INTRODUCTION

Cities have played a central role in the cultural, economic and political evolution and development of the Asian and Pacific Region. However, cities have also been significant contributors to the degradation of the region’s physical environment both as vociferous consumers of resources and relentless emitters of pollutants. This chapter describes the state and trend of urbanization in Asia and the Pacific and provides an analysis of the policies and programmes on urban environmental management at the national, regional and international levels that have been undertaken to cope with the environmental problems and emerging challenges.

STATUS AND TRENDS IN URBANIZATION

Overall some 37 per cent of the people of the Asian and Pacific Region live in urban areas (United Nations 1998), although there is considerable range in the extent of the urbanization, both across and within the sub-regions. For example, the higher degree of urbanization in Australia and New Zealand contrast markedly with the much less urbanized Pacific Island countries and is sufficiently high to ensure that the South Pacific sub-region is on average the most urbanized in the region, whilst South Asia is the least urbanized followed by Southeast and Northeast Asia (ESCAP 1999). The diversity of countries in the region in terms of levels of economic development has resulted in even greater variation in the level of urbanization. For example, urbanization ranges from a minimum of seven per cent in Bhutan to 100 per cent in Singapore (Table 7.1). It is projected that some of the big countries of the region like People’s Republic of China, Indonesia and Pakistan where current urbanization levels are well below 50 per cent, will cross this figure by the next quarter of the century, whilst India’s urbanization level will also approach 50 per cent by the year 2030.

A. Degree and Growth of Urbanization

The degree of urbanization in the countries of the Asian and Pacific Region is presented in Table 7.2. Each of the eight highly urbanized (75 per cent and above) countries is industrially advanced nations, (with the sole exception of Brunei Darussalam, which is very rich in oil resources) whilst the eight with low urbanization (25 per cent and below) comprise countries where the levels of economic development and per capita income are low.

In the region as a whole, urbanization continues to grow at an average rate of 2.2 per cent per annum with higher rates being experienced in Southeast Asia (Figure 7.1). As one might expect, those countries with existing high levels of urbanization tend to be experiencing slower rates of urban growth (Table 7.3). In general, urban growth is expected to continue rapidly in most developing countries of the region, although, in the longer term, growth may be expected to slow as high levels of urbanization and socio-economic development are achieved.

The major reasons for increasing urban population are rural to urban migration (and, to a lesser extent, international migration) and the re-classification or expansion of existing city boundaries to include populations that were hitherto classified as being resident outside the city limits; these are estimated to contribute about 60 per cent of the region’s urban growth in the near future (Figure 7.2). During the 1990s, Northeast Asia had the highest rate of urban growth due to migration and re-classification primarily as a result of the major changes in human settlements in People’s Republic of China and Republic of Korea. Southeast Asia followed with more than half of urban growth accounted for by migration and re-classification especially in Thailand, Indonesia, Malaysia, Lao People’s Democratic Republic and Cambodia.

Urban growth due to natural increase is most prominent in South Asia and the South Pacific and in those countries, such as the Iran (Islamic Republic of), New Zealand and Sri Lanka, where the capital cities are the main urban centres. The contribution of natural increase to urban growth is a complicated issue. In the case of the developed countries, i.e. areas such as Japan, Singapore, Australia and New Zealand, the rates of natural increase have generally been falling rapidly over the last twenty years, owing to the better public health infrastructure, and wider acceptance of family planning practices. These countries have already experienced the transition to an urbanized society, and their cities are growing slowly. On the other hand, the rates of natural increase rose in many developing countries, mainly due to improved housing, sanitation and medical delivery systems resulting in higher life expectancy among adults and lower infant mortality rates.

