

CHAPTER 4

ENVIRONMENTAL IMPACTS OF URBANISATION

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Introduction

An ever increasing number of people in Developing Countries are living in urban areas. By the new millennium almost half the world's population would be expected to be living in urban areas. Africa would experience the highest urban growth rate: an average of 4.5 per cent between 1995 and 2000 and 4.3 per cent thereafter. Latin America, already urbanised will not have such a large increase. Absolute growth will be in Asia, where cities have been projected to gain by the year 2000. Roughly 60 per cent of the GNP of less developed countries is urban-generated by about one-third of the population. Habitat II Secretariat projects that urban centres may account for as much as 80 per cent of GNP growth by the end of 2000. Despite the growing contributions to the economies of developing countries urban areas are being increasingly neglected and the quality of urban environment is suffering. Institutional structures are in decay. More and more people are living and working in some of the world's most degraded environments where the smells and pollution are unbearable. They *lack clean drinking water and rudimentary sanitation facilities.*

A very high proportion of the people live in *dilapidated and overcrowded houses*. Garbage lies rotting outside their makeshift shelters, restricting access along narrow unpaved pathways and clogging surface drains. *Pollution, waste disposal problems, inadequate and neglected infrastructural services, social unrest and other stresses of the environment are endemic.* Diarrhoea, typhoid and many other diseases are ever present menaces of life. *Urban-industrial impacts may well be the most serious of all types of land degradation in several Developing Countries.* A general overview of urban-industrial problems faced in human settlements, especially by the fast growing cities of the Developing World constitutes the central focus of this chapter. Urban degradation reflects underlying socio-economic and administrative problems that have bedevilled both municipal administrators and residents. In turn, these problems are most *maladministration in municipalities.* Human settlement problems are probably more easily identified and resolved at local rather than national level. A basic approach may be to empower both cities and towns of all sizes to make their own decisions and to raise their opportunities without undue constraints from central and regional authorities. More *innovative approaches and policy initiatives are required and a basic strategy incorporating critical areas needing attention in the creation of a sustainable urban living environment is outlined.* The solution of the urban environmental problems in developing countries is more than a task for technocrats. It is a fundamental challenge for the political and administrative leadership in these countries.

Changing Trends in Urbanisation and Industrialisation

The focus of this chapter is a general overview of the environmental impacts of urbanisation and industrialisation in the fast growing cities of the Developing World. Over the last half century, the world has experienced its fastest ever rate of urbanisation and by the year 2000, 46.7 per cent of the world's population would be living in urban areas, made up of 74.8 per cent of the population of Developed Countries and 39.5 per cent of the population of the Developing World. Africa would experience the highest urban growth rate: an average of 4.5 per cent thereafter. Latin America, already urbanised will not have such a large increase. Absolute growth would be expected to greatest in Asia where cities would reach 210 million people by the beginning of the new millennium. It is estimated that during the period 1950 to 2025, the absolute number of urban dwellers in the Developing World would have increased by a staggering fourteen times, from 300 million to 4 billion. It had predicted that by the beginning of the new millennium there would be two city dwellers in the Developing Countries for every one city dweller in the Developed World. United Nations statistics indicate that at the advent of the year 2000, the three largest cities in the world would be Mexico City, Sao Paolo and Shanghai, each with a population in excess of 23 million. This contrasts starkly with the 1950s, when the three largest conurbations were New York, London and the Rhine-Rhur (Table 4.1)

Table 4.1: The Largest Cities in the World, 1950 and 2000

Rank (1950)	City	Population (million)	Rank (2000)	City	Population (million)
1	New York	12.3	1	Mexico	31.0
2	London	10.4	2	Sao Paolo	25.8
3	Rhine-Ruhr	6.9	3	Shanghai	23.7
4	Tokyo	6.7	4	Tokyo	23.7
5	Shanghai	5.8	5	New York	22.4
6	Paris	5.5	6	Beijing	20.9
7	Buenos Aires	5.3	7	Rio de Janeiro	19.0
8	Chicago	4.9	8	Mumbai	16.8
9	Moscow	4.8	9	Calcutta	16.4
10	Calcutta	4.6	10	Jakarta	15.7
11	Los Angeles	4.0	11	Los Angeles	13.9
12	Osaka	3.8	12	Seoul	13.7
13	Milan	3.6	13	Cairo	12.9
14	Bombay	3.0	14	Madras	12.4
15	Mexico City	3.0	15	Buenos Aires	12.1

Developing Countries are also rapidly industrialising, *albeit* at variable regional growth rates and generally at a slower pace than the pace of urbanisation. During the colonial period, these countries were not encouraged to develop industry. They were mainly producers of primary products. Urbanisation during the colonial period denied people of the Developing Countries not only the opportunity of acquiring modern productive skills for processing the produce from their farms, forests and mines, but also the chance of learning organisational skills needed for ensuring the smooth flow and delivery of the produce to foreign markets.

