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Population Growth and Policies in Mega-Cities

KARACHI



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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)
BOMBAY	(ST/ESA/SER.R/67)
DELHI	(ST/ESA/SER.R/68)
DHAKA	(ST/ESA/SER.R/69)
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MADRAS	(ST/ESA/SER.R/75)

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EXPLANATORY NOTES/ABBREVIATIONS

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., 1984/85) 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:

KDA	-	Karachi Development Authority
KMC	-	Karachi Metropolitan Corporation
KTC	-	Karachi Transport Corporation
KSDP	-	Karachi Special Development Programme
KWSB	-	Karachi Water and Sewerage Board
LITE	-	Landhi Industrial Trading Estate
MLO	-	Martial Law Order
PEPAC	-	Pakistan Environmental Planning and Architectural Consultants Ltd.
SITE	-	Sind Industrial Trading Estate
ZMC	-	Zonal municipal committee

INTRODUCTION

Karachi, with an estimated population of 7,500,000 in 1987, is Pakistan's largest city and site of its only ports, Karachi Port and Port Quasim. The city has been growing at more than 5 per cent per annum in recent years and is expected to reach 12 to 15 million inhabitants by the year 2000. Whereas Karachi was the world's twenty-fifth largest city in 1985, it is projected to be the fifteenth largest by the end of the century (United Nations, 1987).

Karachi's high rate of population growth and sprawling low-density pattern of settlement have created severe shortages of essential services. Since about 1947 thousands of hectares of government land have been developed for housing for low-income groups; however, demand has far exceeded the supply. Both migrants who cannot afford formal sector housing and families who do not want to go through the complex bureaucratic process to obtain a legal plot have encroached upon open land, spurring the massive growth of squatter settlements (katchi abadis), which grew from 212 in 1958 to 432 in 1986. The katchi abadis now shelter an estimated 2.6 million residents and have been growing at 10 per cent per annum - around twice Karachi's rate of growth. At that rate, the equivalent of Karachi's entire population growth is being accommodated each year in katchi abadis.

The general housing situation in the main city is also far from satisfactory. About one third of the total housing stock consists of huts. The average number of persons per dwelling was 6.8 and the average room density was 3.1 (Government of Pakistan, 1984b). Water supply is one of Karachi's most critical problems, with only about 40 per cent of Karachi households receiving piped water, usually for only a few hours daily. Household sewerage connections are also inadequate, and most sewage in Karachi continues to be discharged directly into the rivers and surface drains. The city has a non-mechanized system of solid waste disposal which is able to remove only about one third of the solid waste that is generated daily. Because of inadequate drainage, many areas of the city are under water for long periods during the monsoon season. In addition, Karachi has a growing number of environmental problems, an acute shortage of public transport, and a narrow municipal tax base.

I. DEMOGRAPHIC CHARACTERISTICS

A. Population growth

From a population of only about 14,000 inhabitants in 1843, Karachi grew steadily over the next three quarters of a century, reaching a population of 136,000 in 1901 and 244,000 in 1921. It grew at an average annual rate of 2.1 per cent between 1921 and 1931, reaching 301,000 inhabitants, and by 3.8 per cent between 1931 and 1941, reaching 436,000 (Faruqui, 1982). Following partition of the Indian sub-continent in 1947 and the establishment of Pakistan, Karachi received more than 900,000 Moslem refugees from India. Because of net in-migration, the city grew at an average annual rate of 9.4 per cent between 1941 and 1951, reaching a population of 1,068,500 in 1951 (Faruqui, 1982).

Following the closure of the Indo-Pakistan border in the early 1950s, immigration from India fell off sharply. Population growth in Karachi declined from its 1941-1951 level over the next three decades, although it remained high because of a combination of high natural increase and high rates of rural out-migration from surrounding provinces. Karachi's rate of population growth averaged 6.0 per cent per annum during 1951-1961, 5.7 per cent during 1961-1972, and 4.5 per cent during 1972-1981, with its total population reaching 1,900,000 in 1961, 3,500,000 in 1972 and 5,208,000 in 1981 (the latter figure represents Karachi Urban Area, the urbanized area of Karachi Division) ^{1/} (table 1). Although some critics suggested an undercounting of Karachi's population in the census of 1981, post-enumeration sample surveys did not reveal any statistically significant under-enumeration (Pakistan Environmental Planning and Architectural Consultants Ltd., 1985). Karachi's population was estimated to be about 7,500,000 million in 1987 and to be growing at about 5 per cent per annum.

In terms of the distribution of population within Karachi, in 1981 about 40 per cent of Karachi residents were concentrated in Karachi West District, the district with the highest average population density (2,161 persons per square kilometre) and the most rapid population growth (6.3 per cent per annum during 1972-1981) (Government of Pakistan, 1984b). Thirty-five per cent were concentrated in the spatially extensive Karachi East District, which had an average density of 783 persons per square kilometre and was growing at 5.3 per cent per annum. The remaining 25 per cent was concentrated in the smallest district, Karachi South, which had a density of 1,445 persons per square kilometre and average annual growth of 2.8 per cent. In 1987 a fourth district, Karachi Central, was carved out of Karachi West.

Table 1. Historical estimates of the growth of Karachi, 1843-1981.

Year	Population	Average annual rate of growth
1843	14 000	
1872	57 000	5.0
1881	74 000	2.9
1891	105 000	3.7
1901	136 300	2.6
1911	186 800	3.2
1921	244 200	2.7
1931	300 800	2.1
1941	435 900	3.8
1951	1 068 500	9.4
1961	1 912 600	6.0
1972	3 515 400	5.7
1981	5 208 000	4.5

Source: M. Salman Faruqui, Karachi: Physical Situation of Human Settlements (Karachi, Karachi Development Authority, 1982).

There are limited and sometimes conflicting data on other demographic parameters in Karachi. The crude death rate is currently of the order of 9 per thousand population (Karachi Development Authority, 1984). Infant mortality, which greatly improved following the introduction of oral rehydration therapy, is currently estimated to be about 46 per thousand live births. However, there are considerable morbidity and mortality differentials in Karachi by geographical area and by social class. Indeed, in a middle class area of the city, Karimabad, community surveys found low infant mortality and a disease pattern similar to that in an industrialized country. In contrast, in the four katchi abadis surveyed, infant mortality rates ranged from 95 to 145 per thousand live births, and there was a high incidence of malaria, gastroenteritis, diarrhoeal diseases and infectious diseases (Karim, 1986a).

The determinants of fertility commonly observed in other developing countries are less applicable in Pakistan. The relationship between rising educational levels and fertility decline, for example, has been very weak (Alam, 1984). Moreover, fertility is somewhat higher in urban areas of Pakistan than in rural areas - a phenomenon that has been attributed to changing breast-feeding practices. This has been offset

by a somewhat higher age at first marriage in Pakistan's urban areas (in 1981 the singulate mean age at first marriage for women in Karachi was around 21.6 years), hence, on balance, fertility in urban areas has been slightly lower. The crude birth rate in Karachi is currently estimated to be 32 per thousand, compared to the national rate of 43 per thousand (Pakistan Environmental Planning and Architectural Consultants Ltd., 1985). Again, however, there are widespread differentials, with the crude birth rate ranging from 16 per thousand in the middle class area of Karimabad to between 40 to 44 per thousand in various katchi abadis (Karim, 1986a).

According to recent United Nations estimates based on census data, the average total fertility rate in 1981 was 5.7 children per woman in Karachi East and West Divisions and 5.4 in Karachi South Division (United Nations, 1987).

B. Migration

Migration has been a major factor in fuelling Karachi's rapid population growth. Following partition in 1947, Karachi, which had a population of 436,000 in 1941, received an estimated 900,000 refugees, 90 per cent of whom were Urdu-speaking Moslems from India (whose descendants are still called Mohajirs, the Urdu term for refugee). With the departure for India of an estimated 230,000 Hindus, by 1951 Karachi's population was only 16 per cent native-born (Karachi Development Authority, 1978). After 1960 Karachi received a very small number of migrants from India. However, most of the 300,000 migrants from Bangladesh (formerly East Pakistan) who arrived in Pakistan in the early 1970s settled in Karachi.

Beginning in the early 1960s Karachi began to attract many migrants from within Pakistan. Among the major push factors inducing rural out-migration were rural labour surpluses related to the inequitable system of land tenure, the fragmentation of land as a result of inheritance practices, seasonal unemployment, the scarcity of markets for agricultural produce, drought and seasonal flooding. Among the major pull factors were jobs in industry and services. In recent years, migrants have been attracted by the large number of new jobs created by large-scale infrastructure projects such as Karachi Steel Mills and the new port and related facilities at Bin Qasim.

With respect to numbers, although migration rates have been declining, the absolute number of net migrants to Karachi has remained large. In 1981 Karachi had a total of 1,728,200 non-native born residents - 20 per cent of whom had migrated during the preceding five years (Government of Pakistan, 1984b). Migration to Karachi is

generally direct and long distance (over distances of up to 1,000 kilometres) rather than stepwise (i.e., in stages). This is partly explained by the well-developed transportation network dating from colonial times which links the port of Karachi with areas in the north, in contrast to Karachi's relatively poorly developed linkages with its hinterland (Abassi, 1982). Currently, most migrants to Karachi are from the Punjab and from barani districts (areas of limited and irregular rainfall) in the North-west Frontier Province. Most migrants are male, between 15 and 39 years of age, and generally arrive alone, leaving their families behind in their villages. Some migrants who bring their families - particularly Pathans, who are strict in keeping pardah, that is, segregating their women - subsequently send their families back to their villages (Selier and Nientied, 1986).

In addition to its demographic impacts, migration to Karachi has had complex economic and social impacts. Although the massive influx of Moslem refugees after partition created severe economic and social hardships, many of the migrants were entrepreneurs and trained industrial workers who ultimately contributed to Karachi's development. International migration has also had a major impact. Although only 11 per cent of expatriate workers were estimated to be from urban areas of Sind (during 1972-1979), their remittances were disproportionately large and were heavily invested in urban real estate.

On the negative side, much of the recent communal violence in Karachi has been attributed to long-standing ethnic tensions between Urdu-speaking Mohajirs and Pushto-speaking Pathans, who have been the numerically dominant migrant group in recent years. Although concentrated in the same geographical areas - e.g., Liaquatabad, Orangi, Benaras Chowk - the two groups have not been in direct economic competition; indeed, most Urdu-speaking residents are artisans or factory workers, whereas most Pathans are labourers or transport workers (Karim, 1986b). However, small incidents (such as traffic accidents) have ignited ethnic tensions. The situation has been further aggravated by the presence in Karachi of an estimated 100,000 Afghan refugees, who are also ethnic Pathans. Although there are no data on their numbers, it is alleged frequently in the press that there are large numbers of illegal immigrants in Karachi from Bangladesh, Iran, Sri Lanka, and even from countries in Africa (Karim, 1986b).