B. Urbanization and the City Size

The cities of Asia and the Pacific Region can be classified into four categories according to their population: 10 million plus (megacities); 5-10 million (large); 1-5 million (medium); and 0.5-1 million (small). In 1990, seven of the world’s fourteen megacities were located in the region, by 1996 the
Table 7.1 Urbanization Trends in the Asian and Pacific Region, 1999-2030

<table>
<thead>
<tr>
<th>Region/ Country</th>
<th>Degree of Urbanization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast Asia</td>
<td>40</td>
</tr>
<tr>
<td>People’s Republic of China</td>
<td>34</td>
</tr>
<tr>
<td>Democratic People’s Republic of Korea</td>
<td>63</td>
</tr>
<tr>
<td>Hong Kong, China</td>
<td>96</td>
</tr>
<tr>
<td>Japan</td>
<td>79</td>
</tr>
<tr>
<td>Mongolia</td>
<td>63</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>85</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>77</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>38</td>
</tr>
<tr>
<td>Brunei Darussalam</td>
<td>72</td>
</tr>
<tr>
<td>Cambodia</td>
<td>23</td>
</tr>
<tr>
<td>Indonesia</td>
<td>39</td>
</tr>
<tr>
<td>Lao People’s Democratic Republic</td>
<td>23</td>
</tr>
<tr>
<td>Malaysia</td>
<td>57</td>
</tr>
<tr>
<td>Myanmar</td>
<td>27</td>
</tr>
<tr>
<td>Singapore</td>
<td>58</td>
</tr>
<tr>
<td>Thailand</td>
<td>100</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>20</td>
</tr>
<tr>
<td>South Asia</td>
<td>31</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>22</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>21</td>
</tr>
<tr>
<td>Bhutan</td>
<td>7</td>
</tr>
<tr>
<td>India</td>
<td>28</td>
</tr>
<tr>
<td>Iran, Islamic Republic of</td>
<td>64</td>
</tr>
<tr>
<td>Maldives</td>
<td>28</td>
</tr>
<tr>
<td>Nepal</td>
<td>11</td>
</tr>
<tr>
<td>Pakistan</td>
<td>33</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>23</td>
</tr>
<tr>
<td>Central Asia</td>
<td>68</td>
</tr>
<tr>
<td>Armenia</td>
<td>70</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>57</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>55</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>40</td>
</tr>
<tr>
<td>Tajikistan</td>
<td>33</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>45</td>
</tr>
<tr>
<td>Turkey</td>
<td>74</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>42</td>
</tr>
<tr>
<td>South Pacific</td>
<td>70</td>
</tr>
<tr>
<td>American Samoa</td>
<td>52</td>
</tr>
<tr>
<td>Australia</td>
<td>85</td>
</tr>
<tr>
<td>Cook Islands</td>
<td>63</td>
</tr>
<tr>
<td>Fiji</td>
<td>42</td>
</tr>
<tr>
<td>French Polynesia</td>
<td>57</td>
</tr>
<tr>
<td>Guam</td>
<td>39</td>
</tr>
<tr>
<td>Kiribati</td>
<td>37</td>
</tr>
<tr>
<td>Marshall Island</td>
<td>71</td>
</tr>
<tr>
<td>Micronesia (Federation State of)</td>
<td>29</td>
</tr>
<tr>
<td>New Caledonia</td>
<td>64</td>
</tr>
<tr>
<td>New Zealand</td>
<td>87</td>
</tr>
<tr>
<td>Niue</td>
<td>29</td>
</tr>
<tr>
<td>Northern Mariana Island</td>
<td>55</td>
</tr>
<tr>
<td>Palau</td>
<td>73</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>17</td>
</tr>
<tr>
<td>Samoa</td>
<td>21</td>
</tr>
<tr>
<td>Solomon Island</td>
<td>19</td>
</tr>
<tr>
<td>Tonga</td>
<td>45</td>
</tr>
<tr>
<td>Tuvalu</td>
<td>51</td>
</tr>
<tr>
<td>Vanuatu</td>
<td>20</td>
</tr>
</tbody>
</table>