However, with independence, and the burgeoning national governments' ardent interest in promoting industrialisation and the favourable climate provided by the New International Division of Labour, the situation has radically changed. Although the share of Developing Countries' manufacturing is still low (about 18.4% compared to 81.6%, in the developed countries in (1985), it is not surprising that it is in some of these countries that the fastest growth rates in manufacturing have been registered in recent years. The most rapid growth of industrial output has taken place in the Newly Industrialising Countries (NICs), particularly those that the World Bank refers to as the Asian Tigers (South Korea, Hong Kong, Singapore and Taiwan). More recently, this rapid growth has expanded to include China, Malaysia, the Philippines and Thailand. The rapid industrial growth of these South East Asian countries, with their 900 million consumers and economies growing at a rate several times faster than world average, is changing the structure of world business and industry.

In the period from 1960 to 1985, several of these NICs, equalled or exceeded Japan's annual growth rate. They also registered prodigious increases in manufacturing employment: 27 per cent in South Korea (between 1974 and 1985), 53 per cent in Taiwan, 43 per cent in Hong Kong and 75 per cent in Malaysia. The leading exporters in manufacturing in 1985 were South Korea, which accounted for 23.3 per cent of total manufactured exports of all developing countries, Hong Kong (16 per cent), Mexico (9.5 per cent) Brazil (9.0 per cent) and Singapore (7.1 per cent). Industrial development in these countries emphasise the production of high-value goods for both domestic and export markets, together with both resource-based and high technology industries.

While industrialisation may not yet be a significant factor in several countries outside of the NICs (for example, African countries), it has been estimated that roughly 60 per cent of Developing Countries' GNP is urban-generated by one-third of the population, involved in a wide range of mostly secondary and tertiary activities. There is speculation that urban centres may account for as much as 80 per cent of GNP growth by the end of the century (Habitat II Secretariat, 1994)

Urban Benign Neglect and Environmental Deterioration

Despite the growing contributions to the developing economies, *urban centres in several parts of the Developing World are environmentally suffering from benign neglect. The quality of the urban environment is deteriorating.* More and more people are living and working in some of the world's most degraded environments, where the smells and pollution are unbearable. They lack clean drinking water and rudimentary sanitation facilities. A very high proportion live in dilapidated and overcrowded houses. Urban expansion is all too often haphazard and unplanned and slums and squatter settlements are growing (see Table 4.2 which shows the extent of slums and uncontrolled settlements in African cities). Garbage lies rotting outside the makeshift shelters, restricting access along narrow unpaved pathways and clogging makeshift drains. Untreated sewage, uncontrolled industrial effluents and rapidly growing numbers of motor vehicles pollute air, water, coasts and croplands. Diarrhoea, typhoid, cholera, food poisoning and other diseases are ever present menaces of life. There is little or no protection for workers from unsafe work places, over-long working hours and extensive travel to and from home. Social unrest and other stresses of the environment are endemic.

Table 4.2: Extent of Slums and Uncontrolled Settlements in Some African Cities. (Source: Reconstructed from World Bank Reports)

Country	City	Year	Population	% in Unhealthy housing
Kenya	Nairobi	1984	959,000	23
	Kisumu	1984	163,000	73
Zambia	Lusaka	1981	650,000	50
Tanzania	Dar-es-Salam	1981	757,000	65
	Tanga	1978	103,000	60
Egypt	Ismalia	1978	175,000	50
Tunisia	Tunis	1975	925,000	33
Nigeria	Lagos	1975	1,220,000	83
	Ibadan	1970	736,000	75
Morocco	Casablanca	1971	1,445,000	70
Senegal	Dakar	1969	650,000	60
Ethiopia	Addis Ababa	1968	737,000	90
Somalia	Mogadishu	1967	206,000	77
Cote D'Ivoire	Abidjan	1964	437,000	60

Most of these problems are linked to the failure or inability of governments to provide effective regulations and planning frameworks to address the problems of poor citizens and protect the urban environment from contamination.

Urban-industrial impacts may well be the most serious of all types of land degradation in several developing countries, and for the rest of this Chapter focus will be given more closely on some environmental ramifications of urbanisation and industrialisation. The chapter will conclude by sketching a strategy for addressing the urban problems within the overall context of sustainable development of human settlements in the Developing World.

