5 per cent decline in natural increase over a five-year period, with no change in the rate of net migration observed during

1951-1961. The medium variant was based on a 5 per cent reduction in both natural increase and net migration every five years, and the low variant assumed a 10 per cent reduction in natural increase and net migration every five years. The study group acknowledged that the assumptions were highly speculative, because fertility trends would depend on the success of the state of Maharashtra's family planning programme, whereas migration trends would depend on such factors as the impact of the Green Revolution, the state Government's decentralization policies and so forth.

The actual population of Greater Bombay enumerated in the 1971 census was larger than the Demography Study Group's high-variant projection, yet the proposals in the Regional Plan were based on the medium variant. Moreover, whereas the Regional Plan projected a population of 7,000,000 for Greater Bombay and of 2,000,000 for New Bombay by 1991, Greater Bombay had already reached 7,000,000 inhabitants by the mid 1970s, whereas the growth of New Bombay had not yet begun to gather momentum.

During the same period, population projections for Greater Bombay were prepared by several other groups - e.g., by the Gadgil Committee (a high-level state committee charged with studying metropolitan problems); the Demographic Training and Research Centre (DTRC) at Chembur; the Regional Transport Survey (RTS) Unit of the Government of Maharashtra; and by Binnie and Partners, a private management consulting firm (see table 3). A comparison of those projections with the census totals reveals that, with the exception of the projections prepared by the Regional Transport Survey (RTS) Unit, Bombay's future population size was underestimated.

Table 3. Population projections for Greater Bombay, 1971-1991

Year	Board's Study Group			Gadgil Committee	DTRC	RTS Unit	Binnie and Partners	Census totals
	Low	Medium	High					
	Population (millions)							
1971	5.56	5.70	5.76	5.39	5.85	5.94	5.71	5.97
1976	6.30	6.59	6.75	6.10	6.76	7.02	6.39	
1981	7.06	7.57	7.87	6.87	7.70	8.00	7.06	8.23
1986	7.81	8.64	9.16	7.75	7.94	8.02	7.64	
1991	8.67	9.81	10.63	8.72			8.18	

Source: Bombay Metropolitan Region Planning Board, Regional Plan for Bombay Metropolitan Region, 1970-1991 (1973).

The next major population projections prepared for Greater Bombay were based on an urban growth model developed by the City and Industrial Development Corporation (CIDCO). Whereas the methodology of the Demographic Study Group had been an extrapolation of past trends and did not have any causal structure that might identify key variables for policy formulation, the urban growth model developed by CIDCO had a causal structure (BMRDA, 1976). The model identified employment in manufacturing as the self-propelling force in Bombay's economy (and was therefore considered to be a potentially useful tool for analysing alternative employment creation policies). However, planners later concluded that the model had some weaknesses - e.g., it considered the economy of Bombay to be independent of any external forces, and it explained in-migration almost entirely by pull factors.

In 1976 the BMRDA developed an alternative approach to forecasting Bombay's population which was designed to supplement CIDCO's earlier efforts (BMRDA, 1976). BMRDA's methodology assumed that the urban population of the region would grow as a function of the growth of the state population, modified by shifts because of urbanization and interregional competitiveness. However, using data over the period 1901-1971, the BMRDA concluded that no consistent pattern could be observed in the components of the growth rate, except for the share of state growth. The BMRDA projected the urban population of the BMR to be in the range of 16,200,000 - 16,600,000 by the year 2001.

II. THE ECONOMY

A. Historical background and development of Bombay's economic base

Bombay traces its origins to a small fortified settlement of the East India Company, which grew hardly at all in the first decades after it was ceded to the British crown in 1661. Even by the late eighteenth century, Bombay was primarily a marine supply point which, unlike Calcutta and Madras, had few linkages with its hinterland. During the early nineteenth century, Bombay's growth was spurred by several military events (e.g., the destruction of Maratha power (1819) and conquest of the Deccan in the 1840s) 8/ and by several economic factors, including the development of foreign shipping services to exploit Bombay's greater proximity to Europe than that of Calcutta, the extension of the railway line to the cotton-growing areas in Bombay's hinterland in the 1860s, and the boosting of world cotton prices as a result of shortages caused by the American Civil War.

The growth of Bombay from the second half of the nineteenth century was closely linked to trade. Indeed, the three great slumps in foreign trade - in the late 1860s, the 1890s and the 1920s - were reflected in temporary falls in the city's population. Beginning in the mid-nineteenth century, Bombay's port functions were rapidly transformed from exporting to importing. The import trade stimulated the development of import-substituting manufacturing, especially in cotton textiles (where the labour force expanded from less than 7,000 workers in the 1860s to 73,000 workers by 1900), although the manufacturing base remained narrow and rather specialized (Richardson, 1980).

From the 1940s, Bombay's manufacturing sector became more diversified, with an expansion in basic metals and engineering dating from the Second World War. The engineering industry of Bombay is much more mixed, with a wide range of light and medium engineering products, than the heavy engineering found in Calcutta, and is more resistant to national recessions. Other manufacturing activities have developed rapidly in Bombay, and the range of products, from oil refining and petrochemicals to pharmaceuticals, is currently quite broad. Printing and publishing and food manufacturing are other important industrial sectors. The most dramatic gains in employment, however, have been in "other manufacturing", encompassing a broad range of industries (e.g., tobacco, leather, furniture and timber products, paper, ceramics and jewelry). Thus, despite the continued dominance of textiles and engineering, Bombay's industrial base is currently quite diversified in comparison with the past and with other Indian cities.

Although the manufacturing sector is very important in Bombay, accounting for more than two fifths of the labour force, other sectors have also flourished. For example, the port of Bombay has been important not only as a direct employer, but also as the force behind the emergence of a wide range of service and financial activities. These, in turn, have created the business agglomeration economies and non-manual labour pools that have made Bombay very attractive as a location for public- and private-sector offices.

B. Recent performance of the economy

The Bombay economy has been quite strong in recent years. Its economic base is oriented towards international and national rather than regional markets, it has a vigorous and diversified manufacturing sector, and the city is India's leading financial and business centre. With about one twentieth of India's urban population, Bombay generates one tenth of the nation's industrial jobs, two elevenths of manufacturing value added, and handles more than one quarter of the country's foreign trade. Despite a weak performance during 1974-1975, reflecting the city's openness and consequent vulnerability to world recession, industrial production grew at a rate of almost 7 per cent during the late 1970s, industrial employment by 2 per cent and per capita income by about 6 per cent (Richardson, 1980). Moreover, those gains were achieved with a negligible inflation rate by international standards. In addition, there is impressive evidence that some of the benefits of economic growth have "trickled down", especially since 1975, although the improvement in living standards has been greatly influenced by a dramatic improvement in the food supply situation.

