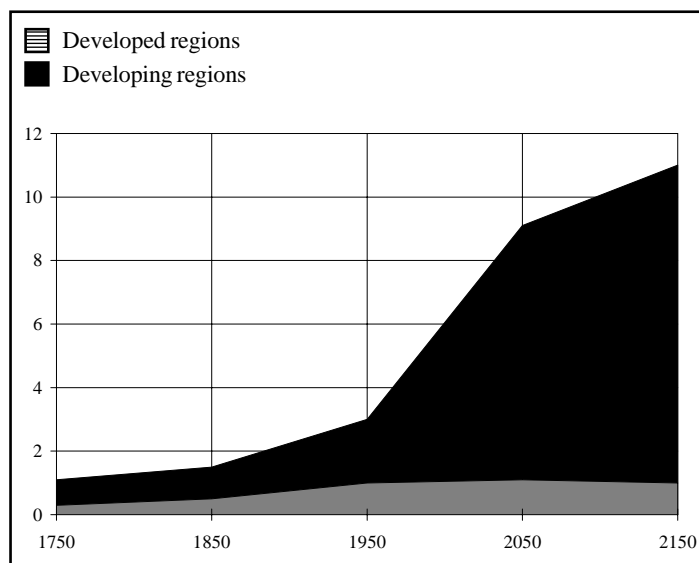




Mega-cities

World population is currently increasing by 86 million people a year and, as a result of the huge numbers who have not yet reached child-bearing age looks set to continue to increase for the next few decades. In general, the population of the developed world is stabilising but is expected to decrease slightly in the next century. The population of developing regions is, however, rapidly increasing (Fig 1).

Fig 1. World population growth (population in billions)



Throughout the developing world, urban growth - the annual rise in the population of towns and cities - continues. At the present time, the highest levels of growth are seen in cities such as Dhaka (7%), Lagos (5.6%) and Delhi (4.6%). Urbanisation can be defined as the increase in the proportion of people living in towns rather than rural areas. Between 1990 and 2025, the number of people who live in urban areas is expected to double - to five billion people - and 90% of this increase will occur in the developing world, particularly Africa and Asia.

A **Mega-city** is defined as a city with a population exceeding eight million. In 1950, only New York and London satisfied this definition. By 1990, there were 20 mega-cities, 14 of which were in the developing world. By 2000, it is expected that there will be 25 mega-cities, with 19 of them in the developing world (Table 1).

Although mega-cities usually do not show the fastest growth rates (growth of 'million cities', i.e. those with a population of between one and 10 million - are usually higher), they do present huge challenges to the governments of both developed and developing countries. Many would argue that the major problems facing mega-cities are environmental. In the developing world, the major problems are lack of access to clean water, inadequate housing and the harmful health effects of air pollution. In **Jakarta, Indonesia** for example, over one million people do not have access to piped water or to a well. Over-abstraction from the city's aquifer - on which 30% of the city's population depends - has resulted in subsidence of many areas of the city. Despite attempts by the government to control vehicle emissions - city-centre taxis use compressed natural gas - the entire population of the city is exposed to levels of particulates which exceed

Table 1: Cities of 8 million or more persons

1950	1970	1990	2000
More Developed Regions			
New York London	New York London Tokyo Los Angeles Paris	Tokyo New York Los Angeles Moscow Osaka Paris	Tokyo New York Los Angeles Moscow Osaka Paris
Less Developed Regions			
None	Shanghai Mexico City Buenos Aires Beijing Sao Paulo	Mexico City Sao Paulo Shanghai Calcutta Buenos Aires Bombay Seoul Beijing Rio de Janeiro Tianjin Jakarta Cairo Delhi Manila	Mexico City Sao Paulo Shanghai Calcutta Bombay Buenos Aires Lagos Tianjin Seoul Rio de Janeiro Dhaka Cairo Manila Karachi Bangkok Istanbul Teheran Bangalore Lima

World Health Organisation (WHO) levels for eight months of the year. Similar problems face mega-cities in Central America. In the developed world, the inhabitants of mega-cities also face serious health problems due to air pollution, but here the more general problem is the incredibly high level of resource consumption and the regional and global environmental problems this causes. A disproportionate number of mega-cities are on or near coastlines (Table 2).