A pivotal theme identified by Potter (1996) is that the very different character of urbanisation and industrialisation is itself a critical and pressing issue. Taking a cue from Potter (1996), the Chapter will attempt to pursue two avenues, the first dealing with the relations between urban development and environmental circumstances and the second, exploring the links between industrialisation and urban environmental conditions and change.

Human settlements, in theory, are areas of opportunities – for production, investment, marketing, trade, education, communication and creativity. Yet, if unmanaged or badly managed and growing under uncontrolled conditions, they can harbour human misery alongside large scale environmental degradation, which goes unnoticed on account of the more pressing survival problems and lead to irreversible resource depletion. This is what is happening in many parts of the Developing World.

Urbanisation and Environment

It is contended that one of the primary reasons why towns and cities are such a disturbing factor in Developing Countries (particularly African countries) today is that they are *unable to provide sustainable living environments for their inhabitants*. The function of towns and cities is to centralise facilities, services and opportunities, both social and economic. As nodal points in networks of communication, towns and cities provide vital links for economic functioning of regions of all sizes. Large urban centres provide exceptionally fertile seed-beds for economic growth, and throughout history, these have offered distinctive environments for the development of human societies. Cities offer job opportunities in both formal and informal sectors, and where jobs exist, average wage rates increase progressively with city size (Hoch, 1972).

Human beings are the centre of concern for sustainable development of human settlements. In theory at least, it should be possible for Developing Countries to provide housing, water, sanitation, paved roads, transport systems

and recreational and open spaces at low units costs as well as job opportunities without prejudicing environmental and human health and well being in their cities.

All too frequently, however, *Developing Countries* are marked by an *unprecedented urban explosion, resources are insufficient, structural poverty is rife, the needs of city dwellers are not met, and the environment is deteriorating*. For example, more than 50 per cent of urban residents in the Developing World live in sub-standard dwellings and this has a direct bearing on their environmental circumstances. In Africa, some 60 million people were reported to be living in 1987, in squatter settlements and unhealthy housing conditions in cities (Munro 1987; see also Table 4.2). The rural landless poor living in unhealthy shelters and neighbourhoods were estimated to be 110 million. The numbers have been and are still increasing alarmingly day by day.

According to the World Bank (1992), less than 60 per cent of the urban population in Developing Countries have access to adequate sanitation and only 33 per cent are connected to a sewer system. It is also evident that 20 to 30 per cent of urban dwellers regularly purchase supplies of drinking water from mobile vendors (Hardoy *et al* 1992). Some sense of the magnitude of the problem can be gauged from a single city. With 6 million inhabitants, Hong Kong produces 23,300 tons of solid waste, 21 tons of floating refuse, 2 million tons of sewage and industrial waste per day, along with 100,000 tons of chemical waste per year. Many difficulties are now being experienced in finding adequate landfill sites (Chan 1994, Potter 1996). Other problems stem from noise pollution from vehicles, aircraft and construction and, as Chan (1994) and Potter (1996) have observed, it is the poor of Hong Kong who suffer the most as a result of the environmental degradation.

Although the best health facilities available in Third World cities are frequently as good as those found in Western cities, *pathogens in the environment* pose serious threats. The main scourges are diarrhoea, dysentery, typhoid and cholera, which disproportionately affect the poor. *Overcrowding in residential areas* means that diseases like tuberculosis, influenza, and meningitis once contracted, are easily transmitted. *There is also the need in all settings to look into the balance that exists between indigenous and foreign influences and modes of development*. An example is the direct link that exists between tourism, Aids and child prostitution in many Developing Countries.

In the Developing World (for example, in African and Latin American countries), *over-concentration of wealth in the big cities* is contributing to the abandonment of the rural areas and the small towns. Attempts to redress the situation are beset with difficulties in view of the low level of investment that has been available to inject into the rural areas from their existing level of deprivation or resource degradation as well as such structural issues like

institutional capacity and absence of meaningful intersectoral linkages. This has led to depletion of human resources and inability to maintain infrastructure and service provision.

In most African human settlements, large masses of people live in environments which are neither life-sustaining, nor conducive to positive development trends. Areas are poorly serviced and the inhabitants are susceptible to both man-made and natural hazards. These environmental hazards can be identified at different spatial scales of the settlement hierarchy (Saha, 1992).