C. Spatial structure of the metropolitan region

Although Greater Bombay extends over an area of about 438 square kilometres, much of the population is concentrated in the south, within the old island city, which is a long and narrow strip extending from Colaba Point at the southern tip to Mahim on the Western railway and Sion on the Central railway (figure II).

In general terms, the two north/south railway lines stratify the areas of Bombay City by function. The area to the west of the railway consists of higher-income residential neighbourhoods, while the eastern shore is occupied by port-related activities, warehouses and wholesale trade. The fort area in the south is the centre for big business, banking and finance, and government administration, while the central zone between the two rail arteries is divided into three sub-areas: a

mix of middle- and low-income housing and commercial activity in the north and again in the south, and an industrial belt in the centre that is largely occupied by old-established textile factories.

Development is highly concentrated in the island city, which accounts for only 15.5 per cent of the total municipal area but for 51 per cent of the population - in very high densities in some areas (see table 2) - 71 per cent of the jobs and almost 60 per cent of factory jobs. Such concentration is not atypical in developing countries with a single centre. However, in Bombay's case, the narrowness of the island and the consequent need to rely on a very limited number of north/south rail and road arteries have aggravated the congestion problems of the central city and limited the options for spontaneous spatial redistribution. In the words of the Bombay Metropolitan Regional Plan of 1970:

"The elongated nature of the island and the Salsette peninsula, the location of the downtown area to the south of the island, the linear nature of developments along the western and eastern corridors, the existence of the wedge of hills and forests between these corridors and limited points of access with the mainland portion of the region, and the long distance from which water has to be brought by laying trunk mains at great cost thus emerge as the principal constraints in evolving a satisfactory physical plan for the metropolis."

Beyond the downtown and central city areas of Bombay City lie the suburbs and the extended suburbs, which have been growing much faster than Bombay City. Suburbanization is not a new phenomenon. The suburbs have expanded faster than the city in each decade since 1911, while the extended suburbs have grown faster than the city since 1951.

The urbanized area of the BMR is not confined to Greater Bombay but stretches northeastwards through Thana, across Thana Creek to Bhiwandi and the large number of towns that form the so-called Kalyan complex (e.g., Kalyan, Ulhasnagar, Ambernath and Dombivli) (table 4). These are thriving industrial centres, many of them located on the railway line. Perhaps their main characteristic is a lack of planning and a severe lag in infrastructure and urban services that have fallen behind population growth. There are some other scattered and mostly small urban settlements distributed over the BMR, the largest of which are Bassein in the north, Panvel across Thana Creek in the large New Bombay zone administered by CIDCO, and Khopoli at the south-eastern boundary of the BMR. The BMR also contains very large rural areas accommodating about 1 million people. The most important part of the rural BMR is the spatially large New Bombay, or twin-city area, connected to Bombay itself by Thana Bridge across Thana Creek. Although there are many

Table 4. Growth of population in the Bombay Metropolitan Region, 1961-1981

Urban centre	Population			Average annual growth rate (percentage)	
	1961	1971	1981	1961-1971	1971-1981
1. Greater Bombay	4 152 056	5 970 575	8 227 332	3.7	3.2
Ulhasnagar urban agglomeration (2-7.)					
2. Ulhasnagar	247 250	396 384	648 149	4.8	5.0
3. Kalyan	107 760	168 462	273 332	4.6	4.9
4. Dombivli	73 482	99 547	135 870	3.1	3.1
5. Ambernath	18 407	51 108	103 213	10.7	7.3
6. Katemanivli	34 509	56 276	96 357	5.0	5.5
7. Mohone	5 803	9 647	20 023	5.2	7.6
	7 289	11 344	19 354	4.5	5.5
Thana City agglomeration (8-10.)					
8. Thana	109 205	207 352	388 577	6.6	6.5
9. Majiwade	101 107	170 675	309 271	5.4	6.1
10. Kalva	-	22 126	48 918	-	21.1
	8 108	14 551	30 388	6.0	7.6
Bassein Town agglomeration (11-13.)					
11. Bassein	28 238	44 909	52 341	4.7	1.5
12. Manikpur	22 598	30 594	34 929	3.1	1.3
13. Sandor	-	7 610	9 488	-	2.2
	5 640	6 705	7 924	1.7	1.7
14. Bhiwandi	47 630	79 576	115 256	5.3	3.8
15. Panvel	18 130	26 602	37 026	3.9	3.4
16. Khopoli	-	18 152	32 108	-	5.9
17. Virar	9 413	12 713	23 179	3.0	6.2
18. Uran	10 229	12 626	15 168	2.1	1.8
19. Alibag	9 909	11 913	14 050	1.8	1.7
20. Pen	9 549	11 754	14 772	2.1	2.3
21. Bhayandar	6 974	10 598	25 611	4.3	9.2
22. Neral	5 604	8 078	9 523	3.7	1.6
23. Kulgaon	-	6 758	13 258	-	7.0
24. Karjat	5 143	5 634	7 969	0.9	3.5
25. Rasayani	-	2 018	3 654	-	6.1
26. Matheran	2 842	3 397	3 920	1.8	1.4
27. Nagaon	-	7 691	29 521	-	14.3
28. Narpoli	-	10 262	25 783	-	9.6
29. Mumbra	-	8 200	21 900	-	10.3
30. Ayare	-	3 075	19 236	-	20.0
31. Gajabandhan Patharli	-	3 655	13 474	-	14.0
32. Chikanghar	-	6 506	9 979	-	4.4
33. Kolshet	-	4 909	9 051	-	6.3
34. Balkum	-	7 580	8 980	-	1.7
35. Chole	-	5 673	8 454	-	4.1
36. Ghanosoli	-	4 273	8 038	-	6.5
37. Kogaon	-	3 804	6 693	-	5.8
38. Sopara	-	4 249	4 327	-	0.2
Total, urban	4 589 000	6 816 000	9 797 000	4.0	3.7
Total, rural	795 000	973 000	1 236 000	2.0	2.4
TOTAL, BMR	5 384 000	7 789 000	11 033 000	3.8	3.5

Source: Bombay Metropolitan Region Development Authority, Population of Bombay Metropolitan Region, 1981.

large-scale industrial establishments, especially in the vicinity of Belapur and Taloja, until recently there has not been much urban concentration in New Bombay. Apart from Panvel, the only sizeable urban settlement has been the planned community at Vashi close to Thana Bridge, which is the core of New Bombay.