### Table 7.2  Degree of Urbanization in the Asian and Pacific Region, 1999

<table>
<thead>
<tr>
<th>Degree of urbanization</th>
<th>Number of countries</th>
<th>Countries with degree of urbanization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 25%</td>
<td>8</td>
<td>Afghanistan (22), Bangladesh (21), Bhutan (7), Nepal (11), Sri Lanka (23), Cambodia (23), Lao People’s Democratic Republic (23), Viet Nam (20),</td>
</tr>
<tr>
<td>25-50%</td>
<td>11</td>
<td>People’s Republic of China (34), India (28), Kyrgyzstan (40), Maldives (28), Thailand (34), Pakistan (33), Tajikistan (33), Turkmenistan (45), Uzbekistan (42), Indonesia (39), Myanmar (27)</td>
</tr>
<tr>
<td>50-75%</td>
<td>9</td>
<td>Democratic People’s Republic of Korea (63), Mongolia (63), Islamic Republic of Iran (64), Kazakhstan (55), Malaysia (57), Philippines (58), Armenia (70), Azerbaijan (57), Turkey (74),</td>
</tr>
<tr>
<td>75% and above</td>
<td>8</td>
<td>Hong Kong, China (96), Japan (79), Republic of Korea (85), Brunei Darussalam (72), Singapore (100), Australia (85), New Zealand (87), Russian Federation (77)</td>
</tr>
</tbody>
</table>

Source: ESCAP 1999  
Note: Pacific Small Island Developing States have not been classified as the quantitative data gives very erroneous picture compared to countries of Asia.

### Table 7.3  Annual Urban Growth Rate in the Asian and Pacific Region, 1999

<table>
<thead>
<tr>
<th>Category</th>
<th>Per cent Annual urban growth</th>
<th>Number of countries</th>
<th>Name of countries with annual urban growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Slow</td>
<td>Less than 1%</td>
<td>4</td>
<td>Kazakhstan (0), Russian Federation (0.1), Japan (0.4), Armenia (0.7)</td>
</tr>
<tr>
<td>Slow</td>
<td>1-2.0%</td>
<td>7</td>
<td>Democratic People’s Republic of Korea (2.0), Republic of Korea (1.9), Singapore (1.3), Azerbaijan (1.4), Kyrgyzstan (1.3), Australia (1.1), New Zealand (1.3)</td>
</tr>
<tr>
<td>Medium</td>
<td>2.1-3.0%</td>
<td>12</td>
<td>Mongolia (2.9), Brunei Darussalam (2.8), Thailand (2.4), Viet Nam (2.1), India (2.8), Islamic Republic of Iran (2.9), Sri Lanka (2.5), Tajikistan (2.4), Turkmenistan (2.3), Turkey (3.0), Uzbekistan (2.6), Hong Kong, China (2.8)</td>
</tr>
<tr>
<td>High</td>
<td>3.1-5.0%</td>
<td>10</td>
<td>People’s Republic of China (3.3), Cambodia (4.8), Indonesia (3.8), Malaysia (3.2), Myanmar (3.2), Philippines (3.5), Bangladesh (4.5), Maldives (4.6), Nepal (4.6), Pakistan (3.5)</td>
</tr>
<tr>
<td>Very High</td>
<td>5.1% and above</td>
<td>3</td>
<td>Lao People’s Democratic Republic (5.5), Afghanistan (6.5), Bhutan (6.1)</td>
</tr>
</tbody>
</table>

Source: ESCAP 1999  
Note: Pacific Small Island Developing States have not been classified as the quantitative data gives very erroneous picture compared to countries of Asia.