At the very **local level**, millions of African peasant and urban slum dwellers are exposed to pathogens, with serious impacts on human health, e.g. pathogens from human excreta in water supplies and to smoke fumes from stoves which cause respiratory problems. The above problems are compounded at the next level, the *small town or neighbourhood level* where in addition, there would be added risks from toxic chemicals used in the workplace without adequate safeguards; disease causing agents, like rats and flies which feed on the uncontrolled garbage dumps and the dirty water pools which occur on accounts of inadequate sewage and drainage.

At the **city scale**, problems would centre on high levels of air pollution caused by poorly maintained vehicles on congested streets and high levels of lead additive in petrol used; high levels of water pollution on account of inadequate and strained systems, absence of drains and sewage treatment plants, inappropriate dumping practices and lack of enforcement, and inadequate environmental control on industry.

At the **subnational level**, problems arise from the interaction between cities and their rural hinterlands. Rural areas suffer from the impacts of city-based generated activities. Among common examples are the degradation of coastal fisheries as a result of water pollution from city-based enterprises. Other resource degradation would occur from over-intensified demand, say, for fuel wood.

There are several fundamental obstacles to the integration of environmental concerns into the management of living environments of human settlements in developing countries. As the experience of African countries show, to begin with, authority is weak generally on account of the shortage of personnel trained in the specific skills required to monitor environmental degradation and whatever skills exist would be concentrated in the Central Government organisations with inordinately large range of responsibilities. Then there is an absence of standards for pollution control measures; a shortage of analytical laboratory facilities and where the same do exist, many instruments are out of use on account of inadequate maintenance capacity. Legislation is out of date and often with a multitude of authority which often amounts to no authority at

all. There is also a lack of inventory on resources and very importantly, an absence of an integrating framework for decision making on intersectoral resource use priorities and a co-ordination mechanism for implementation of decisions once taken.

The relationship between the environment and development requires a comprehensive and integrated approach which can be obtained through National Environmental Action Plans. Several African countries are going through the process of a comprehensive environmental management approach with the collaboration of the World Bank. The pioneering countries and implementing Environmental Action Plans include Ghana, Kenya, Burkina Faso, Madagascar, Mauritius, Lesotho, Guinea and Rwanda.

Industrialisation and the Environment

Some effects of industrialisation are variously mentioned in connection with discussions on urbanisation and the environment. However, some significant issues remain to be highlighted if the environmental ramifications of urban-industrial development in Developing Countries are to be adequately comprehended.

First, in the context of the potential impacts of industrialisation, it is worth noting that the contribution of cities in the developing World to global environmental problem remains relatively small – *it is mainly the cities of the Developed World that are emitting greenhouse gases*. Thus the main threat from industry located in the Developing World cities is to the local population. Even so, Developing World cities are threatened by *global warming which may lead to more severe storms as well as sea-level rise* (Potter 1996).

Second, it ought to be noted that the New International Division of Labour is characterised by a *trend towards global divergence*, whereby, through the activities of multinational companies in particular, *patterns of ownership, capital accumulation and production are becoming more concentrated and diverse at the global level*. Multinationals, with their capital and technology, have the power to choose what they consider to be the ideal locations for their industries. This choice is often made at two levels: the most suitable country and the most suitable place within that country. The choice of a country usually depends upon political factors. Most governments, regardless of the level of economic development within their country, are prepared to offer financial inducements to attract multinationals which they see as providers of jobs and means of increasing exports.

The severe competition to attract multinationals by Developing Countries

means that the process of industrialisation is neither monitored nor managed very closely. Consequently, according to Potter (1996), Developing Countries are prepared to ignore health, safety and environmental issues in their search for investment and employment. The best example is the recent investment of Third World Countries in the reprocessing of highly toxic chemicals exported from developed nations. The trade is prompted by lower costs and lack of regulations in many developing countries. In the late 1980s of the 30 to 45 million tons of hazardous waste that crossed international borders, 20 million went to Developing Countries.

A third point to note is that, *in the arena of political economy, Developing Countries are lacking in power vis-a-vis the global multinational companies in whom industrial capital, technology and production are mainly concentrated.* They must accept the conditions offered by the Transnationals and other large companies. Moreover, they don't have the financial base to fight air pollution because they are mostly pre-occupied with finding jobs and ways to house and feed their growing populations. They are accordingly forced to accept investments or jobs, sometimes at any price. Governments of economically less developed countries, due to a greater economic need, are often prepared to impose fewer restrictions on multinationals because they often have to depend upon them to develop natural resources, to provide capital and technology (machinery skills, and transport), to create jobs and to gain access to world markets. Despite political independence, many poorer countries remain economically dependent (neo-colonialism) upon the large multinationals (together with international banks and foreign aid).