As noted above, the different parts of the BMR have been growing at different rates. The available data on the dynamics of spatial distribution indicate only a very slow growth - almost a steady state situation - in Bombay City and rapid growth in the suburbs and extended suburbs of Greater Bombay, with slightly slower but comparable rates of growth in the more dynamic parts of the urban periphery.

D. Sectoral and spatial distribution of jobs

Greater Bombay employed more than 1 and a half million workers in the formal sector in 1971, more than two out of every five in manufacturing and one out of five in offices. The public sector, including the central, state and local Governments, but also the railways, government banks and quasi-governmental agencies, absorbs almost one third of total employment. The structure of employment is expected to change gradually from manufacturing towards tertiary activities, a structural shift that will reflect both increasing maturity of the economy and a more rapid decentralization of manufacturing activity than services.

According to data from the 1971 census, some 29 per cent of Greater Bombay's jobs were concentrated in the southern part of Bombay Island, with an additional 42 per cent in the rest of Bombay City. The major trade establishments were concentrated in South Bombay (in wards A, B, and C), but the commercial sector was even more concentrated, with almost three fifths of the labour force in ward A alone (Richardson, 1980). Many major offices were located in the central business district (CBD), including two thirds of the shipping companies, the major banks (e.g., State Bank of India, Central Bank of India and Bank of Baroda, which together account for 70 per cent of bank deposits in India) and the headquarters of the Reserve Bank of India, the Stock Exchange, many investment and insurance companies, including the massive Life Insurance Corporation of India, and five of the six long-term finance institutions established since Independence. In addition, the public sector is dominant in central areas of Bombay, which is not only the site of the Municipal Corporation but also of most of the offices of the government of Maharashtra, many establishments of the Government of India, and other public bodies (e.g., the railways, the Port Trust, government banks). Moreover, many of those service and office activities are not dependent upon the city's economic base, which is basically manufacturing and external trade, but are part of the base itself, since they serve national and regional markets rather than the local market.

E. Bombay in Maharashtra

Maharashtra is among India's richest and most developed states. It ranks first with respect to industrial value added, bank deposits per capita and roads per 1,000 sq km, second in domestic electricity consumption per capita, motor vehicles per capita and per capita income, and high on other socio-economic indicators. The performance of Maharashtra strongly reflects the weight of Bombay in its development. Indeed, if Bombay is subtracted from Maharashtra, the state's performance falls sharply to the average for India as a whole.

Although Bombay is clearly part of Maharashtra in political and spatial terms, it is much less so in economic terms. Not only are Bombay's links with major urban centres in India and with the outside world much stronger than with its hinterland (i.e., the rest of the state) but the city is much too large to function merely as a regional metropolis. It is important to note, however, that the areas outside Bombay, and particularly the rural areas of Maharashtra, wield political power that is disproportionate relative to their economic weight (Richardson, 1980). That fact explains many state policies, such as the location-of-industry policy which seeks to distribute industries to the rural areas and small towns of Maharashtra. It also explains why the state government strongly supports the decentralization strategy for the BMR, since the beneficiaries will include the rural parts of the BMR and perhaps ultimately the less developed areas of the state.

III. DECENTRALIZATION AND LOCATION

A. The evolution of spatial strategies

The Government of India's overall spatial policies have evolved in an incremental fashion over the past three decades. Those policies include a system of industrial licensing designed to promote balanced regional development; direct investment in government-owned enterprises, with preference being given to small towns and cities and rural areas at the expense of the largest cities; policies to equalize delivery prices of such basic products as cement, steel and coal among regions, and to promote small-scale industries, particularly in small towns and rural areas; and the establishment of industrial estates as a means of dispersing industry from metropolitan areas to small towns and rural areas. Since about 1970 the Government has placed a great deal of emphasis on developing the country's backward districts. Most recently, the draft Sixth Plan (1980-1985) emphasized the need to promote small towns and medium-sized cities and called for a moratorium on investment in the very large cities. Whereas some of the policies and measures adopted over the past three decades have been successful in dispersing industry from the largest metropolitan areas, their impact on reducing the population growth of the largest Indian cities, including Bombay, has been minimal.

Beginning in the years immediately after Independence, successive committees and study groups diagnosed most of Bombay's ills as a product of excessive spatial concentration in the southern part of Bombay Island and proposed various decentralization strategies to combat the problem. One of the policy instruments common to all of the early strategies was industrial dispersal.

In 1958, a state-appointed study group (the Barve Study Group) proposed rigorous control of further development in Bombay City. Specifically, it recommended that no new industrial units or small-scale factories should be allowed in the Bombay Island area, with exemptions to be granted only to industries that processed large quantities of imported raw materials or were dependent on port facilities. Substantial additions to existing industrial units should not be allowed, and large-scale industries requiring heavy machinery should be allowed only in the outermost limits of Bombay City. Moreover, industries that could function effectively outside Greater Bombay should not be allowed even within the suburban limits. Taking into account the recommendations of the Development Plan for Greater Bombay (1964), which concurred with the Barve Study Group, the state government drafted an industrial location policy in 1965, which discouraged industrial location in the Greater Bombay area and proposed incentives for the location of industries in backward areas. The state policy was basically a rather liberal one, however, since it allowed for further expansion of the textile industry (Godbole, 1978).

In the same year, another high-level committee (the Gagdil Committee on Metropolitan Regions) urged a more drastic course of action, involving shifting heavy industry outside the island city, and eliminating concessions for the textile industry. However, in spite of the recommendations of the Gagdil Committee, the state government announced a revised industrial location policy in 1968 that was less restrictive than its previous policy, in that it permitted the establishment of small-scale units, allowed the expansion of existing industrial units, and even encouraged the expansion of the textile industry as a means of reducing unemployment (Godbole, 1978).

The next phase in the evolution of policy concerning industrial location in Maharashtra was related to regional planning. Following the recommendations of the Bombay Metropolitan Plan (1973), the state government reviewed its industrial policy in 1974 and announced a revised policy that divided the BMR into four planning zones (Godbole, 1978). In zone I, which consisted of Bombay Island, the location of new industry was prohibited and only small-scale units providing essential services (e.g., laundries, bakeries) were permitted. In zone II, which included Wadala Anik industrial area of Bombay Island, the suburbs and extended suburbs of Greater Bombay, Thana and Mira, no new large- or medium-scale units were permitted, and small-scale units were permitted only if they were unlikely to expand. In zone III, which consisted of New Bombay, new industrial units were permitted only in two industrial areas being developed by the Maharashtra Industrial Development Corporation. A similar provision was applied to the outlying areas that comprised zone IV.