### Figure 7.1  Rate of Urbanization in Asia and the Pacific, 1995-2030

![Figure 7.1](image1.png)


### Figure 7.2  Components of Urban Growth in Asia and the Pacific, 1990-2005

![Figure 7.2](image2.png)

number of megacities in the region rose to nine and 1996 projections for early 2000 predicted that there would be twelve megacities in the region (Beijing, Calcutta, Delhi, Dhaka, Karachi, Metro Manila, Mumbai, Osaka, Seoul, Shanghai, Tianjin and Tokyo), although figures recently made available give the number as eleven, with the removal of Seoul and Tianjin and the inclusion of Jakarta. The projected number, size and rankings of cities in the Asian and Pacific Region are presented in Figures 7.3a, b and 7.4. Tokyo continues to be the largest urban agglomeration, both in the region and in the world, a position it has held since 1970 and which it has been projected to retain until 2015 (ADB 1996).

In addition, there are over 300 cities within the region that may be categorized as small, medium or large. Whilst the 164 small cities (with populations of between 500,000 and 1 million) accommodate only eight per cent of the urban population, the megacities are home to twelve per cent of the region’s city dwellers, and the 137 medium sized cities accommodate about a fifth of the region’s urban population.

Primacy, or the domination of a country by a single large city, in terms of concentration of population and economic activities, is relatively common in the region. In most cases, the dominant city is also the national capital and has risen to its position of primacy due to a range of factors including, inter alia, history, geography, stage of development, political system and government policies (Pernia 1998). There are certain countries, such as Singapore, the Maldives and the island nations of the South Pacific sub-region, where the national capital is the only urban centre.

URBANIZATION PROCESS AND ENVIRONMENTAL QUALITY

A. Spatial Growth and Urban Environmental Quality

The population of cities in the developing countries of the Asian and Pacific Region has been estimated to have doubled between 1980 and 2000. In certain cities, urban land expansion has been even faster. Jakarta expanded four per cent annually in the first half of this decade, the population of several areas on its fringe grew as much as 18 per cent per year (Planet Earth 1999). According to one estimate some half a million hectares of arable land is being
CHAPTER SEVEN

taken by urban developments each year in the developing countries of the region (USAID 1994). In India, it is estimated that on average, about 75 000 ha of agricultural land are lost every year due to urban expansion (Pathi 1992). In Pakistan, the Lahore Metropolitan Development Plan alone envisages transformation of 222 500 ha of agricultural land in Lahore and Sheikhupura districts to an urban locality by the year 2010. According to one estimate, Indonesian cities expanded by 376 000 ha over the period 1985-1995, which is likely to accelerate to 40 000 ha per year during the early part of this millennium. To compensate for this loss of land, crop production on the remaining land may become more intensive and potentially more environmentally damaging (WRI 1995).

Records of long term land-use change show that the urbanized area of countries of Asia and the Pacific has increased from about three (Pakistan) to 11 (Brunei Darussalam) times. The trend was particularly high between the 1980s and 1990s when buildings and infrastructure doubled in some countries and, in the case of Brunei Darussalam, even quadrupled. The increases in the built-up urban areas of some Asian and Pacific cities varied from 180 ha annually for Hong Kong, China, to 2 900 ha annually for Bangkok and Karachi. People’s Republic of China has utilized, during the past three decades, about six million hectares of land largely for the construction of factories, public buildings, housing and roads. In the case of Zhangjiagang City, the built-up area increased from 5.6 km$^2$ to 12 km$^2$ with per capita increase in housing floor space from 13 m$^2$ to 18.5 m$^2$. Similarly, built-up area in Foshan City increased from 22.8 km$^2$ to nearly 3 000 km$^2$.

Besides agricultural land, natural areas such as forests, wetlands, and other fragile ecosystems are also lost to residential, industrial and tourism developments. Coastal areas with sensitive ecosystems are under intense pressure from urbanization in the region. Some coastal cities are expanding at a considerably high rate, and reclamation is taking place from the sea to satisfy the soaring demand for new urban land. Land reclamation activities range from draining and filling of marshes and other wetlands and constructing homes or resorts on beaches or dunes, to building seawalls and undertaking large-scale reclamation projects that extend the shoreline into the sea. According to a recent study by the WRI, roughly half of the world’s coasts are threatened by development-related activities (Bryont et al 1995). In Singapore, for instance, the demand for land is so great that the island nation has added 6 000 hectares to its land area by filling along the shoreline, increasing its area by some 10 per cent in the last three decades (Sien 1992).