The Bhopal tragedy is one example of what can happen environmentally if the activities of multinationals are not controlled and if industrial development is allowed to proceed on the basis of a maximum return and insufficient monitoring and regulation. A report marking the tenth anniversary of the disaster highlighted the continuing suffering of many who survived facing breathlessness, dry coughs and chronic lung diseases.

Another example of the human and environmental consequences of unregulated industrial development is provided by the spate of fires which have claimed the lives of workers, particularly women, in factories in the developing countries. *The Guardian* on May 12, 1993, chronicled a case where a ranging fire killed at least 200 workers and injured several hundred more in a toy factory in an industrial zone on the outskirts of Bangkok, Thailand.

The case of Mexico City illustrates some of the hazards rapid population growth and industrialisation can pose for a developing country. Mexico City in 1995 had a population of 23 million people – projected to expand to 31 million by the year 2000, perhaps making it the largest urban area in the world. Cars, buses, industry and power plants in the city emit hundreds of thousands of

metric tons of pollutants in the atmosphere each year. The city is at an elevation of approximately 2255 metres (7400 feet) in a natural basin surrounded by mountains – a perfect situation for a severe air pollution problem. It is becoming a rare day in Mexico City when the mountains can be seen, and physicians report that there has been a steady increase in respiratory diseases. Headaches, irritated eyes, and sore throats are common when the pollution settles in. Doctors advise parents to take their children out of the city permanently! Other large cities in developing countries with similar pollution problems include Dhaka (Bangladesh) and Kuala Lumpur (Malaysia)

Urbanisation and Sustainable Living Environments

It is apparent that the fundamental policy consideration in relation to urbanisation is how to manage human settlements in such a way as to create congenial and humane living conditions for human beings, a more healthy environment as well as caring resource use that would foster a better quality of life, higher productivity as well as a more sustainable environment in the longer term. Population growth in Developing Countries is unlikely to stabilise until well after the year 2000. Many regions in the Developing World have also their share of natural calamities, including, as in the case of Africa, *widespread drought, political conflicts and an ailing agricultural sector*, which, in addition to climatic factors, also suffers from a basic lack of inputs.

The dynamics of *human settlement growth* are made up, *inter alia*, of the interplay among several components: *regional planning, resource use, institutional and legal frameworks, human capacity, technological and financial resource, service delivery and management, energy, transport infrastructure and construction*. The management of certain key linkages among those components would go a long way towards the improvement of sustainability within the human settlements and their rural hinterlands. Such an approach calls for:

- ❑ A ***strong government commitment*** towards the improvement of environmental quality within the built-up and natural environment, a commitment to be made more visible and more tangible through the provision, *inter alia*, of an enabling environment, an intersectorial co-ordination mechanism and the enhancement of appropriate institutional capacity. The collaboration of the international community would be paramount in the light of the scale of the problem.
- ❑ A ***holistic view towards resource use***, resource conservation and the management of investment priorities, relationships amongst environmental quality, human health, productivity and long-term sustainability.
- ❑ A ***strong injection of spatial planning*** to complement

national economic planning and the pursuit of integrated land use planning at all levels. Such land use planning is to be targeted to the priority needs of the community.

- ❑ A ***sanitation and water supply response*** to address the basic needs of the poor and needy. There is need to focus on incremental approach and low cost technology.
- ❑ The ***equity issue*** need to address the problem of cost recovery and the need to stretch service delivery for water supply, sanitation, energy as well as transport to as many beneficiaries as possible. Environmental costs also need to be reflected in pricing so as to encourage the desirable and sustainable policy shifts.
- ❑ It is necessary to clarify ***property rights*** and resolve the ***gender issues*** which mitigate against long term sustainability in land development.
- ❑ A ***programme of public education and creation of environmental consciousness*** are essential.
- ❑ There is a need to enhance ***local community participation*** in all the decision making processes.
- ❑ The ***activities of multinationals*** should be closely monitored and controlled; and there is need to vigorously enforce all laws and regulations regarding pollution and land degradation.
- ❑ Human settlement problems are probably more easily identified and resolved at local rather than national level. There is therefore a need to ***empower cities and towns*** of all sizes to make their own decisions and generate their own revenues without undue constraints from central and regional authorities.
- ❑ There is a need for more ***highly focused environmental impact assessment*** and research on towns and cities as liveable environments.

The solution of the urban-environment problems in Developing Countries is more than a task for technocrats. It is a fundamental challenge for the political and administrative leadership in these countries.

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