In 1976, a similar policy of industrial location was announced for the Pune Metropolitan Region. The Government also extended the ban on new small-scale units (except those in the service category) in Bombay to the suburbs and extended suburbs, and declared that units located in "non-conforming" areas of Bombay and Greater Bombay should be shifted to new locations. In 1977, however, the Government relaxed several of those restrictions. It decided not to compel industrial units in non-conforming areas to shift to the conforming zones, unless the industries contributed to air, water or noise pollution or constituted a major health hazard, and to allow the modernization and replacement of equipment in zone I, even if the improvements led to increases in employment. Moreover, in zone II, the Government decided that expansion of existing large-, medium- and small-scale units should be allowed if required to maintain efficiency.

With respect to measures, the state government and related agencies have employed a variety of incentives and disincentives designed to influence industrial location decisions in Maharashtra. Since the early 1960s, for example, the Maharashtra Industrial Development Corporation

(MIDCO) has provided industrial infrastructure in more than 50 industrial areas of the state, while a second agency, the State Industrial and Investment Corporation of Maharashtra (SICOM) has offered a package of incentives (e.g., interest-free loans, seed capital, sales tax exemption) to industries willing to locate in designated growth centres rather than in the Bombay/Thana/Pune belt. With respect to disincentives, in 1974 the state government introduced a system of "no objection certificates", without which no new industrial units would be permitted in the BMR, nor would existing units be permitted to expand or change location.

New Bombay

Throughout the 1960s, planners in Bombay considered a number of alternatives for the future structure of the metropolitan region, including a linear corridors plan, a series of medium-sized new towns encircling the metropolis, and a counter-magnet of metropolitan size. In the late 1960s, however, a group of Bombay architects put forward the concept of a twin city, New Bombay, which would be built on the mainland across the harbour from Bombay Island and visually connected with Bombay. The choice of location was determined by the coincidence of several factors, including proposed development of a new port (Nava Sheva) across the harbour and the fact that the location was close enough for the decentralization of the office sector, but not so far from Bombay so as to distort the economies of agglomeration. The new city was to be self-contained and more or less independent of Bombay, with an employment base of tertiary activities rather than manufacturing, mainly for aesthetic and environmental reasons.

The 1970 Bombay Metropolitan Regional Plan endorsed the proposal for the twin city, noting that it was the "most important feature of the future regional development structure" and "the optimum location for an effective counter magnet to Bombay". By redistributing expected population increases in the BMR between the new city and the old, planners hoped that New Bombay would have as many as 2 million inhabitants after about two decades. To oversee its development, a new corporation, CIDCO (City and Industrial Development Corporation), was established in 1970, and a development plan was prepared in 1973 and finally sanctioned in 1979.

B. Current spatial strategies

Assessing the progress made in developing New Bombay, out of a total of about 20 nodes that ultimately will be developed, six nodes - Vashi (which is already a built-up town), Nerul, Belapur, Kamboli, Panvel, and Airoli - are currently under construction. By January

1983, CIDCO had built 33,100 housing units (more than 60 per cent of which were scheduled to be allotted to lower-income households), which were expected to attract some 133,000 residents, assuming an average family size of four (Gupta, 1983). An additional 18,000 units (for a target population of 72,000) were scheduled to be constructed by CIDCO during 1983, and another 15,000 households (for 60,000 persons) were expected to be generated by private and co-operative efforts, giving a maximum projected population of 265,000 in the six nodes by mid 1984 (Gupta, 1983).

The shifting of a proportion of the office sector to the Belapur area is another important component of the development strategy for New Bombay. As of 1983, land had been sold to a number of public and private sector organizations (e.g., the Reserve Bank of India, State Bank of India, Overseas Communication Service, Maharashtra State Electricity Board, Cotton Corporation of India, and the state government), and the relocation of 20,000-24,000 office jobs was envisaged.

As a means of expanding the economic base of New Bombay, CIDCO has worked out plans for progressively shifting agricultural produce markets from Bombay City to locations in New Bombay. For example, the wholesale onion/potato market was shifted to Vashi in 1980, and the project will eventually include a number of commodities markets (e.g., grains, condiments and spices, dry fruits, edible oils, sugar, and flour) that are currently located in the southern part of Bombay Island. In addition, the wholesale iron and steel markets and steel stockyards are being relocated from south Bombay to Kalamboli (near Panvelnode in New Bombay). Together, the shifting of these markets is expected to vacate about 80 hectares of land in Bombay City, to transfer perhaps 65,000-70,000 jobs, and to divert 4,000 daily truck trips and 17,000 daily tons of produce from Bombay City to New Bombay (Gupta, 1983).

Whereas progress has been made in developing Vashi, which has reached the scale of a modest new town, and several other urban nodes, New Bombay is only now beginning to achieve the grand vision of the 1960s. One of the major reasons for its slower than anticipated development was the reluctance of government offices to relocate there. Whereas planners originally hoped that the entire state government complex (Mantralaya) would move across the harbour, resulting in the shifting of some 70,000-80,000 jobs, the state government relocated only a token number of jobs (about 1,200). Another major explanation for the slow take-off of New Bombay was the fact that government officials approved the large-scale reclamation of the backbay area at Nariman Point (an area close to the old commercial centre in South Bombay), where land was sold to speculators at very high prices for high-rise office construction. Still another reason for the slow development of

New Bombay was financial constraints. Although CIDCO was modelled on the British New Towns Development Corporation, it did not have the latter organization's financial scope. Indeed, instead of government-financed 60-year loans at low interest rates, CIDCO had to borrow 15-year loans on the open market at prevailing market rates.

The Bandra-Kurla complex

The Bandra-Kurla complex is a low-lying area along Mahim Creek between Bandra and Kurla, located in the northern part of Bombay Island. The idea that Bandra-Kurla might be developed as a commercial area to relieve pressure on South Bombay is quite old, since it was discussed in the Modak/Meyer Report of 1948, the Barve Study Group Report of 1957, the Bombay Development Plan of 1964 and the Bombay Metropolitan Regional Plan of 1970. However, it has recently been revived, mainly to compensate for the slower than anticipated development of New Bombay. In 1977 the BMRDA was given the task of co-ordinating the development of the Bandra-Kurla complex as an instrument for decentralizing as many as 154,000 office jobs out of South Bombay. The BMRDA is currently planning for the transfer to Bandra-Kurla of a large segment of the wholesale textile market, which has been located for more than a century in the southern tip of Bombay Island. Indeed, a key component of plans to develop Bandra-Kurla is that the commercial users should be transferees from South Bombay. Moreover, new housing that will be constructed in the area will be reserved for workers in the new commercial zone. Implementation of the Bandra-Kurla scheme is expected to require costly reclamation and drainage. Since the project is intended to be self-financing, the costs will have to be recovered from the intended users.