Similarly, over 450 000 hectares of coastal wetlands have been identified for reclamation in the National Plan for Land Development of the Republic of Korea and in Pakistan, mangroves near Karachi are also under considerable pressure as the urban population cuts trees for fodder, fuelwood, construction timber and clear felling to provide land for development.

B. Ambient Environmental Conditions

For most of the region’s urban centres, the key environmental challenges are those associated with deteriorating air and water quality, persistent noise pollution and the management of municipal, industrial and hazardous waste. The status, trends and constraints associated with urban generated solid waste forms part of a wider examination of solid waste management, which is presented in Chapter 8.

With a few exceptions, ambient environmental conditions in the cities of the Asian and Pacific Region are far from satisfactory and urban dwellers face worse air and water quality, greater noise pollution and worse living conditions than their rural counterparts.

1. Air Pollution

The deterioration in air quality in urban areas is partially the result of increases in industrial and manufacturing activities, but primarily relates to the growth in the number of motor vehicles in the region. Motor vehicles are particularly concentrated in the urban areas and contribute significantly to the production of various types of air pollutants, including carbon monoxide, hydrocarbons, nitrogen oxides and particulates. For example, it is estimated that in a single day around 56 tonnes of carbon monoxide, 18 tonnes of hydrocarbons, 7 tonnes of nitrogen oxides, and just under one tonne each of sulphur dioxide and particulate matter are discharged through the tailpipes of vehicles in Kathmandu alone (Government of Nepal 1998). In Shanghai, the contribution of carbon monoxide, hydrocarbon, and nitrogen oxide emission by automobiles to the air was over 75, 93 and 44 per cent, respectively (Miankang et al 1997). By 2010, these emissions are estimated to increase further to 94, 98 and 75 per cent, respectively.

In Bangkok, Jakarta and Kuala Lumpur, the annual costs from dust and lead pollution are estimated at US$5 billion, or about 10 per cent of combined city income (World Bank 1996). Air pollution also pushes up the incidence and severity of respiratory-related diseases and cardiovascular
disease, particularly amongst children and the elderly (see Box 7.1).

Cities in the more developed nations of the region have recorded improvements in ambient air quality in recent years. In Seoul, for example, sulphur dioxide (SO₂) pollution has fallen from a peak of 0.094 ppm in 1980 to 0.008 ppm in 1998 (Green Korea). These improved levels of pollutants are in line with a number of other cities in high-income countries, including Tokyo, Osaka, Melbourne and Sydney, although the cities of developing countries, such as Shenyang, New Delhi, Tehran and Jakarta, invariably exceed WHO Guidelines on concentrations of particulates and sulphur dioxide.

In addition to particulates and SO₂, nitrogen oxides (NOₓ) are increasingly being recognized as a persistent and unhealthy component of urban living, even in the cities of developed countries. In the Republic of Korea, whilst levels of sulphur dioxide and total suspended particulates (TSP) have been declining, slight increases in concentration of other pollutants such as nitrogen oxides, ozone and carbon dioxide have been recorded. Air quality in Singapore has also significantly improved with the adoption of various strategies to prevent air pollution at source (Government of Singapore 1997). In particular, several countries of the region are now promoting the use of unleaded petrol.

2. Water Pollution

In many cities in the region’s developing countries, the principal water bodies have become heavily polluted with domestic sewage, industrial effluents, dumped chemicals and solid wastes. As many of these water bodies are also relied upon as a source of domestic and industrial water, the available of clean, safe potable water and uncontaminated process water has become a major challenge to many city authorities (see Chapter 4).