Table 2. Distribution of cities with more than 1 million residents in coastal and noncoastal areas, 1995

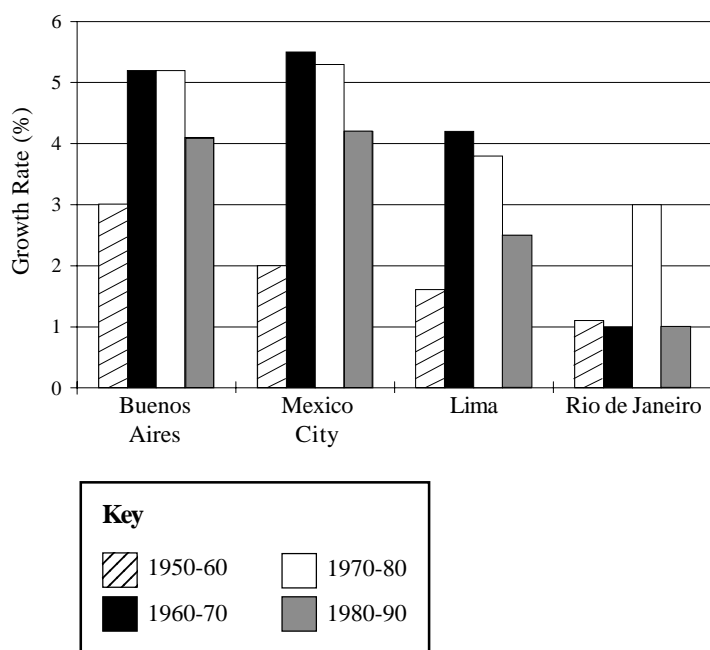
	1-10m		>10m	
	Coastal	Noncoastal	Coastal	Noncoastal
World	108	159	6	2
Africa	13	14	0	0
Asia	59	88	5	1
North America	4	4	0	0
Central America	3	8	0	1
South America	12	10	1	0
Europe	8	15	0	0
Former Soviet Union	4	20	0	0
Oceania	5	0	0	0

Thus, valuable habitats, biodiversity and natural coastal protection mechanisms are threatened by the activities and growth of such cities.

In both the developing and developed world, mega-cities exhibit social problems such as violence and drug abuse but these problems do not necessarily become worse as a city population progresses to Mega-city proportions.

For many of the world's mega-cities there is a slowing down in the rates of urban growth, particularly in the mega-cities of Latin America (see Fig 2) where levels of urbanisation are now between 60-80%.

Fig 2. Annual Growth Rates in Latin America 1950-1990



Africa and parts of Asia are expected to increase their levels of urbanisation as they pass through the cycle of urban development. Currently, **Lagos** is the only African mega-city but with anticipated urban population growth rates as high as 6.2 in Kenya and 6.0 in Tanzania, this will soon change.

However, existing megacities must improve basic services and infrastructure. The rapid outward spread of cities such as Lima means that vast areas of self-help housing are totally unconnected to roads, water or sewage. In other cities which are not yet mega-cities but are growing rapidly, up to two thirds of the population is housed in shanty towns (as seen, for example, in **Caracas**).

For mega-cities to become environmentally sustainable they must pursue policies which include community participation as seen in, for example, **Shanghai** and **Guangzhou** in China, rather than continuing to grow without recognising the relationship between human action and environmental degradation. Without tougher controls and management, targets for service provision and environmental reductions cannot be met. Measures which increase the legality of shelter in shanty towns, promote informal activities and provide capital for micro-businesses are essential. In addition, measures to reduce the gap between the rich and the poor and between the urban and rural areas are necessary to reduce the pull of the city to potential migrants.

General factors which have influenced the growth of mega-cities are outlined opposite. The advantages and disadvantages are shown on page 3 and case studies of Bombay, Shanghai and Sao Paulo are provided on pages 4 and 5.

Factors influencing the growth of the mega-cities:

1) **Colonial influences** - The creation of coastal cities in previously non-urban areas by invaders. For example, the Spanish and Portuguese created **Lima** (Peru) and **Buenos Aires** (Argentina) which then grew as Europeans flocked to the 'new world' to seek their fortunes, **Rio de Janeiro** (Brazil) was established in 1763 and by 1936 had displaced **Salvador de Bahia** as the colonial capital of Brazil.

2) **Ports and Trading cities** - These developed from the late 1600s to mid 1800s as the serving port for specific products eg. cities such as **Shanghai** grew through export of cotton, silk and textiles, whilst in **Sao Paulo** it was coffee which stimulated rapid growth.