The Kalyan complex

The Kalyan complex is a cluster of industrial towns to the east of Thana and north-east of Bombay which are sufficiently connected with each other to be treated as a whole. The site of about 500 industrial units and a large number of cottage industries, Kalyan has witnessed rapid growth in the past two decades, based mainly on industrial expansion. The complex has several cores, particularly the urban centres of Dombivli, Kalyan, Ulhasnagar and Ambernath. Since the railway runs through part of the complex, the area could be regarded as part of an urban/industrial corridor extending from Thana. However, there is currently a serious lag in housing, urban infrastructure and social services, since public investment has fallen further and further behind the area's rapid population growth.

To date, the BMRDA has prepared a structure plan for the Kalyan Complex (BMRDA, 1983). The structure plan anticipates the development of Kalyan Growth Centre, a new town of perhaps 240,000 inhabitants by 2001, and the provision of basic amenities in the most rapidly growing urban centres (e.g., Dombivli and Kalwa).

IV. ISSUES AND SECTORS

A. The labour market

The BMR generates about 10 per cent of the factory employment and manufacturing value added in India. Employment growth of 2.6 per cent per annum in organized establishments in recent years is lower than in earlier years. It is highest in office-oriented activities (3.4 per cent per annum) but still generates incremental employment of about 51,000 jobs per year.

Although data are available only on aggregate employment trends, they suggest that the urban labour market has worked rather well in Bombay and that employment growth has generally kept pace with the growth in labour supply. Although Greater Bombay's population grew somewhat faster than manufacturing employment during 1961-1971, a substantial part of the population growth was the result of natural increase rather than net in-migration. The other major component of the formal sector, public sector employment, expanded even faster than population growth (by about 49 per cent during 1961-1971).

B. Urban land

In spite of the geographical shape of Bombay island, there is a sizeable area of undeveloped land in the BMR, although much of it needs reclamation. For many years, land acquisition for public purposes in Bombay was regulated by the Land Acquisition Act of 1894, which allowed acquisition only at market prices. In recent years, new legislation has made land acquisition possible on less onerous terms. For example, the 1969 act setting up the Bombay Building Repairs and Reconstruction Board provided for the acquisition of land for urban renewal and rehabilitation via the notification process (i.e., publication of a notice in the Government gazette), at a compensation equal to 100 times the net average monthly return during the five preceding years. Subsequently, under the BMRDA Act of 1974, land could be acquired relatively rapidly for public purposes, at the same rate of compensation as that established in 1969.

A more radical step was taken at the national level in 1976, with the passage of the Urban Land Ceiling and Regulation Act, which was intended to allow the state government to acquire vacant private land at a fraction of market value, so that low-income shelter needs could be met. 9/ The act imposed a ceiling on the vacant land holdings both of individuals and companies. (In the large cities, including Bombay, the ceiling was only 500 square metres.) Moreover, it required landowners

to register their land holdings and to surrender excess vacant land to the Government, for compensation fixed at the standard rate, although at a much lower rate if the land did not produce any income.

Although it was estimated that Bombay stood to acquire a significant amount of vacant land under this legislation, the transfer of land did not take place on any major scale. This was partly because of a provision that landowners could be exempted if they intended to eventually use the land for public purposes or for the construction of low-income housing. (By 1979/1980, some 30,000 applications for exemption had been submitted.) Eventually, continuing resistance from landowners resulted in a freezing of transactions in several hundred thousand hectares of vacant land. This led in turn to an increase in the market price of land, putting the cost of shelter even further out of reach of the majority of Bombay households. Recently, local government officials have been experimenting with a new scheme that is intended to provide land for public sites and services development and allow private development to re-commence.

C. Housing

Bombay faces a severe housing crisis. According to the 1971 census, more than three quarters of households lived in one room housing units. Nearly one third of households lived in houses with walls made of grass, leaves, reeds or bamboo and metal sheets, while nearly one half of households had roofs made of grass, leaves, thatch, reed or other such materials. A 1976 census of slums carried out in the large cities of Maharashtra concluded that Bombay had a slum population of 2,820,000, which meant that two out of every five persons in the city were slum dwellers. According to a survey conducted in 1971, a substantial proportion of households in "permanent" dwellings lived in a total of some 20,000 tenements (chawls), 84 per cent of which had been constructed before 1940 and which had been poorly maintained following the imposition of rent controls (BMRDA and Maharashtra Housing and Area Development Authority, 1982). The Bombay Metropolitan Corporation estimated housing needs for the city at the end of 1977 to be about 1,040,000 units. The BMRDA currently estimates that there is average annual demand for 45,000 housing units, yet the combined output of both the private and public sectors has been only around 15,000 units per year. An annual output of 60,000 units is estimated to be needed to clear the backlog, which would mean a quadrupling of current output.

The major policy response to Bombay's chronic housing deficit is the government of Maharashtra's Affordable Low Income Shelter Programme, which is currently being implemented by the BMRDA, in collaboration with the Maharashtra Housing and Area Development Authority, with financial

assistance from the World Bank. The goals of the five-year programme, which commenced in 1982, are to secure a better match between the resources that are realistically available for investment in land, infrastructure and shelter, and the population's growing shelter needs. The project also aims at providing legal, environmentally acceptable land and shelter for new BMR households, which are forming at a rate of more than 65,000 annually, as well as for the existing 1 million to 1.2 million households currently living in Bombay slums.

The World Bank's ongoing Bombay Urban Development Project, programmed for the period 1983/1984-1989/1990, will support the additional affordable low-income shelter objectives of shifting public sector investment from subsidized, high-unit cost apartment construction to programmes aimed at producing large numbers of residential, commercial and small industrial serviced plots at much lower unit costs, and with nearly full cost recovery. The project aims at halting further slum growth by about 1987, and then subsequently reducing the absolute number of households living in slums at the fastest possible rate. Finally, the project will explore ways and means of shifting private capital into the production of legal affordable shelter, both in the form of serviced plots and low-cost dwellings.