The principle rivers flowing through Karachi, Lahore, Kabul and Peshawar are all heavily polluted, as is the Chao Phraya and numerous klongs (canals) in Bangkok, the Pasig and Tenajeros-Tullahan Rivers in Metro Manila, and the Ganges in India. Hong Kong, China’s Victoria Harbour has also become heavily polluted due to daily dumping of 1.5 million tonnes of untreated sewage (EPD-Hong Kong 1999), whilst the Beira Lake in central Colombo is currently undergoing a massive clean-up operation after decades of receiving untreated industrial effluents and raw sewage. In People’s Republic of China, organic pollutants have been the main cause of

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**Box 7.1 Costs of Urban Air Pollution**

The rapid economic growth of Bangkok, Thailand, generated levels of pollutants and traffic congestion that carry significant costs in terms of both health and productivity.

A recent World Bank study identified air pollution from particulates and lead, surface water pollution due to micro-biological contamination, and traffic congestion as Bangkok’s most serious urban environmental problems, and indicated that even moderate reductions in air pollution and congestion could provide significant benefits. Reducing ambient concentrations of key pollutants by 20 per cent from current levels, for example, would provide health benefits estimated at between $400 million and $1.6 billion for particulates and between $300 million and $1.5 billion for lead. For congestion, the study estimated that a 10 per cent reduction in peak-hour trips would provide benefits of about $400 million annually.

Growth in air pollutants displayed an alarming situation both for particulates and for lead. From 1983 to 1992, concentrations of particulates were up at all six monitoring stations in Bangkok; annual standards were violated at every station in every year since 1988. The World Bank study found that the Bangkok economy operates quite efficiently and that there are therefore few opportunities for “win-win” initiatives that would improve environmental quality without slowing economic growth. There are nevertheless some cost-effective initiatives that deal with the highest-priority problems.

In the area of energy-related air pollution, the study recommended managing demand and imposing emissions standards and taxes. Demand-side management initiatives include the use of energy-efficient lighting and appliances for residential and commercial users, improved building designs, and the use of more energy-efficient motors and production processes in the industrial sector. One way to reduce particulate emissions was identified as the development of incentives to reduce the use of lignite, a fuel that emits more particulates and sulphur dioxide than hard coal or fuel oil. Emissions standards that require new power plants to be fitted with low-sulphur control or combustion technologies and precipitators or a switch to hard coal (instead of ignite) and an increase in taxes on lignite also would be cost effective.

Air pollution should not only be viewed in economic terms as the costs to human health, but also include the issues of quality of life, suffering and death. Air pollution problems impact disproportionately on the poor and marginalized sectors of society, particularly children and the elderly who face the highest risk. Indeed, one of the region’s highest causes of child fatality is respiratory disease caused through exposure to both indoor and outdoor pollutants.

*Source:* World Bank 1996
pollution in rivers passing through urban areas, especially in the northern part of the country (Government of China 1997). In Republic of Korea, although overall water quality in the rivers recovered slightly in 1996, some points along Nakdong and Youngsan rivers are highly polluted (Government of Korea 1997). Most rivers in Nepal’s urban areas have also been polluted and their waters are now unfit for human use (Government of Nepal 1998).

In the developing countries of the region, unsafe water is responsible for a large percentage of diseases and a significant proportion of mortality (AMCB Bulletin 1996). Fifteen out of 1 000 children born in the developing countries die before the age of five from diarrhoea caused by drinking polluted water. The microbial diseases endemic to the poorer parts of many cities in the developing countries cost billions of dollars each year in terms of lost lives and poor health. In Jakarta alone, the cost of impaired health from unsafe drinking water is estimated at US$300 million a year (World Bank 1996).

3. Noise Pollution

Urban noise is becoming an issue of increasing concern to municipal authorities and residents in many of the region’s cities. The extent to which a person is disturbed by a specific noise level varies and is influenced by a range of factors, including the individual’s levels of tolerance, the cultural and socio-economic context and the frequency and persistence of a particular noise source. However, standard indices [dB(A)] have been developed for the measurement of sound power levels and these are typically employed as a numerical guide to determining the acceptability of noise.