C. Population projections

The first master plan for Karachi issued in 1951 projected a population of 2,500,000 inhabitants by the year 2000. This was a gross under-estimate, for the population of Karachi urban area (the urbanized area of Karachi Division) was 5,208,000 according to the census of

1981. As an input to the second master plan, the Karachi Development Plan, 1974-1985, population projections were prepared for Karachi under two hypothetical urbanization scenarios - one assuming a dispersed regional settlement pattern and the other assuming a concentrated pattern of urban growth. Both scenarios assumed that Karachi's average annual rate of growth would remain constant at around 4.6 per cent per annum from the mid 1970s through the late 1980s, and would decline to about 4 per cent by the end of the century, with the total urban population of the Karachi metropolitan region reaching 5,750,000 in 1981, 8,600,000 in 1990, and 12,600,000 by the year 2000 (Karachi Development Authority, 1973). However, the distribution of population between Karachi urban area and other urban areas in the metropolitan region was quite different under the two scenarios. By 1990, under the dispersion scenario, the population of the Karachi urban area was projected to reach 6,550,000, with the remaining urban population to be dispersed among two proposed growth centres, Kalu Khuhar and Baran Town, and three minor urban centres. By the year 2000 the population of Karachi urban area was projected to reach 8,950,000. In the alternative projection, which assumed a concentrated pattern of urban growth, the Karachi urban area was expected to absorb most of the population increase of the region, reaching 8,544,000 in 1990 and 12,500,000 by the year 2000.

In 1977 the Master Plan Department of the Karachi Development Authority (KDA) revised its earlier population projections. The population enumerated in the 1972 census (3,515,400) and a somewhat higher estimated figure of 3,780,000 were projected at average annual rates ranging from 4.8 to 6 per cent, with Karachi's total population in the year 2000 ranging from 13,340,000 to 19,320,000 (Karachi Development Authority, 1977).

In preparing population projections as an input to a revised water master plan, Pakistan Environmental Planning and Consultants Ltd. (PEPAC) forecast the total population of Karachi Metropolitan Area (KMA) to the year 2025 and allocated the population to 21 clusters in the KMA. Using the base population enumerated in the 1981 census and age-specific fertility and mortality rates for Sind Urban Area obtained from a 1979 demographic survey, PEPAC prepared two alternative population projections. In light of Pakistan's slow decline in fertility, the first assumed that there would be no change, or else a mutually compensatory change, in levels of fertility and mortality. The second assumed that there would be a systematic reduction in the crude birth rate from the current level of 32.3 per thousand to 30 per thousand by 1995, to 25 per thousand by 2010, and to less than 20 per thousand by the year 2025 (Pakistan Environmental Planning and Consultants Ltd., 1985).

Three levels of migration were considered likely to result from alternative economic development policy scenarios. The high variant projection based on the assumption of high levels of public and private sector investment in Karachi assumed an annual migration stream of 310,000. The medium variant (reflecting medium levels of investment and a moderate policy of national decentralization) assumed annual migration of 225,000, whereas the low variant (resulting from low levels of investment and a policy of strong decentralization) assumed that there would be an annual migration stream of only 150,000. The three hypothetical migration streams were then added to the basic cohort survival model (it was assumed that the migrants would adopt the declining fertility levels of the native Karachi population). The total population corresponding to the three levels of net in-migration for 2025 were 24.6 million (low), 30.3 million (medium) and 36.8 million (high). These translated into average annual population growth rates of 3.6, 4.1, and 4.5 per cent over a 45-year period. In addition, it was assumed that 600,000 new inhabitants would be added to the population of Karachi as a result of areal reclassification, yielding a total population in the working range of around 25 to more than 37 million in 2025 (Pakistan Environmental and Planning Consultants Ltd., 1985).

II. THE ECONOMY

A. Historical background and development of the city's economic base

Karachi functioned as a port from around 1700 but no town existed before 1725. At the time of its settlement by the British in 1836, the small walled township had a population of only about 14,000 inhabitants. Karachi was ceded to the British crown in 1842 and in 1852 the Karachi Metropolitan Corporation was established. The railway network linking Karachi with the rich Punjab hinterland opened in 1861, and Karachi's economy received a major boost during the cotton boom of the mid 1860s, which resulted from a decrease in the world supply during the American Civil War. Following completion of the Suez Canal in 1869, the port of Karachi became the shortest sea route between the Punjab and Europe. The city developed rapidly thereafter. The first regular water supply system was put into operation in 1880-1883, trams were introduced in 1884, and a modern drainage and sewerage system was constructed in 1894/95 (Faruqi, 1982). The period following the First World War was a boom period for Karachi's economy, including the construction of more than 90,000 houses. During the Second World War, Karachi was of vital strategic importance to the Allies, serving as an important air base and ship rehabilitation port. By the 1950s Karachi had become one of the most important junctions for air traffic between Asia and Europe.

Following partition of the Indian sub-continent in 1947, Karachi's economy began to expand because of factors other than its role as a British colonial port. For example, the establishment of Karachi as the capital of the newly created nation of Pakistan, until 1959 when the federal capital was transferred to the planned city of Islamabad, spurred the growth of the administrative sector. Similarly, the Government's choice of an industrialization strategy based on import substitution reinforced Karachi's growth as the country's major urban centre and only port.

At the time of independence, Karachi had only a small number of industrial units. During the 1960s there was an increase in the production of intermediate and capital goods, e.g., engineering, electrical products, cement, chemicals and fertilizers. By 1981 the city had more than 1,700 registered industries, with a value of net fixed assets exceeding Rs. 4 billion (Government of Pakistan, 1984b). The largest number of units were in textile manufacturing (453), followed by printing and publishing (87), iron and steel-based industries (75), food preparation (73), drugs and pharmaceuticals (56), textile dyeing and bleaching (55), transport equipment (49), and chemicals (49) (Government of Pakistan, 1984b).

B. Recent performance of the economy

With a brisk rate of industrial production and excellent harvests, Pakistan's economy grew by 7 per cent per annum in recent years, accompanied by relatively moderate inflation. Despite these favourable trends, the economy faces a number of long-term problems. The Government identified three key examples in the Sixth Five-Year Plan (1983-1988): a low investment and savings ratio, low agricultural productivity, and heavy reliance on imported energy. In addition, remittances from Pakistanis working abroad have been decreasing steadily because of the slowdown in the oil industry. The country's development has also been constrained by inadequate power and transportation systems and by poorly developed health and educational infrastructure.

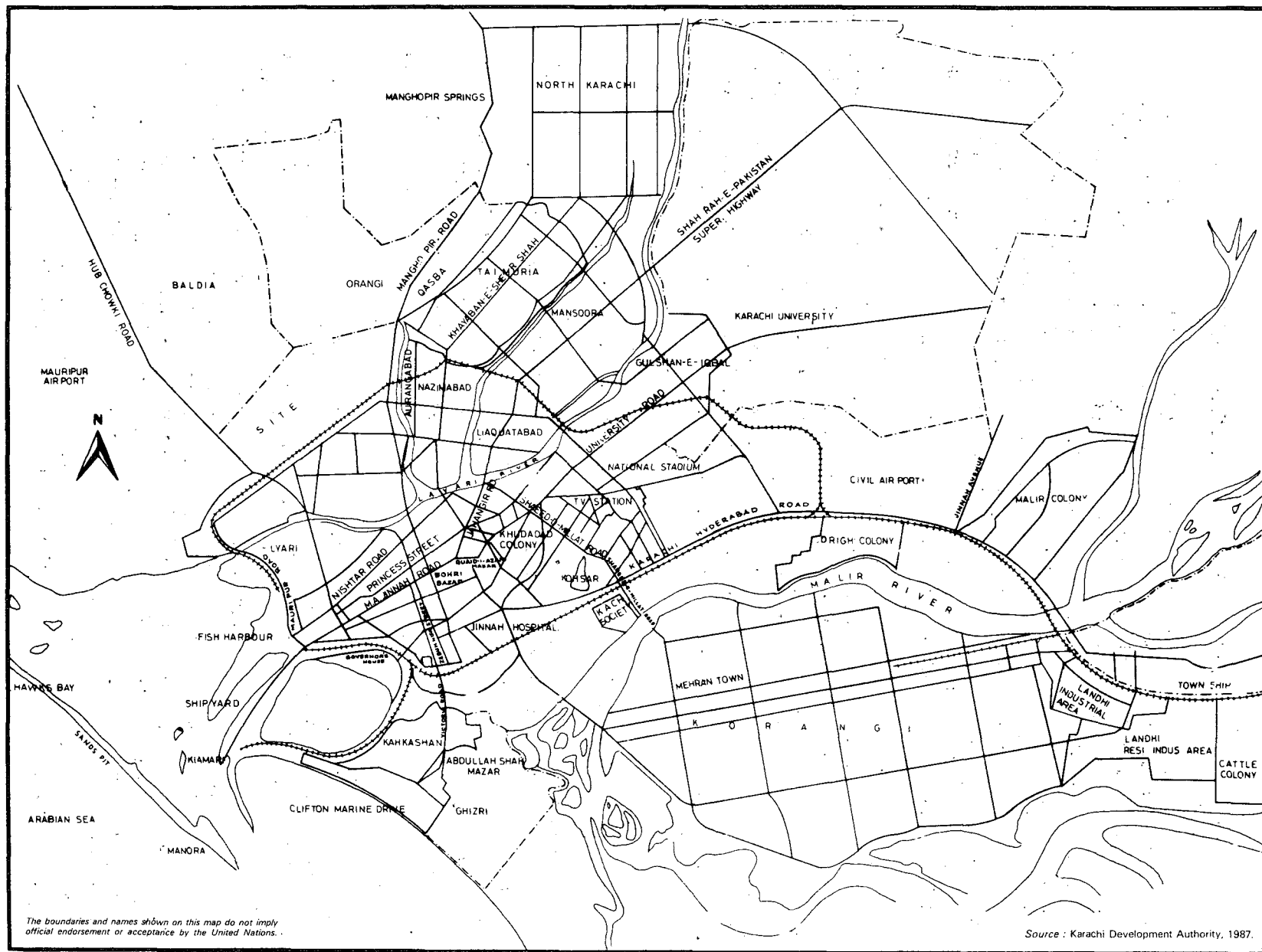
In recent years, the Government of Pakistan embarked on a new course of development involving an increased role for the private sector. The Government has also cut subsidies, increased charges for railroads, electricity and gas, and increased import duties, partly to raise capital for investments in literacy and health. The economy picked up during the 1980s and has remained strong. Karachi's growth has largely paralleled the growth of the national economy, although it has not been affected significantly by the nationwide drop in agricultural output.