The sites and services component of the Bombay Urban Development Project will aim at developing 700 hectares of vacant land, and providing serviced residential plots to about 85,000 households, at least 45-55 per cent of which have very low incomes. With respect to standards, all of the plots will have access to a paved footpath and will be located within half a kilometre of a bus route and within 55 metres of a road. There will be metered piped water supply connections, with supply guaranteed for at least two hours daily, sewerage connections, storm water drains, a main electricity connection, street lighting and garbage boxes. The 13 project sites are located in five subregions: the north-west suburbs; the north-east suburbs; within the Thana and within the Kalyan Municipal Corporations; and in New Bombay. One of the sites, located at Airoli, next to the Thana/Belapur industrial belt, will be developed into a new city of about 90,000 inhabitants.

In the slum-upgrading component of the Bombay Urban Development Project, about 200 slum and squatter areas (located mainly in the BMC, with 90 per cent on government-owned land) 10/, will be converted into legal, environmentally acceptable neighbourhoods through the provision of water, sanitation, roads, footpaths, drainage, street lighting and landscaping. In addition to those infrastructure improvements, the estimated 100,000 households that will be beneficiaries of the programme will be given long-term leasehold tenure and will be eligible for home-improvement loans.

Providing shelter for the homeless remains a continuing problem in Bombay. In early 1983 the Supreme Court of the Government of India directed the Bombay Metropolitan Corporation and the state government to stay the demolition of make-shift huts belonging to pavement dwellers, to formulate a scheme for their rehabilitation, and to submit a list of vacant sites that could be used for housing pavement dwellers. The state government argued that the pavement dwellers should be evicted because they created a serious public health hazard, obstructed traffic and constituted a public nuisance. (In late 1985 the state government succeeded in obtaining a reversal of the ban.)

A final serious problem facing the housing sector in Bombay has been that of rent control. The Bombay rent control act of 1947 froze standard rents of households in existing properties at the 1940 rental value and of those in properties built later at their initial rental values. Under the act, tenants and their heirs have received rents that are more or less fixed in perpetuity, hence the standard rent for several hundred thousand Bombay households is only a fraction of their market value. Owners have little or no legal means of regaining the use of their property, of obtaining sufficient revenue to maintain their properties, or of earning a reasonable rate of return on their investment. As a result, investment in new, legal rental housing is practically non-existent, whereas prices of illegal properties, whether sale or rental, are highly inflated. For many years, in spite of the recommendations of successive World Bank missions, the state government resisted making any changes in the rent control laws. In the past several years, however, some progress has been made in reforming rent control. The state government has proposed amending the rent control act, thereby freeing all new (and reconstructed) residential and non-residential properties, as well as existing commercial and industrial properties, from rent control. Rents on other existing properties would be adjusted to provide a fairer rate of return to landlords.

D. Water supply and environmental problems

The water supply situation in Bombay is critical, with the level of supply so much below demand that it is restricted to between two and eight hours per day, depending on location. Moreover, the supply situation sometimes reaches emergency proportions when the monsoon fails (e.g., in 1966 and in 1972). Although the sewerage system in Bombay is inadequate and outdated, the entire city area, although not the suburbs, has access to a sewerage system. The Bombay Metropolitan Corporation's investment in water supply and sewerage rose from 35 to 55 per cent of its capital budget during 1974-1975, largely as a result of the World Bank's first Water Supply and Sewerage Project (the estimated project

cost was \$272.4 million) (Richardson, 1980). The second World Bank project in Bombay (which had a project cost of \$411.6 million) involved facilities for the treatment, transmission and distribution of 450 mega litres per day of water from the Bhatsai dam; improvement and extension of sewage collection, treatment and disposal; provision of 15,000 latrines and 10,000 water taps in slum areas; and detection and repair of distribution system losses (Richardson, 1980). In addition, a water supply and sewerage project was initiated in the north of the BMR in the Kalyan complex, where demand was estimated to be about one and a half times greater than the supply. Both projects were expected to have a marked impact on the urban poor by decreasing morbidity from water-borne diseases.

Bombay suffers from serious air pollution, mainly from noxious industries (e.g., textile mills, petrochemical plants, gas works), rather than from automobile emissions. To date, the BMRDA has allocated only a small proportion of total investment for air and water pollution control, and this has been mainly for surveys. Although the state's industrial location policies have been motivated in part by the desire to reduce industrial pollution and there have been attempts to re-locate non-conforming industries outside the island city, industrial pollution remains a serious problem.

E. Power

Maharashtra also suffers from severe power shortages. Although the Maharashtra State Electricity Board formulated an ambitious programme in the 1970s for expanding generating capacity, the programme was cut back heavily as a result of financial constraints. Because of delays in completing new power projects, load restrictions are projected to continue throughout the 1980s.

In recent years, the World Bank has assisted two major projects designed to improve the generating capacity in Bombay: the expansion of the refineries at Trombay, and development of the Bombay High offshore field. Although the latter is a national project designed to reduce dependency on foreign oil, it is expected to have some local impact in the BMR. Moreover, the state of Maharashtra planned to spend more than 40 per cent of its plan outlay on power during the Sixth Plan period.

F. Health and education

On most health indicators, Maharashtra stands higher than the national average. There continue to be wide differentials within the state, however, which reflect the long-standing tendency for the

allocation of large shares of the health budget to big urban hospitals and to high technology and curative medicine. As might be expected, Bombay is better off than the other urban areas in the state and considerably better off than the rural areas.

With respect to Bombay's patterns of morbidity, typhoid fever is endemic and shows a tendency to increase during the monsoon season. The incidence of tuberculosis and malaria is also high. The municipal authorities have mounted major public health campaigns in recent years, including tuberculosis control and implementation of anti-TB measures and a malaria eradication programme (which involves passive surveillance in Bombay City and active and passive surveillance in the suburbs and extended suburbs) (BMC, 1985). During 1985, utilizing mobile health units, the municipal authorities conducted a number of mass immunization campaigns and medical examinations in primary schools. In addition, a number of "health drives" were conducted in some of Bombay's slums. During the drives, 55,600 Bombay residents were immunized against measles and 179,000 were given general health checks (one of the purposes of which was to look for vitamin-A deficiency in children and anaemia in expectant mothers).

With the goal of providing basic health and family welfare services to the urban poor within walking distance of their residential areas, the Bombay Metropolitan Corporation has established health posts in 56 existing family welfare centres. Family planning services have been given high priority. Instruction in the spacing of births is given free of charge to married couples by trained physicians; contraceptives are also distributed free of charge. Currently, the Greater Bombay administration operates 282 abortion centres, about 100 dispensaries, 61 urban and five post-partum clinics, 39 maternity and child welfare homes, and some 200 sterilization camps (People, 1984b). During 1985, 9,000 vasectomies and 17,000 tubectomies were performed, and 8,800 intra-uterine devices were inserted (BMC, 1985).