3) **Reassignment of a city as a capital city** - Prior to the independence of Bangladesh, **Dacca** (Dhaka) was the eastern regional administration capital and an old trade centre. In 1950 it had a population of around 430,000. Independence was gained in 1971 and by 1975 the population had shot up to 2.3 million. With an annual growth rate of around 7.25% it is predicted to be a mega-city by the year 2000.

4) **Post independence policies frequently favoured urban areas over rural** - In many countries industrialisation/import substitution became the dominant post-independence development strategy as terms of trade had begun to favour Britain and the United States, especially in the countries of Latin America (**Mexico City**, **Rio de Janeiro**, **Buenos Aires**) and India. These industries were principally located in the largest cities and drew labour from rural areas and overseas.

5) **Post-war modernisation and industrialisation** - The World Depression of the 1930s following the Wall Street Crash and the effects of the Second World War, encouraged industrialisation in developing countries, particularly in Latin America. At this time, the industrialised nations needed manufacturing goods (as their own factories had been converted for war production), thus creating a ready market for Latin American exports, which in turn created the wealth to back import substitution.

6) **Declining mortality rates** - Adult and infant mortality rates have fallen in both urban and rural areas as a result of modern public health measures and imported medicines. The urban populace began to live longer and rural to urban migration increased.

7) **Rural to urban migration** - Classic push and pull factors (see Factsheet 31) related to lack of land, war, famine, higher standards of living and better access to services, training and employment opportunities have been responsible for urban growth in all developing countries. For example rural to urban migration accounted for 20% of the growth of **Buenos Aires** between 1940 and 1980, and between 1947-1960 it accounted for 50.8% of urban growth in Argentina as a whole.

8) **Settlement laws** - For example, in the 1950s in China a household registration system was enforced which classified the urban population (non-agricultural) as 'Entitled' and allowed access to subsidies and welfare, and the rural population (agricultural) as 'Non-Entitled'. The 'entitled' urban sector became very attractive where levels of consumption were 2.5-3 times higher than the countryside, so migration to the cities grew.

9) **Location of international production into urban areas** - Developing countries have steadily increased their role in the international economy, usually as providers of low cost workers performing standard production tasks. It is the largest cities which have been the hosts to international investment in the developing world as the best providers of services and trading networks: **Bangkok** accounts for 86% of Thailand's GNP in banking, insurance and real estate and 74% of manufacturing; **Lagos** has only 5% of Nigeria's population yet contains 40% of the highly skilled labour force and the majority of overseas inward investment to Indonesia is restricted to the area surrounding **Jakarta**.

Table 3. Advantages and disadvantages of mega-cities

Many of the factors discussed below are applicable to all cities. However, many of the disadvantages, in particular, get worse as the size of the city increases.