C. Spatial structure of the metropolitan region

Karachi's metropolitan area, 350 square kilometres in the 1974 master plan, currently extends over an area 10 times that size. Karachi Division, with an area of 3,527 square kilometres, extends from the Dhabeji water works in the east to Baldia in the west and from the newly planned area of Surjani town (located north of North Karachi) to the Korangi and Landhi estates in the south-east. The urbanized component of Karachi Division extends over an area of some 1,300 square kilometres.

Karachi originally developed around the mouth of the Lyari River and then spread north-eastwards. The Central Business District (CBD) is located between the Lyari and Malir Rivers (fig. I). Much of the area between the rivers is in residential use, intermingled with commercial and small-scale manufacturing units. Whereas there was considerable open space in the central city at the time of Independence, much of the land was subsequently allocated to co-operative housing societies for land development for middle- and high-income households. As much as one quarter of the central area has been pre-empted for military use and developed by cantonment boards (e.g., Drigh Cantonment, Malir Cantonment) at very low densities. Moreover, an estimated five square kilometres of serviced land in the heart of the city lie vacant as a result of speculation (Sivaramakrishnan and Green, 1983).

Figure 1. KARACHI URBAN AREA



3502 x

Karachi currently has 432 squatter settlements (katchi abadis), which cover more than one quarter of the city's total residential area. Katchi abadis are located in the old city and in small scattered pockets throughout the urbanized area. They also include old villages (goths) now surrounded by the spreading metropolitan area and settlements in dried up river beds. Baldia and Orangi, two of the largest katchi abadis in Karachi, are located in the arid hilly region in the west (where migrants were drawn because it reminded them of their native North-west Frontier Province). One of Karachi's major industrial complexes, the Sind Industrial Trading Estate (SITE) is located close to Orangi and Baldia. The other, the Landhi Industrial Trading Estate (LITE) is located east of Korangi.

D. Sectoral and spatial distribution of jobs

According to the 1981 census, the major occupational group in Karachi was production and related workers, transport equipment operators and labourers (39.3 per cent). Other important occupational groups were sales workers (15.8 per cent) and clerical and related workers (7.8 per cent) (Government of Pakistan, 1984b).

Nearly half of all employment in Karachi is concentrated in four areas: the central city, the port, the Sind Industrial Trading Estate (SITE), and the Landhi Industrial Trading Estate (LITE). Other industrial establishments, especially small-scale manufacturing units, are distributed throughout the city, often in residential areas. Following completion of Karachi Steel Mills and Port Qasim, this area has become a major employment centre. Karachi Steel Mills alone is expected to have 28,000 direct employees. Taking into account ancillary employment in related services (about 16,000), employment in downstream industries, family members (typically five dependents for each employee), the total population of Bin Qasim is expected to be nearly 500,000 by the year 2000 (Government of Pakistan, 1981).

E. The city in the region and in the national urban context

Sind is the most urbanized province in Pakistan, with 43 per cent of its population residing in urban areas in 1981. This is mainly because of the dominance of Karachi, which accounted for 62 per cent of Sind's total urban population in 1981. Karachi's economic dominance in the province is even greater than its demographic weight. In the 1980s Karachi was the site of more than three quarters of the major manufacturing establishments in Sind, accounted for 70 per cent of the gross provincial product, and generated 44 per cent of total revenues. Much of the rest of Sind consists of desert and traditional rural areas

dependent on subsistence agriculture. The province's urban system is highly skewed, with only two cities - Karachi and Hyderabad - above 500,000, four in the 100,000-500,000 size class, four in the 50,000-100,000 size class and 14 in the 25,000-50,000 size class.

Both Hyderabad (pop. 702,500 in 1981) and Sukkur (pop. 190,600 in 1981), Sind's two principal urban centres after Karachi, have had stagnant economies over the years and have subsisted largely on a traditional economic base of small commerce, artisanry and personal services. Essentially, none of the larger cities in Sind have been consistent enough in their growth performance to attract substantial numbers of rural migrants, who have gone instead to Karachi. Although some small cities in Sind - e.g., Mirpurkhas and Larkana - grew at well above average rates, most of the others have been growing very slowly.

The dualism between Karachi and the rest of Sind and the lack of diffusion of the benefits of economic growth have been issues of concern to the Government for many years. In response to these concerns, the World Bank prepared a Sind Urban Sector Memorandum (World Bank, 1983). The report concluded that there was a case for deflecting some of Karachi's growth to Sind's secondary cities, as long as the strategy was not counter-productive for the overall economy. In practice, this would mean reducing governmental subsidies to Karachi and promoting growth in smaller urban centres through policies that would simultaneously address urban infrastructure needs and generate employment. The report cautioned that efforts should be concentrated on a few secondary cities with economic potential (e.g., Hyderabad, Sukkur) rather than spread too thinly among a large number of towns. In recent years physical development plans have been prepared for a number of Sind's secondary cities, although implementation has been slow. Moreover, to counteract the pull of superior higher educational facilities in Karachi, medical colleges were established in Larkana (pop. 124,000 in 1981) and in Nawabshah (pop. 102,000 in 1981).

In the national urban context, the province of Punjab, which contains Lahore, Pakistan's second largest city, has a more fully developed urban system. It has 80 cities larger than 25,000, compared to only 24 in Sind, 14 in the North-west Frontier Province and four in Baluchistan. The national federal capital of Islamabad (pop. 201,000 in 1981) has been growing very rapidly (indeed, it grew by 161 per cent during 1972-1981) but, as a planned city, it is a special case. Some of the highest urban growth rates in Pakistan - in Peshawar and in Quetta - are artificial because of the influx of refugees from Afghanistan. In conclusion, many of the more dynamic larger cities in Pakistan are located in other provinces, suggesting that policies to reduce the dominance of Karachi may ultimately promote the development of cities outside of Sind.

III. DECENTRALIZATION AND LOCATION

A. The evolution of spatial strategies

Until the early 1900s development in Karachi took place within the existing built-up area. After the First World War, new areas began to develop rapidly, and Karachi's first master plan was prepared during 1922/23. In 1946 an updated master plan was begun by the British. However, because of partition and the subsequent upheaval, the plan was not completed.

In 1951, with Karachi facing severe problems associated with the doubling of its population over a four-year period, the Government commissioned an urban development plan from a Swedish consulting firm, Merz Randal Vatten (MRV). The resulting Greater Karachi Plan was not officially approved by the Government, although it was used as a guideline plan by the Karachi Improvement Trust, later amalgamated with the Karachi Development Authority (KDA). Unfortunately, accurate statistics were not available at the time the plan was drafted, and it was based on too conservative assumptions about Karachi's future size and rate of population growth. The plan suggested, for example, that in order for Karachi to carry out its functions as Pakistan's capital and only port it would have to reach a population of at least 2.5 million inhabitants by the year 2000. The plan questioned whether Karachi would be able to achieve this target, which would require average annual growth of 3.2 per cent per annum up to the end of the century.

Two decades later, Karachi's second master plan, the Karachi Development Plan, 1974-1985, was finalized with assistance from the United Nations Development Programme (UNDP) and a private consulting firm, Planning and Development Collaborative International (PADCO), based in Washington, D.C. The project was started in 1968 and was divided into three cycles. In the first cycle, planners compiled data and statistics and produced two alternative long-term investment strategies, as well as a series of recommendations for immediate action. During the second cycle two alternative spatial strategies were examined. One proposed a polycentric pattern of development designed to respond to Karachi's existing growth pressures, particularly in the northeast. The other, the selected strategy, proposed a development corridor pattern making better use of existing infrastructure and minimizing future investment.

The latter strategy had three major components: provision for new growth, intensification of existing areas of development, and containment of future growth in old-established areas. The main thrust of new growth up to 1985 was to be in the northwest (Baldia, Orangi), the southeast (in the undeveloped parts of Korangi), and in the east

(Khanto and Pipri). New growth areas were essentially areas that could be provided with infrastructure and essential urban services at a relatively modest cost, and where the risks associated with new development would be minimal.

The areas identified for intensification of development were in a belt extending from North Karachi across the northeast side of the city and down into Korangi, and those parts of the Korangi area and Clifton that were already provided with partial infrastructure. Indeed, a major selection criterion was the fact that these areas had substantial underutilized infrastructure capacity (e.g., in the arterial road system, water mains, trunk sewers). Finally, containment of further growth and a programme of urban renewal were recommended for densely populated central Karachi, which had only intermittent supplies of unsafe water and inadequate sanitation.

In regard to industrial location, the master plan proposed that expansion of manufacturing in the Sind Industrial Trading Estate (SITE) be curtailed. Rather, the plan proposed consolidating the growth of the industrial complex at Korangi-Landhi and opening up two new complexes. One of the proposed new complexes, in North Karachi, was selected because of the severe deficit of jobs in the area, and because it was located on the superhighway leading to the east and upcountry. The other proposed complex (in Pipri) was selected because of its proximity to the proposed new port and steel mills, and to the main rail and road arteries linking Karachi with the east and upcountry. The plan also recommended sites for sub-metropolitan trade and service centres and proposed establishing green belts to serve as buffers between industrial and residential areas (e.g., in North Karachi).

In order to ensure proper implementation of the master plan, a Master Plan Department was established on a permanent basis and was charged with implementation of the development proposals, and with updating and monitoring development works in the region.

In addition to preparing master plans, the Government adopted a number of policy measures over the years designed to decentralize economic activity. For example, in an effort to decentralize large-scale industry, the Government employed fiscal incentives such as a regional bias in the tax holiday structure. It is now generally acknowledged, however, that the incentives were not sufficiently attractive to promote significant industrial decentralization (Pakistan Environmental Planning and Architectural Consultants Ltd., 1983). They primarily induced investors to move just beyond the borders of developed areas, thereby promoting metropolitan deconcentration rather than decentralization. In any event, despite efforts to reduce the concentration of industry in Karachi, Karachi's share of value-added in

large-scale manufacturing declined only slightly - from 39 per cent in 1959/60 to 35 per cent in 1976/1977 (Pakistan Environmental Planning and Architectural Consultants, Ltd., 1983).