In Maharashtra as a whole, 98 per cent of children of primary school age are enrolled in primary school, compared to 43.3 per cent of children of middle school age and 25.3 per cent of children of secondary school age, a level of enrollment that is far higher than the Indian average (Richardson, 1980).

G. Transport

Bombay does not exhibit a typical set of urban transportation problems, when compared with most other mega-cities. Car ownership rates are very low, and cars have accounted for less than 40 per cent of road traffic and less than 20 per cent of road passengers (Richardson, 1980). Bombay has a substantial public transport system, although it is

inadequate to meet demand. The system consists of suburban rail services operated by the Western and Central division of Indian Railways and a municipal bus service operated by the Bombay Electrical Supply and Transport Undertaking. The difficulties of Bombay's public transport system are aggravated by the geography of the city and by the spatial distribution of jobs and residences. The dominant traffic flow and main routes run from north to south and about 20 per cent of the jobs in the island city are held by residents of the suburbs or of areas outside Greater Bombay. The limited number of north/south road arteries are clogged with traffic, in spite of the modest size of the total vehicle fleet, mainly as the result of inadequate traffic management.

Public transport (mainly bus and rail, but also taxis) in Bombay accounts for about 90 per cent of all person-trips. In terms of passengers per day, the suburban railways and municipal buses carry approximately the same number, about three and one half million passengers. Although plans have been put forward over the years for a new subway/surface rail line and for a freeway system up both sides of the island and linked by cross-connectors, those recommendations have not been adopted because of cost constraints. Instead, Bombay has adopted a capacity extension strategy. The World Bank provided financial assistance to the Bombay Urban Transport Project, which aimed mainly at improving the municipal bus services. The project involved the purchase of some 700 buses, replacement of obsolete buses, construction of bus shelters and terminals, and some traffic engineering projects such as the construction of flyovers, road widening and installation of signals (Richardson, 1980). The anticipated economic and social benefits of the project were the better use of existing transport facilities, while longer-term options were being studied.

V. RESOURCES AND MANAGEMENT

A. Public investment

The BMRDA prepared a five-year Regional Investment Plan (RIP) for the BMR during the Sixth Plan period, which serves as a rough indicator of investment priorities by sector (BMRDA, 1980). However, in practice, the investment programmes of the state government and the various sectoral agencies are drawn up independently of one another. Although the BMRDA is theoretically in charge of co-ordinating investment decisions in the region, BMRDA officials have conceded that the co-ordinating role has mainly involved compiling lists of the intended projects of various public agencies.

According to the RIP, between 1978-1979 and 1982-1983 housing and urban development accounted for 42 per cent of total planned investment (of Rs 1,931 crores), water supply and sewerage for 28 per cent, transportation and communications for 25 per cent and industrial area development for 5 per cent. Within these broad sectors, the most important subsectors were urban water supply (22.6 per cent), slum improvement (14.4 per cent), housing (13.7 per cent), mass transit (10.2 per cent) and roads and bridges (9.0 per cent).

With respect to the spatial distribution of investment, New Bombay's share (10.3 per cent) has been much larger than its population share (which, until recently, was less than 1 per cent), indicating a continuing commitment to developing the area as a twin city to Bombay. However, the level of investment probably has been too small to finance the development of New Bombay on as ambitious a scale as originally intended. In addition, a number of other urban development investments such as growth centres (which accounted for 5.8 per cent of total planned investment), the establishment of two new municipal corporations (1.3 per cent), and the relocation of wholesale markets (0.8 per cent) are closely related to the decentralization strategy.

The wide acceptance among central, state and local government agencies of the decentralization goal has resulted in some broad consistency among their investment plans, even in the absence of an effective co-ordination mechanism (Richardson, 1980). Ironically, however, two of the major projects undertaken - the Bombay water supply and the urban transportation projects - may have reinforced centralization in Greater Bombay and thereby conflicted with the overall decentralization goal. Of course, those projects had a strong justification in sectoral terms.

B. Resource generation

The contribution of the Government of India to financing sectoral investments in Bombay has been quite small (only about 11 per cent of the total) and has been largely confined to investments in the railways and the port. The state contribution has not been much larger (14 per cent), with the major emphasis on housing and irrigation projects. That leaves internal resources and long-term loans to provide close to 40 per cent each of the financial resources.

Since controlled rents are the basis for the property tax in Bombay, rent control has for many years severely reduced local government revenues. In the past several years, agreement has been reached to amend the Bombay Municipal Corporation Act in order to fix the rateable value for the property tax on the basis of the actual annual consideration paid by property occupiers.

Largely because of the octroi tax (a duty levied on goods entering the city), the revenues of municipal corporations in the BMR are high relative to other Indian cities, although inadequate in relation to the growth of the city's population and the need to provide basic services. As a further revenue-generating mechanism, the Bombay Municipal Corporation recently began metering the water supply; to date, water-metering has been financially successful and has generated surplus revenue for transference to the general budget.

In ongoing World Bank-assisted projects, such as the Bombay Urban Development Project, there is a major emphasis on cost recovery. About 75 per cent of total project costs, 98 per cent of land infrastructure servicing costs, and 94 per cent of slum improvement costs will be directly recovered from beneficiaries through charges for land, infrastructure and loans for home improvements and expansion, in the form of cash down payments and monthly installments on loans to beneficiaries, at 12 per cent over 20 years. The Bombay Municipal Corporation and the other municipal corporations expect to recover an additional 24 per cent of total project costs through property taxes, other local government charges and user charges. Only about 1 per cent of project costs, mainly for technical assistance and training, are not expected to be recovered.

C. The institutional context

The Bombay Municipal Corporation, which was established in 1888, is one of the largest local government authorities in the world and is by far the most important local government in the BMR. The BMC council consists of 140 elected representatives and is responsible for a wide

range of civic services, including water supply and sewerage, bus transport, electricity supply, public health and medical services, solid waste collection, education, roads, traffic control and slum improvement. In order to strengthen management and services in the rapidly growing urban areas outside the BMC, the state government established the Thana Municipal Corporation in 1982 and the Kalyan Municipal Corporation in 1983 and issued preliminary notification for the creation of a municipal corporation for New Bombay.