Advantages	Disadvantages
<ul style="list-style-type: none"> - Allows concentration of industry and finance. Those industries which are advantageous to one another cluster together in the urban area where there is both a ready market and access to external markets and labour. - Provision of education and services, basic infrastructure (roads, availability of piped water, electricity etc.) are often better than in rural areas. - Cities usually have lower levels of infant mortality and higher levels of life expectancy than rural areas. For example, in Brazil (1986) urban levels of infant mortality were 75.4/1000 whereas in rural areas this figure was 107.5/1000. In Peru in the same year these figures were 57.9/1000 and 104.1/1000 respectively. The concentration of education, health care and family planning services allows more efficient delivery of, for example, literacy campaigns and campaigns focusing on children and women. - The emergence of the informal employment sector in the mega-city provides scope for local entrepreneurial talent and offers a remedy for the urban employment problem. - Autoconstruction and self-help housing offers a solution to housing shortages. Peasants build their own homes at the rate that they are needed and this allows scope for further building as families expand or if there is a need to let part of the house. - Creation of social and employment networks within shanty towns is crucial to the development of the informal sector. Small business and family enterprises located amongst the houses in the shanties allow close interaction of household and informal economies. - Potential for strong local government based in the grass-roots organisations of the shanty towns which, if respected by national governments, can be very advantageous eg. the Chawls of Bombay. Increasing privatisation of services in the mega-cities releases the public sector from the responsibilities of infrastructure and has been supported by international bodies such as the World Bank. - Moves towards 'concentrated deconcentration' as the state tries to encourage companies to move to the outskirts to boost economic activity in the periphery and strengthen the wider region surrounding the city. This tactic has been pursued in Buenos Aires. 	<ul style="list-style-type: none"> - The mega-city becomes a magnet for immigration, often as the primary city in the country (eg. Lagos in Nigeria) when rural employment opportunities decrease (through mechanisation of agriculture and surplus rural labour) and inward investment is concentrated in the urban areas. Migration becomes a particular problem when inward movement outstrips the pace of economic and social development in the mega-city. - Universities and health centres are usually located in wealthier areas and as such are inaccessible to the majority of the population, resulting in continually deteriorating health quality in the city. For example, in Sao Paulo, 40 out of 54 public hospitals are found in middle-class neighbourhoods. - Some of the most acute environmental problems can be found in the mega-cities of the developing world: For example, the highest levels of water pollution are in Dhaka, Seoul, Karachi and Manila. Local water shortages are acute in all of the mega-cities of the developing world. In Mexico city, overabstraction from the aquifer beneath the city has led to widespread subsidence - over the last 100 years the centre city has sunk by 7.5m. Children mark their height on wells to see whether they are growing faster than the land is sinking. Contamination of the aquifer by sewerage is an increasing problem. Sewage disposal is a particular problem in Bangkok, Manila and Dhaka. The collection of solid waste is worst in Lagos, Jakarta and Lima and air pollution is highest in Mexico City, Sao Paulo, Calcutta and Bombay. Many mega-cities are situated on coastlines; valuable habitats, biodiversity and coastline protection functions are threatened. - Informal sector employment rarely receives support from government and is often subject to harassment. Lack of business support and credit often restricts legitimate development. In addition, it contributes little to national development, merely providing a means of subsistence for the urban poor. - Problems for planned service provision where there has been rapid and uncontrolled spread of the city through increased use of the motor car and spontaneous settlement for example, favelas (Brazil), Pueblos Juvenos (Peru), Bustees (Calcutta). This works against any official planning and increases problems of inefficient urban spaces, and leads to inflated land costs (eg. in Sao Paulo). - Land occupied by shanty towns is often unsuitable for dense urban settlement and, as the shanties continue to grow, the risk of environmental damage eg. landslides (favela's) of Roshina in Rio de Janeiro and flooding (Calcutta). - Public administration of mega-cities, encompassing many different municipalities and neighbourhood administration areas is extremely difficult - no major city in Latin America has a single authority which administer the whole urban areas and there is very little collaboration between municipalities. - It is argued that in healthy cities, the social classes should not be so starkly divided. There has been the development of 'dual cities' whereby there are two categories: a highly paid social elite versus the low paid, low skilled jobs typical of both formal sector manufacturing jobs and the informal sector. This is reflected in forms of social segregation (for example in Sao Paulo).

**Case Study
Bombay**

Bombay, recently renamed Mumbai, is the second largest city in India after Calcutta. In 1994 it had a population of over 13 million and has been predicted to grow to 15 million by the Year 2000. It currently spans 180 square miles over seven islands which have been joined together by reclaimed land.

Bombay was received by the English in 1661 from the Portuguese and was developed as a deep water port by the East India Company and export channel for Indian textiles.

In the late Nineteenth Century the city grew as piracy was suppressed, steamships arrived and the Western Ghats (a steep range of mountains 50 miles to the East) were crossed by rail in the 1850s. From 1850, raw cotton and textiles were exported to the mills of Lancashire.

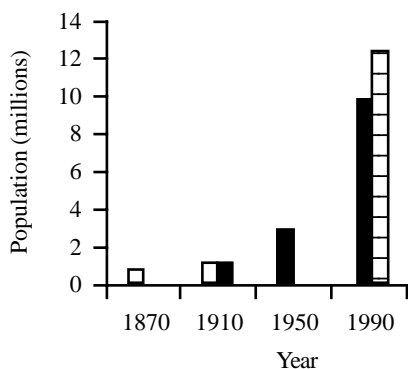
The new industrial employment drew streams of migrants from within India, and from Europe, China and the Middle East.

By British standards, half of the current population of Bombay would be classified as homeless. Almost 50% of people live in the city slums (chawls) along the roadside.