Of far greater importance than explicit measures to promote decentralization, Karachi's initial historical advantage as Pakistan's only port was reinforced over time by a number of macroeconomic and sectoral policies, which served as implicit spatial policies. To cite only one example, aggregate transportation costs in Pakistan, which are regulated, increase proportionally with distance from the port of Karachi, hence favour location in the Karachi area (Pakistan Environmental Planning and Architectural Consultants Ltd., 1983). In addition, many bureaucratic regulations of the Government necessitate face-to-face contact.

In regard to public investment, Karachi, with a 6 per cent share of Pakistan's population, accounted for 70 per cent of Ministry of Production investment in industry in recent years, twice Karachi's share in industry. Although this was largely because of Karachi Steel Mills, which dwarfed the rest of industrial investment, several other major industrial projects (e.g., in automobiles, machine tools, fibres, and chemicals) were set up in Karachi by the Ministry of Production. As for development expenditure in the Annual Development Plan, Karachi was again the largest recipient, receiving 46 per cent of public infrastructure investment (again, mainly because of Port Qasim and the Pipri marshalling yards built in conjunction with Karachi Steel Mills) (Pakistan Environmental Planning and Architectural Consultants, Ltd., 1983).

B. Current spatial strategies

In evaluating the 1974-1985 Karachi Development Plan, perhaps its major legacy was to highlight the crisis confronting the metropolitan region and to provide a framework for improving public services. The plan's recommendations - that development should be contained in certain areas (e.g., the old city) and consolidated in others (e.g., in a belt extending from North Karachi down into Korangi), and that new growth should be guided to the northwest, the southeast, and the east, were only partly fulfilled. The area to the southeast has developed rapidly following the construction of Karachi Steel Mills and Port Quasim. However, most new growth in Karachi has been unplanned and has occurred in katchi abadis on the periphery. The central city remains densely populated, with pockets of derelict housing indispersed among modern commercial buildings. Because of widespread speculation, and the consequent difficulty of assembling large tracts of land, the Karachi Development Authority (KDA) developed its latest large-scale project,

Surjani town, in an area on the northern periphery of the city which was designated as a greenbelt in the 1974 master plan. At the same time, the proposed metrovilles, one of the innovative concepts put forward by the master plan, remain largely vacant tracts in prime locations.

Essentially, Karachi has grown more as a result of market forces than in accordance with the 1974 master plan. Partly in recognition of this fact, the Government's current approach is based more on improving services than on guiding and controlling development.

Whereas the Sixth Five-Year Plan provided guidelines for development at the national level for the period 1983-1988, there was no separate allocation or special treatment of the problems of Karachi. The federal government therefore decided to lessen the burden of the provincial government by assisting it to provide much-needed basic services to Karachi's multi-ethnic population (that was termed a "miniature Pakistan"). The resultant Karachi Special Development Programme, which is being assisted by the World Bank and the Asian Development Bank, envisaged an outlay of Rs. 3.2 billion in the public sector and 1.4 billion in the private sector for katchi abadis, water supply, sewerage, stormwater drainage, flood control, and public transport. In each sub-sector, projects that are designed to directly improve urban services, particularly for the low-income population, are combined with measures to improve resource mobilization and cost recovery, to demonstrate the feasibility of new approaches for providing services, and to strengthen the institutional capacity of local agencies to deliver services. The Government of Sind and the executing agencies expect project implementation to be completed in four to six years, beginning 1 April 1986. Although the project will not directly influence spatial distribution, other than by its recommendation to freeze the boundaries of katchi abadis, transport improvements may eventually have some influence on settlement patterns in Karachi.

The Government of Pakistan constituted a Commission of Enquiry into Affairs of Karachi in October 1985 to look into the causes of the city's unrest. Among the recommendations of a report presented to the Prime Minister in 1986 were: that the Karachi Special Development Programme should be vigorously implemented and completed within the stipulated period; that the programme of providing basic amenities for the rapidly increasing population should be undertaken on a continuing basis and forward planning should be done on a long-term basis even after completion of the current KSDP; and that a master plan should be prepared to cater to the needs of Karachi's population by the year 2000.

At the request of the Government of Pakistan, a new project - financed by the United Nations Development Programme (UNDP) and executed by the United Nations Centre for Human Settlements (UNCHS) in

collaboration with the Karachi Development Authority (KDA) -- will seek to develop an innovative approach to urban master planning. Rather than preparing a new master plan for Karachi every 10 to 20 years, particularly when the physical condition of the city has been changing continuously, the aim of the new master plan project is to create an urban management tool with a strong analytical base, which will be used mainly by city managers, by planners in the various urban sub-sectors, and by investors from the private sector.

The new master plan will include: an urban data base which will be continuously updated; mathematical models designed to relate and project data; consumption and performance indicators associated with the Government's long-range development goals; sub-sectoral studies to reinforce the data base and models; alternate development scenarios derived from the data base and models and designed to project the effects of such factors as population growth, household size and income, public and private capital investment, operation and maintenance expenditures, land use, land costs, public revenues, and so forth (HABITAT News, April 1987).

IV. ISSUES AND SECTORS

A. The labour market

According to the 1981 census, Karachi's labour force (defined as persons working or looking for work) constituted 25.8 per cent of the total population. The rates for males and females were 45.1 and 3.8 per cent, respectively. Unemployment was reported to be 7.4 per cent (Government of Pakistan, 1984b).

Employment is an area of major concern for the Government of Pakistan. The National Manpower Commission, established to provide recommendations for the Seventh Five-Year Plan, has been examining the machinery for manpower planning in order to suggest measures for integrating it within overall economic planning. It has also been examining the problem of unemployment (to determine its magnitude and to recommend both short- and long-range policies), women's employment, and the imbalance between general and vocational education (Dawn, 2 December 1987).

Problems arising from the migration of Pakistani workers to foreign countries, and the effects of reverse migration following the changing pattern of labour demand in the Middle East, are additional concerns. In an effort to check the downward trend of employment abroad, in 1987 the Government liberalised grants of licenses to promoters of overseas employment. The Government has also explored possibilities for concluding bilateral agreements with Middle Eastern countries, for sending recruiting agents to establish contacts with foreign overseas employers and government agencies, and for obtaining overseas contracts for professional, technical, administrative and clerical personnel from Pakistan (Pakistan Times, 4 August 1987).

B. Urban land

The urban land market in Karachi is unique. A legacy of the colonial government is that about 80 per cent of land in Karachi, including large expanses of sparsely populated arid land outside the built-up area, is owned by the Government. The land is often under long-term lease and is managed by various governmental agencies, e.g., the Government of Sind, Karachi Development Authority (KDA), Karachi Metropolitan Corporation (KMC), the Karachi Port Trust, and the Ministries of Defence and Works.

Despite large-scale public ownership of land in Karachi, unusual among Asian mega-cities, there has been widespread speculation in the urban land market over a period of many years. A major reason for

speculation was the availability of large numbers of serviced sites developed by the Karachi Development Authority (KDA) and sold at well below market value. The 1974 master plan recommended that KDA should no longer distribute land at bargain prices and summarized KDA's role in the land market as follows:

"The failure to apply adequate pricing to the sale of plots by KDA is the single factor most responsible for the present poor state of infrastructure in the city. It results in large-scale land speculation and a consequent decrease in the effective supply of land available for housing. It results in a transfer of resources from the public sector to the high-income groups in the private sector. It prevents KDA from obtaining sufficient revenues from land development to establish a continuous and expanding programme for low-income groups. There is no reason to allow the vast profits from land speculation on KDA plots to continue to accrue to the private sector at the expense of low-income households."

Although restrictions have been imposed by the Government on the number of plots that can be owned by an individual, they have been easily circumvented, allowing investors to purchase multiple plots. Moreover, property tax and capital gains tax regulations have generally induced investors to hold plots they never intended to occupy. To illustrate the extent of the problem, 80,000-100,000 out of the 260,000 serviced plots developed by KDA during the 1970s (and some 20,000 apartments) lay vacant 10 years later. A majority were held as investments by well-to-do residents of Karachi, overseas workers, or by investors living in other provinces of Pakistan. Land that has been bought up by speculators in Karachi has not been generally put to temporary productive use through lease arrangements, mainly because landlord/tenant regulations stipulate that tenants cannot be evicted.

Speculation in Karachi has not only distorted the residential land market but also resulted in a highly dispersed, discontinuous pattern of urban development, with large vacant areas lying next to densely populated built-up areas. Servicing those areas has been highly uneconomic. Water and sewerage pipes, power lines and other service lines have had to be installed with a capacity sufficient for the eventual total development of a given area. They have remained under-used for such a long time, however, that cost recovery from user charges has been nearly impossible. A related problem is that certain areas of Karachi (e.g., Defence, Clifton) were initially developed to accommodate lower-income households. The beneficiaries sold their land, however, and these areas were subsequently developed for higher income groups, with infrastructure that was greatly under-specified.

The Government has made efforts in recent years to distribute land in an equitable fashion. To deal with the large number of applicants for plots developed by KDA, under the terms of the Sind Disposal of Plots Ordinance (1980), plots in Karachi of under 366 square metres are allotted to the general public by computerized ballot. Plots over that size are sold at public auction to obtain cross-subsidies. Theoretically, there are no restrictions regarding who can apply for plots. Applications must be filed at one of 150 bank branches, with payment of a 10 per cent deposit. A successful applicant has to pay another 40 per cent of the price within 60 days of the ballot and the remainder within a two-year period. Low-income families have generally been at a considerable disadvantage, however, mainly because of illiteracy (e.g., notices are circulated in newspapers) and inability to pay even the 10 per cent deposit.

In spite of various policies formulated at the federal and provincial level for preventing new encroachments, illegal land-grabbing has become an extremely lucrative activity in Karachi, and professional squatters have realized enormous profits by occupying state land, sub-dividing it, and then selling it to low income groups. Indeed, there is hardly any governmental or semi-governmental agency in Karachi whose land has not been encroached upon in this manner.

C. Housing

Karachi's response to its housing needs has evolved over time. In order to cope with the massive influx of refugees from India following partition, the Government developed six townships, with nucleus houses for more than 55,000 households. Following a survey conducted in 1958, which revealed that 120,000 households were continuing to live in more than 200 slum clusters in and around Karachi, the Government launched the Greater Karachi Resettlement Programme, planning and constructing Korangi and North Karachi, two large satellite townships for a projected population of 600,000 (Nizami, 1983).