Although investment decisions in the BMR are made by a wide range of agencies and groups, including the Government of India, the state government, the BMC, sectoral agencies, quasi-governmental and private firms, some of the responsibility rests with the BMRDA. Established in 1973 to plan development in the BMR, the BMRDA faced a number of initial difficulties in developing a co-ordinating role, stemming largely from its late arrival on the institutional scene and partly from doubts about what its precise role was supposed to be. Although it was soon generally accepted that its main functions should be to plan and co-ordinate, the BMRDA remained handicapped by several factors, including lack of a sizeable professional planning staff; reliance on ad hoc or informal contacts for information about the activities of other agencies; failure to develop links with the private sector; and lack of a documentation centre and data base to enable it to monitor metropolitan development trends. To address those problems and make the BMRDA a more effective planning authority, the state government reorganized the BMRDA in July 1983, abolishing its three sectoral boards and strengthening the planning division.

The City and Industrial Development Corporation of Maharashtra (CIDCO) was constituted by the state government as a public limited company in 1970 for the purpose of planning and developing New Bombay. In 1971 CIDCO was designated as a New Town Development Authority for New Bombay, and in 1976 it became a wholly owned government corporation. Recently, CIDCO has been participating in the execution of World Bank-assisted sites and services projects.

CONCLUSION

According to the census of 1981, Bombay was India's second largest city and may eventually surpass Calcutta as the country's largest urban agglomeration. Although Bombay City's contribution to the growth of the metropolitan region has fallen steadily for the past three decades (and it therefore cannot be argued that the island city is becoming more spatially concentrated), planners continue to be preoccupied with the goal of decentralizing population and economic activity to peripheral areas.

There are several reasons for preoccupation with the issue of planned decentralization. One is the increasing congestion, resulting from the spatial concentration of jobs in the southern part of Bombay Island and exacerbated by the geography of the island city, which forces both people and commodity flows through a very limited number of north/south arteries. Also, planners acknowledge that certain types of urban infrastructure (e.g., a water supply system) may be cheaper to build outside the central city than in the urban core. Most importantly, Bombay's housing problem has reached crisis proportions. Due to the shortage of residential land in the island city, the presence of rent control, the vast hutment areas, and the dilapidation of much of the housing stock (e.g., the chawls), planners believe that it will be difficult to improve the housing situation in the central core except by massive urban renewal, which is a very high-cost policy option. They have concluded that a preferable solution would be to provide sites and services in peripheral areas. However, since housing cannot be stimulated in peripheral areas in isolation (otherwise the poor would be living far from income-earning opportunities), a decentralized housing solution implies the decentralization of jobs and services, hence a poli-centric metropolitan structure. This has been the goal of Bombay's planners for many years, yet it remains elusive. One problem is that in spite of efforts to decentralize part of the office sector to peripheral areas such as New Bombay or Bandra-Kurla, the island city remains a highly attractive location for the office sector.

Although New Bombay, the planned twin city across the harbour, has not taken off on the scale anticipated in the late 1960s, it remains an integral part of the decentralization strategy for the BMR. As previously noted, the fact that the state government decided not to shift a large number of government jobs to the twin city site, the reclamation of the sea in the back bay area as an alternate site for the office sector and the limited financial scope of its development authority (CIDCO) are some of the factors that contributed to the slower than planned development. On the other hand, the Government of India's decision in 1983 (after many years of discussion) to set up a deep water port at Nava Sheva in the southern part of New Bombay may well

contribute in the long run to the development of the entire area. Similarly, the development of the Bandra-Kurla complex as an alternative location for part of the office sector and the development of the Kalyan complex as a major industrial pole remain major planning targets.

A major explanation of the importance of resolving the spatial distribution issue in Bombay is that alternative spatial strategies imply different sectoral investment decisions. For example, attention to the office sector implies an emphasis on New Bombay or Bandra-Kurla rather than the Kalyan complex. Conversely, emphasis on manufacturing favours New Bombay or the Kalyan complex rather than Bandra-Kurla. Moreover, choosing a particular decentralization strategy involves a decision to invest either ahead of demand (i.e., at New Bombay) or in response to existing demand (i.e., in the Kalyan complex). Similarly, it is difficult to formulate a regional transportation plan without taking a position on the most likely spatial structure for the metropolitan region. Thus, since major sectoral investments have direct locational implications, the question of spatial distribution cannot be ignored. The only issue is how strongly planners should intervene to guide the pattern of decentralization in a desired direction or whether it would be more efficient to respond to spontaneous decentralization trends.

Notes

1/ The figures for the population of Greater Bombay and the Bombay Metropolitan Region (BMR) are provisional figures from the 1981 census.

2/ Bombay City (also known as Bombay Island or Island City) is a long narrow island that is separated by Mahim Creek from the suburban Salsette Island. Excluding a small northern portion of Salsette Island that is part of Thana district, Bombay Island and Salsette Island together form the municipal unit of Greater Bombay. The Bombay Metropolitan Region (BMR), of which Greater Bombay is a part, extends onto the mainland beyond the Ulhas estuary and Thana Creek and includes New Bombay. A 4,370 square kilometre planning area, rather than administrative area, the BMR has the largest geographical area of any metropolitan city in India.

3/ The 12 metropolitan cities, in descending order by population size, are Calcutta, Bombay, Delhi, Madras, Bangalore, Hyderabad, Ahmendabad, Kanpur, Pune, Nagpur, Lucknow and Jaipur.

4/ Fifty per cent of the BMR population is estimated to have incomes below the 1983 Bombay absolute poverty level of Rs 880 per month per household.

5/ Because of the effects of the non-co-operation movement, the absolute increment to the population of Greater Bombay during 1921-1931 was only 38,296, compared to an increment of 440,132 during 1931-1941.

6/ Suburbs denote areas annexed in 1950, including present-day wards H,K,L, M and N, while extended suburbs are areas annexed in 1956, including wards P,R, and T.

7/ This figure was cited in a recent interview with Datta Nalawde, Mayor of Bombay Metropolitan Corporation ("Bombay developed 'by chance'." Popline, June 1986.)

8/ The Marathas, who were some of the earliest inhabitants of the area that is now Bombay, gave their name to the state of Maharashtra. The Deccan plateau was the major cotton-growing area.

9/ According to 1974 estimates, there were 8,000 hectares of vacant land in Bombay, and about 20,000 hectares, including marshland. (Richardson, 1980).

10/ Fifty per cent of all households in Bombay live in slum hutments, and of that number, a majority are on privately owned land and receive neither improvements nor services.

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