In Dharavi, Asia's largest slum, found in Greater Bombay, some 77% of households have an average of 5.3 persons per room. This particular slum is home to an estimate 700,000 people and occupies less than one square mile. Whilst few households have plumbing, most of their occupants have jobs. Households and industries vie for space as jewellery, pottery and cloth shops give way to tanneries (leather producers) and to the largest industry in the slum: recycling.

Service provision to the city is also scant and pollution levels are high. Some 2 million people live with no sewage facilities and despite the actions of the people employed in recycling, produced 5,000 tonnes of rubbish every day. Every day, 550 million gallons of drinking water must be brought in to the city over a distance of 100 miles. Sewage is not treated before being dispersed in to the Arabian Sea and industrial pollution has been blamed for increasing incidents of respiratory and skin disease.

Fig 3. Population Growth in Bombay



Key
 □ City
 ■ Greater Bombay
 ▨ Bombay metropolitan region

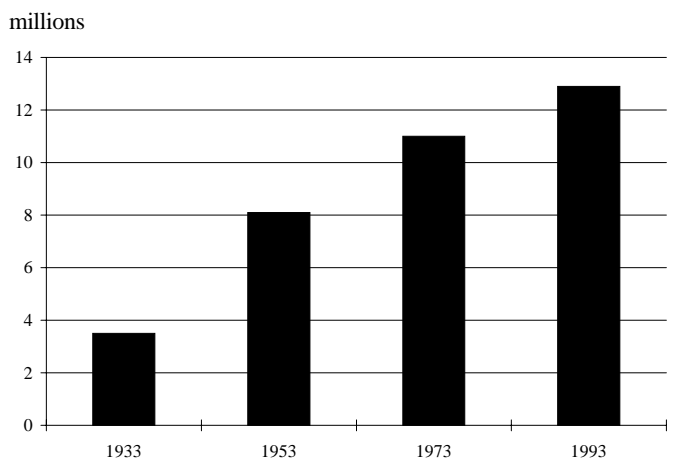
**Case Study
Shanghai**

Shanghai initially developed as a regional port and trade centre and by 1910 it had a population of 1.2 million and was the largest city in China

Between 1937 and 1949 the city was under Japanese occupation and many foreign people left the city. After the Peoples Liberation Movement marched into the city in 1949, Shanghai suffered under the anti-urban policies of the Communist regime which were against foreign trade. Shanghai served as a reminder of the semi-colonial past and this factor, combined with the threat of attack during the Korean War in the 1950s, meant that large sectors of both community and industry were relocated and those which remained were largely nationalised.

Following liberation in 1949 there was massive in-migration as those previously displaced by civil wars and the Japanese returned.

Fig 4. Population Growth of Shanghai



People in the urban areas (in non-agricultural employment) were now classified as being entitled to welfare and subsidies. This made urban areas very attractive and immigration accelerated. Unfortunately, by the end of the 1950s in-migration became unmanageable, stricter controls were introduced and people who had entered Shanghai in the 1950s were sent out again.

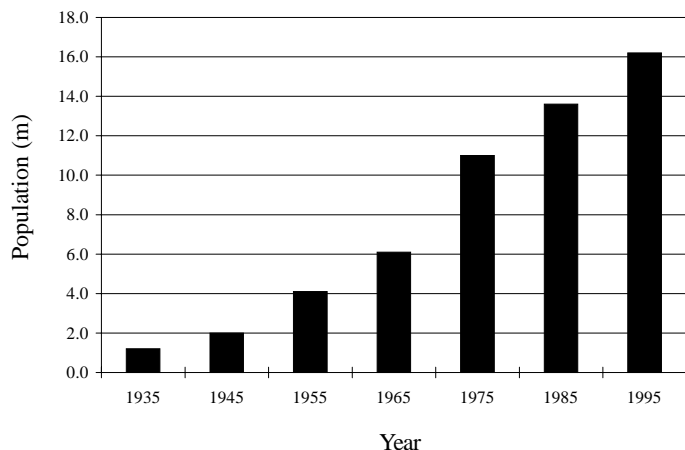
During the Cultural Revolution (1960s) the emphasis was on increased industrial activity and population control measures. At the same time many of the city's youth and skilled workers were forced to move out to rural outposts as part of the efforts to increase the output of the periphery. This resulted in under-urbanisation.

Chairman Mao's rule over China ended in 1978 and, as a result, Shanghai was free to grow again as policies favoured foreign investment. The educated youth and their families were free to return. The population growth rate increased to 3.8% between 1985 and 1993. Shanghai became a magnet for illegal immigrants many of whom were unregistered and often temporary. This group of people, known as 'the floating population' poses one of the biggest threats to the city in terms of planning for housing and other services.