In terms of implementation, some 75,000 housing units, chosen by families from among a variety of housing designs, were constructed during the early 1960s. The programme was ended, however, in 1965, because of its high cost and the necessity for large governmental subsidies. Moreover, whereas part of the cost of the programme was supposed to be recovered from the beneficiaries in small monthly installments, most households stopped making payments, and the authorities did not have explicit powers to take action against defaulters (Afroz Alvi, n.d.). Also, a large number of beneficiaries sold their property and then encroached upon land elsewhere in the city. An additional problem was the fact that Korangi and North Karachi

were located at a considerable distance from the central city, forcing residents to commute long distances and to spend a considerable part of their wages on transportation.

In the next phase of its housing programme, the Karachi Development Authority (KDA) began to provide serviced plots, e.g., in Qasba Township, Orangi and Baldia. KDA was concerned, however, with developing a longer-term solution to Karachi's housing needs. Hence, it requested assistance from the United Nations Development Programme (UNDP) and Planning and Development Collaborative International (PADCO) in preparing a master plan for the Karachi Metropolitan Region.

The resulting Karachi Development Plan, 1974-1985 initiated the concept of metrovilles. Designed to provide a range of plots to match the paying capacity of different income groups, and to encourage self-help building, metrovilles consisted of areas divided into various sized plots with utility walls (which could be incorporated into the houses subsequently built by the owners). Metroville I, with more than 4,000 serviced plots, was implemented in the mid 1970s in a prime location near the Sind Industrial Trading Estate (SITE). Although the plots were quickly sold, most were held for speculation, and very few plots were occupied. Moreover, the utility walls were unpopular with residents and were usually demolished. More than a decade later, Metroville I remains a largely undeveloped tract. The experience with serviced plots in Metroville II was similar to that of Metroville I. Standards were generally too high. Moreover, plots were transferable and were frequently sold to higher income households and then held for speculation.

In addition to the metroville programme, KDA undertook a self-financing redevelopment scheme in the Lines Area, where over 20,000 families were living in slum conditions. Although KDA's guidelines stipulated that residents of the area should be resettled in multi-storey flats in the same location, the 800 flats completed by KDA were too costly to be allotted to area residents, and all were sold to outsiders. However, despite this, the Lines Area rapidly acquired a slum appearance, and KDA is currently redeveloping the area. KDA also developed Gulzar-e-Hirji, in which 70,000 plots were provided through 17 co-operative housing societies, as well as three additional plot development programmes (Metroville III, Gulistan-e-Jauhar for middle-income households, and Shah Latif Town for low-income households). KDA has also been involved in several commercial housing schemes, constructing apartments in North Karachi and Gulshan-e-Iqbal for middle income households and in Clifton for high income households. It has also advertised world-wide, soliciting applications, and then constructing apartments for overseas Pakistani workers, who were required to make the payments in foreign exchange.

One of KDA's most recent projects is Surjani town to the north of North Karachi in an area designated as a green belt in the 1974 master plan. Of the 50,000 plots of 60 to 200 square metres that will be developed, 20,000 have been assigned to private developers and 10,000 have been designated for low-income, but not the lowest income, households. Considered to be an innovative project because, for the first time, formal sector housing finance will be made available to lower income households, Surjani town will take some time to be settled because of a lack of water connections in the area.

The House Building Finance Corporation (HBFC) is the only institution in Pakistan that provides long-term loans to individuals for the construction of houses. Consistent with the gradual Islamization of Pakistan's economy, HBFC now jointly owns with the purchaser for a specified time period the property that it finances with zero interest loans; however, it is entitled to a share of the rent or of the capital if the property is sold. A more important source of housing finance has been the remittances of overseas workers, more than 20 per cent of which are estimated to have been invested in real estate. Remittances contributed substantially to the building boom and soaring house prices in Karachi in the 1970s and probably resulted in a large proportion of the city's unoccupied apartments.

Despite three decades of formal sector housing programmes, Karachi's housing stock has been unable to keep pace with population growth. By the early 1980s, it was estimated that there was a deficit in Karachi of some 450,000 housing units (Faruqui, 1982). Moreover, the large number of migrants from up-country, unable to afford any type of formal housing, have solved their housing needs by squatting on public land, often with the assistance of professional encroachers. By 1986 it was estimated that 2.6 million persons, or nearly 40 per cent of Karachi's total population, were living in a total of 432 squatter settlements (katchi abadis), covering more than 6,000 hectares.

Whereas the Government's policy up to the mid 1970s was to demolish katchi abadis and to transfer residents to newly developed plots, a revised strategy was outlined in the Fifth Five Year Plan (1978-1983). Although the plan called for an increased rate of construction of formal sector housing units, it acknowledged that this would be insufficient. Moreover, in light of the high cost of removal and resettlement of squatters, it proposed an alternative strategy of upgrading katchi abadis by providing basic services such as streets, water supply and sewerage, granting security of land tenure, and assisting residents with self-help housing construction (Saleem, 1983).

The Government's new policy for the katchi abadis outlined in Martial Law Order (MLO) 183, was to regularize all katchi abadis located on provincial or local council land (although not on federal or private

land) and built before 1 January 1978. The law stipulated, however, that scattered slum clusters of less than 40 households, and encroachments on land designated for future public amenities (e.g., for mosques, parks, playgrounds) or in dangerous areas (e.g., under high tension wires, in low-lying flood-prone areas) could not be regularized and had to be removed. (Although katchi abadis to be removed are supposed to be notified well in advance, in practice, removals take place with little advance notice.)

In areas that could be regularized, the standard practice was to give squatters land leases for a period of 99 years. These leases could not be transferred for a period of five years, except in cases of inheritance. In return for receiving ownership rights, a one-time charge was levied on the plot holder, who was then obliged to pay a nominal annual land rent. The idea was that security of tenure would stimulate residents to invest their savings in improving their individual dwellings, thereby helping the overall process of slum upgrading. Because it was felt that residents would be reluctant to pay for tenure rights before any visible physical improvements had been made, a revolving fund was established to begin the process of improvement.

Each regularization and improvement scheme in Karachi was supposed to recover a major portion of the development cost. In practice, however, there were problems in achieving cost recovery. Although the charges for cost of land and development were low (Rs. 15 per square yard for small residential plots), the pace of recovery was very slow. For example, a pilot project in Baldia township found that over a period of 15 months, despite vigorous follow-up and motivational campaigns, less than 10 per cent of residents in the project area came forward to obtain title (Saleem, 1983). Generally, in fact, unless households wanted to sell their land after the five-year waiting period, they were content to maintain the status quo. Subsequently, to increase the number of residents seeking title, the Government reduced the fee to Rs. 7.5 per square yard (for land whose actual development cost was about Rs. 60 per square yard, and whose market value was estimated to be about Rs. 2,000-3,000 per square yard). However, rather than encouraging more residents to come forth to obtain title, many Karachi residents may be waiting to see if the rates will come down further or perhaps be abolished (Interview with Mr. T.A. Jafri, Director General, Sind Katchi Abadis Authority, December 1987).

Under a 1986 ordinance the Karachi Metropolitan Corporation (KMC) will be responsible for regularizing 198 katchi abadis that were notified prior to the issuance of the ordinance; the remaining 234 katchi abadis will be regularized by the newly established Sind Katchi Abadis Authority. However, KMC will continue to provide services in all katchi abadis within its jurisdiction.

Although tenure problems persist, upgrading katchi abadis is a continuing process. Indeed, the Karachi Special Development Programme allocated Rs. 2,100 million for upgrading katchi abadis at Baldia, Orangi, Gulbahar, Trans Lyari, Bhutta Village, Manzoor Colony, Kashmir Colony, Akhtar Colony, and Hilltown. In contrast to the widespread demolition of katchi abadis in the past, programmes now aim at preserving as much of the existing housing stock as possible. Water is generally provided by standposts, each serving about 50 households, although in unserviced areas it is provided by tankers. In a number of instances, community residents have worked together to improve basic services. In Orangi, for example, residents without electricity organised and installed generators. Under the internationally-known Orangi pilot project, low-cost lane sewerage was completely financed and managed by the lane residents, who were provided with technical assistance.

The Government has recognized that, in addition to the programme for regularization and upgrading of katchi abadis, strong parallel measures are needed to put a stop to new encroachments. Toward this end, MLO 183 was superseded by a new ordinance which set a cutoff date for regularization of 31 March 1985. Several months later, detailed aerial photography was conducted, theoretically fixing the limits of Karachi's regularisable katchi abadis. Any new encroachments will supposedly be demolished after that date.

D. Water supply and environmental problems

Water supply is one of Karachi's most critical problems. The city is located some 160 kilometres from the Indus River, which is its major source of ground water. In 1983, at the end of the Fifth Five Year Plan, Karachi had a total water supply of 324 million gallons daily (210 MGD from the Greater Karachi Bulk Water Supply System, or Indus source, 20 MGD from the Haleji-Gharo system, 4 MGD from Dumlottee wells, a system dating from 1884, and 50 MGD from the Hub dam, which is not a perennial source (Karachi Special Development Programme (KSDP) I). Although the total translated into about 49 gallons per capita per day, because of heavy non-domestic use and substantial systems losses, per capita domestic consumption was only about 21 MDG, which is below acceptable international standards (KSDP I). Given Karachi's high rate of population growth and anticipated normal increases in industrial/commercial activity, the gap between supply and demand is expected to widen rapidly.

Only about 40 per cent of Karachi households receive piped water, usually for only a few hours daily. The perennial problem of low water pressure has been aggravated by the construction of private storage

tanks and by the use of suction devices to draw water from the mains. The remaining 60 per cent of Karachi households are either served by standpipes (at a ratio of about one per 270 persons) or purchase water from water tankers.

The approved programme under the Sixth Five Year Plan provided for augmentation of Karachi's water supply from 284 to 374 MGD. Because this was considered inadequate to meet even current demand, a number of projects were included in the Karachi Special Development Programme (KSDP) which aimed at improving the reliability of the overall supply system, increasing the bulk water supply, and improving water quality.

Specific improvement projects included under KSDP I were construction of a concrete lining for the Kinjher Gujo canal (the canal, which supplies water to Karachi from the Indus river, has not functioned properly because of frequent breaches and sinking banks), and construction of standby siphons. Additional projects involved increasing the Hub dam water supply by 39 MGD, undertaking filtration works for the entire supply of 89 MGD (previously, water from the Hub dam was chlorinated but unfiltered, which would lead to an eventual blocking of the pipes), constructing a standby pumping capacity, and undertaking miscellaneous related works, e.g., modernization of the factory that produces Karachi's water pipes.

According to the Karachi Development Plan, 1974-1985, only 20 per cent of Karachi households had sewerage connections. Although housing areas developed after 1975 have properly laid-out sewerage networks, trunk mains to collect the waste water from these networks are grossly inadequate (KSDP I). It has been estimated that the existing reticulation system covers only about one quarter of the total urbanized area. Although a World Bank-funded programme for rehabilitation of trunk mains and construction of missing links was undertaken during 1983-1984, most sewage in Karachi continues to be discharged directly into the rivers and surface drains, causing severe pollution and contaminating the underground water supply.

Karachi's two sewage treatment plants have a capacity of 40 million gallons daily, which is about 14 per cent of the available water supply of 284 MGD. According to normal standards, treatment capacity should be about two thirds of the available water supply, or 147 million gallons daily (KSDP I). However, because of obstructions, missing links, and the need for repairs, Karachi's existing treatment plants actually process only about 6 million gallons daily (Interview with Mr. S.A. Waheed, Chief, Physical Planning and Housing, Government of Sind, December, 1987). The five-year programme for the sub-sector aims at increasing sewage treatment capacity by 60 MGD, or by 150 per cent; thereby raising total treatment capacity to about 25 per cent. This

will be achieved through renovation and expansion of Karachi's two existing treatment plants. In a proposed second phase of the Greater Karachi Sewerage and Sewage Disposal Scheme, a third treatment plant would be constructed.

A pre-feasibility study for the treatment of sewage by recycling and creating a livestock farm in the desert land outside Karachi was conducted under the auspices of the United Nations Development Programme (UNDP); the study concluded that, because of the need for extensive rehabilitation of the existing system, implementation was not yet feasible. In addition, as part of the Karachi Special Development Programme, a detailed sewerage and waste-water disposal study is currently being undertaken.

Household refuse in Karachi is removed by private hired sweepers in high- and middle-income areas and placed in bins; in lower-income areas it is generally thrown into the back lanes. Refuse is removed manually by the city's 9,000 municipal sweepers and then transported by a fleet of 150 refuse vans to a single dumping site located 30 kilometres outside Karachi, where it is disposed of by burning. It is estimated, however, that only about one third of the 5,600 tons of solid waste generated daily in Karachi is adequately removed. The remaining garbage lies uncollected and rotting in various localities of the city, creating a serious health hazard. Concluding that the current refuse collection system was too primitive and inefficient to meet the requirements of a rapidly growing, modern city, KSDP proposed to replace it with a mechanized garbage collection and disposal service, and to raise the collection capacity from 33 to 60 per cent of the anticipated daily generation of refuse, and to 80 per cent by the end of the century. The mechanized collection, transportation and disposal system will involve the purchase of 1,750 additional refuse bins, 10 mechanical sweepers, 40 additional large capacity refuse vans and 40 compactors. A combination of disposal technologies will be adopted for final treatment of solid waste. Slightly more than one half of the collected refuse will be subject to a composting process, whereas the remainder will be disposed of by land-fill method, following completion of two new landfull disposal sites. In addition, a campaign will be launched through the media to educate the general public in matters of public hygiene.

In addition to the formal refuse collection process, a sizeable population in Karachi is directly involved in the informal recycling of refuse. Newspapers, magazines, bottles, tin cans, and so forth are either sold directly to hawkers or are picked up by the city's some 1,000 scavengers. The recycleable material is then sold in turn to wholesalers and reproducers and is either reprocessed as is or is mixed with new material and made into new products (Pakistan Council of Scientific and Industrial Research, 1987).

In regard to drainage, Karachi's stormwater drainage system is rather modest in scale and is designed on a five-year storm frequency basis. The city's two main rivers - the Malir and the Lyari - remain dry for most of the year but are subject to heavy flash floods during the monsoon season. The fact that the stormwater drains in various parts of Karachi do not have proper outfalls results in many localities being under water for prolonged periods. To overcome this problem, the programme for the sector provides for the construction of required outfalls with flap gates at five different points in the city. Also, a comprehensive storm water drainage study will be undertaken, with a view to updating and extending the city's outdated drainage master plan. In addition, because of periodic flash floods from the Malir river, a scheme has been launched to construct protective embankments on both banks of the river in its most vulnerable reaches.

Karachi has a growing number of environmental problems. The piped water supply is generally in good condition when it leaves the treatment plants. However, there are breaks in both the water and sewerage mains. The intermittent supply of water results in negative pressure, which sometimes causes sewage to be sucked into the water pipes. In regard to air pollution, although meteorological conditions and other factors in Karachi are conducive to the dispersion of air pollutants (e.g., Karachi has good wind velocity, sunshine, wide roads, and a relatively new stock of automobiles), there is considerable pollution from poorly serviced buses, trucks and rickshaws (International Union for Conservation of Nature and Natural Resources, 1987).

Water pollution is another serious problem. Karachi's large number of small industries produce toxic liquid effluents which are discharged untreated into the surface drainage system. The effluent of tanneries, for example, which is high in suspended solids, organic lead, and toxic metals, is one of the major causes of the city's water pollution. Moreover, thermal effluents (resulting from the sterilization of large quantities of water used for cooling) are harmful to the larvae of numerous marine organisms and are considered to be a major stress factor on Karachi's mangrove ecosystem (International Union for Conservation of Nature and Natural Resources, 1987).

In regard to environmental policy responses, at the federal level the Government has prepared environmental quality control standards and has considered establishing an Environmental Protection Agency. Generally, however, environmental issues have been given a low priority. The Government of Sind established a Karachi Environmental Protection Committee, consisting of 14 sub-committees dealing with various environmental issues, e.g., water pollution, air pollution, noise pollution. Also, as a means of assessing environmental problems, the International Union for Conservation of Nature and Natural Resources

(IUCN) undertook a rapid assessment survey of pollution in two industrial areas of Karachi, Korangi and LITE. Under this approach, the total annual amount of pollutants from a variety of industries are calculated by multiplying their annual production rates by the appropriate pollution rates published by the World Health Organization (International Union for Conservation of Nature and Natural Resources, 1987).

E. Power

In Karachi, power generation capacity was in surplus following the commissioning of Bin Qasim Thermal Power Station Unit Nos. I and II in 1983 and 1984. Moreover, about 70 per cent of Karachi households currently have electricity, a much higher proportion than those with water and sewerage connections. However, given the continuing need for system improvements, the Karachi Electricity Supply Corporation (KESC) is undertaking a Rs. 1170 million programme for system expansion, expected to be completed by 1989. In the short run, the programme focuses on expansion in transformer capacity at various grid stations, on the installation of a new distribution transformer and tension circuits and on the reinforcement of old and saturated overhead mains. One problem continuing to affect the sector is the fact that Karachi has had a serious problem with systems losses and power theft. Indeed, it estimated that KESC has a power loss or theft rate of more than 20 per cent (Economic and Business Review, 28 November, 1987).

To promote energy conservation, the Government reported in the Sixth Plan that it would encourage more extensive use of public transport, discourage the use of household electrical appliances, and promote the use of architectural designs requiring less heating and cooling. In addition, the Government was considering closing shops earlier in the evening, introducing a five-day work week with longer working hours, encouraging industries to close for plant maintenance during the critical energy supply period (December to May), and discouraging wasteful energy use.

F. Health and education

In 1985 Karachi had a total of 442 health care institutions, with 14,700 beds, a ratio of around 2.8 beds per thousand inhabitants. The private sector operates 60 per cent of Karachi's 104 hospitals, 85 per cent of its clinics, and 80 per cent of its maternity homes. Although the Karachi Metropolitan Corporation (KMC) is mainly responsible for preventive health care (e.g., environmental sanitation, vector control), it supplements the curative health facilities provided by the Government

of Sind and the federal government. KMC currently operates four general hospitals, two specialized hospitals, 12 maternity homes, five maternal child health centres, and numerous clinics and dispensaries, which are staffed by 273 medical doctors, 7 homeopathic doctors, and 6 hakeems (traditional practitioners). In line with the federal government's Accelerated Health Programme, which commenced in 1982, KMC's goal is to immunize all children below five years of age against the six major preventable childhood diseases (diphtheria, whooping cough, tetanus, measles, poliomyelitis and tuberculosis), and to control diarrhoeal disorders by means of oral rehydration therapy.

In regard to emerging health care issues in Karachi and other urban areas in Pakistan, the Government is concerned with raising the level of training of health care personnel and with regulating both health care personnel and institutions more closely. A significant proportion of Karachi's population, particularly in the katchi abadis, is served by private practitioners, who are frequently untrained. Community health surveys conducted by the Aga Khan University Medical College found that, even in the presence of several government hospitals and dispensaries, only 10 per cent of residents surveyed in katchi abadis who were sick utilized these facilities, relying instead on private practitioners (Karim, 1986a). Large numbers of Karachi residents are also treated by traditional healers (hakeems), whom the Government wants to regulate and integrate into the broader health care system. Traditional medicine was explicitly recognized in Pakistan's Sixth Five-Year Plan; during the Seventh Plan period, the Government plans to raise the level of training of traditional practitioners, to undertake research in the area of traditional medicine, and to maintain greater control over the manufacture, sale, and quality of traditional medicines.

Drug addiction is another emerging health care issue in Karachi and in Pakistan's other urban areas. To date, the Government has set up a number of treatment and rehabilitation units in existing Karachi hospitals. In regard to senior citizens, who have been identified as a priority group, the Government has discussed the possibility of establishing day care centres for senior citizens in the largest cities; it has also considered a long-term plan to provide social insurance for elderly women and has been exploring possibilities of employing elderly women in productive ways (Government of Pakistan, 1986).

Financing health care is another priority issue. The Government has recommended that social security programmes should be extended to non-industrial sectors and to employers with as few as two persons. It has also recommended that health care insurance should be introduced gradually and should eventually cover most of the country's urban population.