Despite a 67% growth in industrial output between 1990-93 many low skilled, low wage jobs (such as those in the textile industry where employment in the city has halved in the last five years) are moving out in to rural areas where people are willing to work longer hours for less money. Current levels of unemployment are around 15-20% and 40% of families are lacking basic facilities.

Case Study
Sao Paulo

Fig 5. The growth of Sao Paulo



The Metropolitan Area of Sao Paulo (MASP) consists of 39 municipalities with a population of around 17 million people. It contributes 30% of Brazil's GNP and one third of its economically active population works in the manufacturing sector. This makes it the second largest industrial city in the world.

The city originated in 1554. Until the second half of the Nineteenth Century it performed only local functions whilst Rio de Janeiro was clearly the national metropolis. In 1890 the population of Rio de Janeiro was 500,000 whilst the population of Sao Paulo was only 60,000.

In the last quarter of the Nineteenth Century Sao Paulo became the centre of coffee production in Brazil. With the associated 'Europeanisation' of the urban hinterland it developed into an important import-export commercial centre. The population of the city began to grow at a rate of 13.9% per annum.

A mix of industrial and residential properties developed. Social segregation began to occur through house ownership and type. 80% of the population lived in accommodation rented from their employers, which increased in size and standard according to influence and position. The social elite owned their own houses and mansions.

Between 1910 and 1930, the wealthy began to move in to an isolated area of the city named **Hygienopolis**. In addition, Haussmann's work in Paris was copied and tree lined avenues were created radiating from the centre of the city, effectively clearing the centre of the city and forcing the poor to the outskirts. Home ownership was encouraged to reduce the rent burden on industry.

Between 1920 and 1930, industries based upon imports substitution grew rapidly. The existing infrastructure, locational advantages and proximity to growing internal markets resulted in rapid growth.

During the 1960s more efficient country-wide transport facilities were developed and Sao Paulo grew rapidly and this continued for the next two decades as the Brazilian economy grew. In the 1980s many of the major banks relocated from Rio to Sao Paulo.

Overall, between the 1940s - 1980s a clear core-periphery pattern of urbanisation emerged. There were four characteristics:

1. The city dispersed as population density fell from 110 persons per hectare (1914) to 24.5 inhabitants per hectare in 1960 with population growth in the periphery at around 10% per year whilst there was little or no growth in the centre. Massive in-migration (of 2.3 million people) between 1970 and 1980, alongside high rates of natural growth, saw a total increase of 4.6 million people in one decade.

2. Social classes became separated, with middle and upper classes in the centre and the poor in the periphery.

3. Home ownership increased amongst all the social classes (expanding to 53.8% of houses in 1970 from only 19% in 1920) with the encouragement of autoconstruction for the lower classes in the periphery and the creation of apartment blocks and condominiums for the upper classes in the core of the city.

4. A dual transportation system developed, with buses for the poor and cars for the rich. This ensured a lack of communication and total segregation between the different classes in Sao Paulo. The economic crisis of the 1980s hit the large cities hardest deconcentration of industry and programmes in Brazil to develop the standard of living in the smaller cities of the interior. This increased their attractiveness over Sao Paulo and decreased the number of manufacturing jobs in the city. As a result, unemployment rose consistently through the 1980s, as did numbers of people working without permits (Table 4).

Table 4: Unemployment in Greater Sao Paulo, 1985-1993

Year	Economically active population (000s)	Unemployed (000s)	Unemployment rate (%)
1985	6415	795	12.4
1987	6871	666	9.7
1989	7100	596	8.4
1991	7553	899	11.9
1992	7789	1253	16.1
1993	7948	1224	15.4

Increasing numbers became unable to afford official autoconstruction and so moved in to Favelas (shanty towns) in the periphery where, it is estimated, two thirds of all homes were in 1992.

Sao Paulo faces acute environmental problems. Air pollution is at a chronic level in Sao Paulo; WHO limits for particulates and carbon monoxide are exceeded for 6 months of the year. Daily, 800 tonnes of raw sewage are released into the Tiete river as it runs through Greater Sao Paulo, along with the unleaded effluent of 1200 industries. 28% of all homes still lack piped water and 50% are not connected to sewage.

Acknowledgements;

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