As the Government reported in the Sixth Five Year Plan, population sector plans were initiated over two decades ago; but despite large sums of money and considerable effort, their execution remained far from satisfactory (Government of Pakistan, 1983). Among the causes of this failure were focusing on family planning services alone, deficient organization, frequent changes of programmes and, above all, insufficient attention to socio-economic development of target groups (Government of Pakistan, 1983). The Government noted that it had pursued various strategies over the years, including a target-oriented approach (1965-1969), a Continuous Motivation System (1970-1973), contraceptive inundation (1974-1977), and, finally, a multisectoral approach. The Government's Population Welfare Plan, an integral part of the Sixth Plan, aimed at averting two million births during the plan period. Core projects included the Family Welfare Centres Project (key institutions providing maternal and child health care and promoting responsible parenthood and women's education), the Reproductive Health Services Project, and the Family Health Manpower Development Project (designed to train cadres of clinical, paramedical and auxiliary personnel). Complementary and support projects included the establishment of two population studies centres (one at the University of Karachi) and a National Research Institute on Fertility Control, located in Karachi since the early 1960s.

Although mass media such as the radio, newspapers and cinema have been sometimes used to popularize the use of contraceptives, many religious leaders are opposed to family planning and to the advertisement of contraceptives. As a result, the activities of population welfare clinics in Karachi are not widely publicized. Educated couples in Karachi generally practise family planning under the guidance of private physicians. There are widespread differences in Karachi by socio-economic status in contraceptive usage. Indeed, community surveys conducted by Aga Khan University found that, in the middle-class area of Karimabad, 56 per cent of currently married women aged 15-44 were currently using a contraceptive method; 40 per cent had used a method in the past, and only 4 per cent had never used a contraceptive method. In contrast, in three katchi abadis surveyed, an average of only 8 per cent of currently married women 15-44 were using a contraceptive method; only 7.5 per cent had used a method in the past, and 84 per cent had never used a contraceptive method (Karim, 1986a).

According to the 1981 census, 55 per cent of Karachi's population aged 10 and over was literate (60 per cent of males and 49 per cent of females) (Government of Pakistan, 1984b). Karachi currently has more than 3,100 educational institutions, serving about 1 million students. However, an estimated 30 per cent of children of primary school age and nearly two thirds of children of secondary school age do not attend school. The Government's current policy is to institute universal

education, beginning with a mandatory minimum five years of schooling. The level of universal education will be progressively increased to 10 and then to 12 years, probably over several plan periods.

There was a considerable increase in the share of Karachi's budget allocated to education during 1987/88, mainly for the construction of new primary schools. However, in recent years, mosques have been used to accommodate the overflow student population. Under the recent reorganization of the Karachi municipal government, primary education will be under the auspices of the zonal municipal committees (ZMCs).

In terms of technical education, a number of organizations in Karachi - e.g., the Karachi Steel Mills, Karachi Shipyard - operate in-house vocational training programmes for their workers. In addition, Karachi has three universities, Karachi University, the NED Engineering University, and the Aga Khan (Medical) University.

G. Transport

Although Karachi has wide roads and by international standards relatively moderate traffic levels outside the congested central area, transport is considered to be a major problem. The acute shortage of public transport, coupled with widespread lack of traffic discipline and a high accident rate, has been identified as one of the immediate causes of the city's periodic rioting and violence.

About 75 per cent of Karachi's population is served by public transport, with buses being the major transportation mode. Of the city's 2,150 registered buses (840 operated by the publicly-owned Karachi Transport Corporation (KTC) and 1,310 by the private sector), only about 72 per cent, or 1,550 buses, are roadworthy at any given time, a number insufficient to meet the demand of around 1.5 million daily commuter trips (KSDP I).

The Karachi Transport Corporation has experienced heavy operating losses, partly met through a government subsidy of about Rs. 30 million annually, with the balance remaining uncleared in the form of outstanding liabilities. The main causes of KTC's large losses have been uneconomically low bus fares (although these were raised in 1986), pilferage and fare jumping. The city's larger fleet of private buses are typically owned and operated by individuals, whose interests are represented by the Karachi Bus Owners Association. Although there is basically a free transport policy in Karachi, and applications for new routes and for licenses to operate are generally granted, the growth of privately operated standard-sized buses has been very slow, mainly because of the high cost of operation and low profitability.

In recent years, mini-buses have filled the gap caused by the shortage of standard-sized buses. First introduced in the early 1970s, the number of mini-buses grew by 80 per cent during 1978-1986 and now number around 4,500, making them the most widely used mode of public transport. However, because of the large number of accidents involving mini-buses (they accounted for more than 20 per cent of total traffic accidents in recent years), they have been the target of considerable public criticism. In 1987, following the report of the Commission of Enquiry (1986), which looked into the causes of Karachi's civil unrest, the Minister of Transport announced that mini-buses would be phased out gradually and that the federal government would provide Karachi with an additional 200 new full-sized buses. Although the phasing out of mini-buses is not yet official policy, by late 1987 the Government of Sind was not issuing new mini-bus permits or renewing existing permits.

Other para-transit modes in Karachi include some 6,580 metered taxis, mainly used by middle income groups, and some 14,300 autorickshaws, which are smaller, faster, and a major cause of air pollution. Although autorickshaws increased rapidly during the late 1970s, they stopped being manufactured in 1982 following the imposition of a sales tax, but their manufacture was resumed in late 1987. Unlike most other South Asian cities, railways in Karachi are not an important transport mode and account for only about 3 per cent of daily local person-trips. Although a circular railway operates around the city, because of inadequate service and frequent delays, it is rarely used.

By international standards, the incidence of private vehicle ownership in Karachi is not high. In 1986 there were about 30 private cars and about 32 motorcycles and scooters for every 1,000 inhabitants. However, partly because of the inadequacy of Karachi's public transport system, private transport modes have been growing very rapidly in recent years. Despite steep rises in automobile and gasoline prices, between 1977 and 1986 the number of private automobiles increased by 8.5 per cent per annum, whereas motorcycles and scooters increased by 10.6 per cent per annum.

In regard to transport planning, several reviews of Karachi's transport problems have been carried out since the early 1970s. The 1974 master plan discussed the possibility of constructing a light rail network. Other proposals recommended upgrading bus services, while still others suggested making greater use of existing railway rights of way. The Commission of Enquiry (1986) made a number of recommendations in regard to transport: fare structures should be rationalized in order to make operating buses more financially attractive to the private sector; transport should be declared an industry so that better credit facilities could be extended to the private sector; large capacity

double decker buses should be employed for maximum efficiency; and a superior class of bus service should be introduced in order to induce more middle income households to use public transport.

In terms of implementation, the Karachi Special Development Programme (KSDP) will increase the number of buses on the road by 1,400, with 900 buses operated by KTC and 500 operated by the private sector. This will improve the current bus/population service ratio from 1:1,900 to 1:1,700 (however, even this level of service will be well below the recommended standard of 1:1,500) (KSDP I). In addition, a superior category of private bus service (e.g., air conditioned metro coaches) will soon be introduced on an experimental basis, starting with a fleet of 500 buses. An efficient radio cab service will also be operated by the private sector, starting with a fleet of about 1,000 cabs.

As part of the Karachi Special Development Programme, a mass transit study is currently being conducted. The objectives of the study are to develop alternative public transport plans for Karachi, each consisting of an appropriate mix of feasible mass transit systems; to conduct a full cost benefit analysis of the various public transport system alternatives; to prepare an investment programme for the period 1988-1993; to indicate broadly how the public transport system should be developed beyond the study period; and to develop an implementation programme for the recommended plan, identifying both the role of the private sector in its implementation and any institutional, management and training implications. Although currently in progress, preliminary studies seem to suggest that a completely reorganized and reliable bus system might be the preferred option (Interview with Dr. Tahir Soomro, Transportation Expert, Karachi Development Authority, December, 1987).

Karachi's highway network is strongly radial in character, without supporting ring roads and with no grade separations and very few railroad overpasses. Until recently, Karachi was considered to have an adequate road network. However, the rapid increase in private automobile ownership has brought about increasing levels of traffic congestion, which the Government has attempted to relieve by establishing segregated bus lanes. An additional problem is that the rapid growth in inter-city traffic and the overloading of major roads, such as the National Highway from Peshawar to Karachi, has necessitated large road maintenance expenditures.

V. RESOURCES AND MANAGEMENT

A. Public investment

Primary municipal functions such as the maintenance of water supply, sewerage, drainage, fire services, city roads, parks and recreational facilities have accounted for about 60 per cent of the Karachi Metropolitan Corporation's current expenditure and 80 per cent of development expenditure. Education and health services have accounted for 40 and 20 per cent respectively (Sivaramakrishnan and Green, 1983).

The federal government has invested heavily in Karachi in recent years. The large-scale investments of the 1970s (Karachi Steel Mills, Port Qasim, Pipri marshalling yards, and Hub Industrial Estate) might not have been undertaken if policy makers had been aware of the overall resource limitations and future investment needs. Indeed, the results of the National Human Settlement Policy Study (NHSPS) showed that, although Karachi was highly productive in terms of value-added per urban employee (although it was not the most productive city in Pakistan), it was also very costly in terms of the expense of creating jobs and of housing and servicing new population (Qutub and Richardson, 1986). In fact, although it was 53 per cent more efficient than the national urban average, it was 69 per cent more costly. The conclusion of NHSPS was that policy makers could significantly lower the costs of urbanization by promoting a less concentrated pattern of settlement.

B. Resource generation

The municipal tax base in Karachi is very narrow. Although regressive and possibly damaging to trade, octroi from sea dues has been a buoyant source of revenue in Karachi, increasing by more than 20 per cent per annum during the early 1980s (Sivaramakrishnan and Green, 1983). In recent years, octroi registered a record increase, accounting for 75 per cent of total current receipts of Rs. 1,627 million during 1987/88, and enabling KMC to cover a shortfall in revenue in other departments (Karachi Metropolitan Corporation, 1987).

KMC has had difficulty in exploiting its remaining tax base. Although KMC's share of property taxes, its second major source of revenue, increased from 40 to 85 per cent (with the remainder going to the provincial government), property taxes accounted for only 10 per cent of total current receipts during 1987/88, well below the level in most other South Asian cities. That is mainly because property taxes are calculated on the basis of 6.5 per cent of net annual rental value (NARV). Moreover, whereas properties were supposed to be reassessed

every four years, the last reassessment took place in 1968. By the mid 1970s the assessment values of properties in Karachi was estimated to be under one third of market value, while for a variety of reasons 55 per cent of properties were not taxed (Pasha and Khan, 1977).

Additional revenue sources in Karachi (in descending order of importance) are the conservancy rate (calculated on the basis of 5 per cent of net annual rental value), which made up 3 per cent of current receipts during 1987/88, income from investments (2.8 per cent) and share of betterment tax (1 per cent) (Karachi Metropolitan Corporation, 1987). All remaining revenue sources (e.g., rent from land, buildings, shops and markets, grants for primary schools, fire tax, advertisement tax) each contributed under 1 per cent.

In regard to capital receipts, World Bank loans (mainly earmarked for various water supply schemes) constituted 46 per cent of total capital receipts (of Rs. 596 million) during 1987/88. Loans from the federal and provincial governments constituted 44 per cent (30 per cent earmarked for katchi abadis and 14 per cent for solid waste management) (Karachi Metropolitan Corporation, 1987). Other loans from the provincial government and KMC's own capital receipts each contributed 5 per cent.

In the wake of the change in Karachi's administrative structure which occurred in late 1987 (and which will be discussed in detail in the following section), there will be changes in the tax collection procedure. Whereas KMC will continue to collect octroi, Karachi's major source of revenue, collection of the property tax, has been assigned to the four zonal municipal committees (ZMCs). To avoid favouring the city's more affluent areas, revenues will be apportioned on the basis of population, service deficits and income; octroi will also be apportioned on a population basis, once an appropriate formula has been derived. Taxes collected from affluent Cantonment Board residential areas (e.g., Clifton, Defence) are not necessarily spent in Karachi.

In regard to cost recovery, public services in Karachi have traditionally been under-priced and heavily subsidized. Charges have been generally inadequate to cover service costs, hence, KMC's general revenues have been used to cover operating deficits. For example, KMC's water supply service subsidy was 96 per cent during 1984/85. More than 25 per cent of the population paid nothing for water from standpipes and tankers, and the domestic charge for house connections was only Rs. 2 per month. Sewerage and drainage have been provided at zero cost. Medical services and recreation have received a subsidy of 95 per cent, education of 93 per cent and public health services of 76 per cent (Karachi Metropolitan Corporation, 1987). The cost of providing refuse collection has been about four times the revenue collected from the

conservancy rate. Public transport has been also heavily subsidized, with fares covering between one third and two thirds of operating costs.

The Government has been under considerable pressure from the World Bank and other donors to increase rates and to promote cost recovery (the Karachi Special Development Programme was, in fact, held up between 1983 and 1985 until the Government agreed to increase lease rates and water charges). Water rates are, at present, de-linked from the net annual rental value (NARV) and are based on plot size, with rates ranging from Rs 7.5 per unit for plots of up to 60 sq yards to Rs. 187 for plots of over 2000 sq yards. As a result, KMC's water supply service subsidy was expected to be only 12 per cent during 1987/88 (Karachi Metropolitan Corporation, 1987). There has also been some discussion about de-linking the conservancy rate and the fire rate from NARV.

In regard to KDA's finances, although there have been small profits from land development schemes (mainly on commercial schemes), its non-profit land disposal policy has contributed to the overall financial weakness of the authority. Moreover, the non-profit basis of operation has meant that KDA has had to borrow to finance its land development operations.

C. The institutional context

The Government of Pakistan has generally had limited involvement in municipal affairs. However, the Ministry of Housing and Works has been responsible for implementation of Karachi's master plan. Moreover, its Environment and Urban Affairs Division co-ordinated two major urban planning exercises in recent years: the development of a National Human Settlements Policy and the examination of systems for planning, development and management of cities. Several other bodies with federal status - e.g., the six Cantonment Boards, Karachi Port Trust, Port Qasim Authority, Pakistan Steel, Public Works Department - and line agencies - e.g., Karachi Electric Supply Corporation, Karachi Gas Company, Indus Gas - have also directly influenced Karachi's development.

There are two main corporate bodies responsible for providing services in the Karachi metropolitan area - Karachi Metropolitan Corporation (KMC) and Karachi Development Authority (KDA). KMC is a multi-purpose authority and a representative institution, consisting of a council of 167 members which reports directly to the mayor. According to the Sind Local Government (4th amendment) Ordinance (1987), which amended the Local Government Ordinance of 1979, KMC is responsible for

bulk water supply, the trunk sewerage system, sewerage treatment plants, refuse disposal plants, planning, development and maintenance of metropolitan roads and storm water drains, metropolitan transport, land control, regularization of katchi abadis, and implementation of the Karachi Special Karachi Development Programme. Theoretically, KMC is responsible for physical planning, town planning and building control. In practice, however, these activities continue to be carried out by KDA, which operates under the executive authority of the Provincial Government.

In 1987 the provincial government established a new two-tiered system of municipal administration. Under the new administrative system, each of the city's four districts (Karachi West, Central, East and South) will have a zonal municipal committee (ZMC), and the Karachi Metropolitan Corporation will be formed with one third of its members drawn from each committee by internal election. The Government also designated the distribution of functions and resources between KMC and the ZMCs. Under the new system, KMC and the ZMCs will be virtually independent, with the latter having various autonomous powers. ZMCs will deal with paving of lanes and streets, preventive and curative medicine, immunization, vital statistics, garbage collection and disposal, dispensaries (of under 50 beds), parks and playgrounds, and primary education.

The Karachi Development Authority (KDA) is an ad hoc body which is responsible for land development, housing, physical planning, and flood protection. (It was established initially to deal with land development, which required timely decision-making and flexibility in resolving problems; KMC, with its emphasis on participative decision-making, would have found this difficult.) Territorially, KDA's jurisdiction exceeds the jurisdiction of KMC.

Over the years, there has been growing recognition of the need to link KDA's development schemes with KMC's operating and maintenance responsibilities. A major step in that direction was the 1983 merger of KDA's water production wing, KMC's sewerage department, and the Karachi Water Management Board's distribution activities, all under the umbrella of the Karachi Water and Sewerage Board (KWSB).

CONCLUSION

Karachi, which has a high rate of natural increase and a continuing influx of migrants from upcountry, is currently one of the most rapidly growing mega-cities in the developing world. Because Karachi is growing by more than 5 per cent per annum, many basic services are strained to the point of collapse. Moreover, much of Karachi's population increase is being accommodated in katchi abadis - sprawling, unserviced squatter settlements that recently have become breeding grounds for social unrest.

Karachi's severe service deficits are not a result of governmental inaction. Indeed, the municipal authorities were quick to respond to the problems created by the influx of 900,000 refugees following partition. The Karachi Development Authority (KDA) planned and developed 42 large settlement schemes covering an area of 44,000 hectares. To date, KDA has developed about 700,000 serviced plots, constructed 100,000 housing units, laid a network of more than 7,000 kilometres of roads, and constructed a number of commercial and industrial centres and estates.

Despite these efforts, serious problems remain with regard to land use, housing, water supply, sewerage, transport and so forth. Land is one of Karachi's most serious problems. Whereas large-scale government ownership of land in Karachi offered a potentially unique opportunity to use land tenure legalization to benefit lower income households, in the end, the land situation in Karachi has not been very different from that in other Asian mega-cities, where the private sector dominates the land market. From the beginning, KDA's development and sale of plots at below market value created problems. Speculators acquired multiple plots which they kept off the market. Lower income residents who obtained plots often sold their plots to higher income households and then moved elsewhere, often encroaching on public land.

Housing in Karachi, even when it has been aimed at lower (but not the lowest) income household, has been affordable in reality only by middle and higher income groups. Despite the emphasis in recent years on reduction in plot sizes, incremental development, utilizing a system of cross subsidies, granting security of tenure to squatter dwellers, and preventing further encroachments, there has been massive growth of katchi abadis. This is not only because many residents of katchi abadis cannot afford housing elsewhere, but also because some residents decide to bypass the bureaucratic procedures and higher costs involved in obtaining a plot in a regular housing scheme. Although the Karachi Metropolitan Corporation (KMC) and other groups (e.g., the Orangi Pilot Project) made significant progress in improving conditions in the katchi abadis, there is concern that improvements may attract larger numbers of migrants. Moreover, although the authorities conducted aerial

photography and announced a freeze on the limits of the katchi abadis, given the current political climate in Karachi, the freeze may be difficult to enforce.

In regard to planning, Karachi is a city which illustrates the difficulty of implementing a traditional master plan. Whereas the Karachi Development Plan, 1974-1985 contained a thorough diagnosis of Karachi's problems and presented recommendations to guide the city's future growth, it has not had a major impact on Karachi's development over the past decade. Although investment decisions of KDA and KMC have been guided broadly by the plan, because of a variety of factors - e.g., resource constraints, the difficulty of enforcing zoning laws, widespread encroachment of public land, often by professional encroachers, highly subsidized urban services, and the impacts of large-scale national infrastructure projects, which undoubtedly attracted large numbers of migrants to Karachi - much of the plan was never implemented.

In recent years the Government and international donors have adopted a more management-oriented approach to resolving Karachi's problems. As previously noted, the Karachi Special Development Programme (KSDP), which is being assisted by the World Bank and the Asian Development Bank, has targetted specific areas where investments will create immediate improvements in service delivery and will simultaneously contribute to Karachi's development. The project also aims at strengthening the institutional capacity of local agencies to deliver services.

Karachi's new master plan, which is being prepared by KDA, with assistance from the United Nations Centre for Human Settlements (UNCHS), aims at creating an information and monitoring system that will examine the implications of investment proposals in each sector (e.g., water supply, education, transport), both for investment in other sectors and for the total resource pool. The process is intended to minimize waste and to identify areas where standards will need to be lowered to meet the constraints of available resources. This is important because the National Human Settlements Policy Study (NHSPS) of Pakistan concluded that Pakistan's future investment resource pool may cover only one third to one half of aggregate urbanization costs during 1983-2003 (Qutub and Richardson, 1986).

In addition, the new master plan will enable the Government to monitor Karachi's changing demographic profile, and to alter the master plan to reflect the changes. This may be among its most important uses. Although the Government of Pakistan has highlighted the issue of population growth in successive five-year plans, there has been little progress in creating awareness of population issues or in implementing a

family planning programme, as shown by the extremely low rates of contraceptive use in Karachi's poorer areas, and by continuing high rates of fertility. Given Pakistan's uncertain economic prospects, particularly as remittances from workers in the Middle East are expected to decline, Karachi's continuing service deficits, political uncertainties, and ethnic unrest, fertility reduction could not only be a cost-effective urbanization policy, which would relieve some of the resource pressure resulting from urban population absorption, but also be an important instrument of social and economic development.

Notes

1/ Karachi Urban Area, the urbanized area of Karachi Division, extends over 1,821 square kilometres. The area of Karachi Division is 3,365 square kilometres.

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