Few cities in the region routinely measure urban noise levels, primarily due to resourcing constraints and the prioritization of air and water pollution. Where studies have been undertaken, however, the primary sources of urban noise have been identified as motor vehicles, aircraft, railways, construction activities, industrial activities and a range of neighbourhood activities and sources. Of these, traffic noise is often identified as the principle source of noise disturbance, such as in Hong Kong, China, where it is estimated that over one million people are living with unacceptably high levels of noise, primarily from road traffic (EPD-Hong Kong 1999). A similar number of urban residents in Australia live in areas that rank as “acoustically unacceptable” when assessed against OECD standards (Paboon et al 1994). In People’s Republic of China, the measurement of traffic noise has indicated an average of 71 dB(A), which is well above international standards of acceptability (Government of China 1997). In summary, however, the lack of robust data for many urban areas in the region precludes an assessment of the extent of noise pollution throughout the region, although the limited data that are available would seem to indicate that the problem is widespread.

Some highly urbanized countries have embarked upon comprehensive programmes to monitor and control noise pollution. For example, in Hong Kong, China, a range of strategies and regulatory mechanisms have been used to reduce noise pollution, including the allocation of significant resources for noise control enforcement, the introduction of requirements for less noisy construction equipment, the strict regulation of out-of-hours construction activities and, in an effort to control traffic noise, the re-paving of roads and the construction of noise barriers alongside highways and surface railways (Box 7.2). Similar control mechanisms have also been adopted in Singapore, whilst in other cities measures have been adopted in specific locations to counter acute noise problems (Best Practices Data Base: Weihai 1999).

C. Shelter and Dwellings

There are two major challenges associated with the provision of adequate dwellings to the residents of the region’s cities: the ever-increasing backlog in housing provision; and the inadequacy of utilities and infrastructure including water supply, sanitation and waste disposal. The lack of purpose-built housing or supporting infrastructure impacts directly upon the urban poor, who respond by encroaching on unused land and constructing temporary shelters, which over time have grown into the seemingly permanent shanties and squatter towns that are found in many of the region’s cities.

1. Slums and Squatter Settlements

The squatter settlements of the Asian and Pacific Region are typically characterized by temporary structures and the absence or severe lack of basic infrastructures and services such as water supply, sewerage, drainage, roads, healthcare and education. The dwellings in these areas are generally made of discarded materials, such as used wooden planks, plastic, corrugated metal, asbestos sheets and cardboard. The population density of the settlements is typically high and inadequate water supply and sanitary facilities result in high incidences of disease.

In contrast to the illegal occupation of land by squatter communities, slum dwellers have legal access to their dwellings through formal ownership or through the payment of rent. However, rents in the region continue to rise faster than the average income and the provision of legally established low cost housing is becoming increasingly constrained.
by the entry of larger, commercial housing developers and the increasingly complex administrative mechanisms introduced to regulate the market. The commercialization of land and institutionalization of the housing provision sector have left slum dwellers and squatters with fewer opportunities to improve their situation. Unscrupulous developers have also increasingly bypassed the planning and administrative systems such that, in some urban areas, it is estimated that 70-95 per cent of new housing is technically outside the law (O’Meara 1999).

Estimates for the proportion of the population that inhabit squatter settlements in Mumbai, Delhi, Jakarta, Istanbul and Metro Manila range from 15 to over 50 per cent (Fernandes and Varley 1996; Habitat 1996). In Dhaka, about half of the city’s population has been estimated as living in slums and squatter settlements with a population density of over 2 500 persons per ha.

Within the low-cost rental sector a range of housing is provided including inner city tenements, houses and apartments with the cost of rental being

Box 7.2 Urban Environmental Protection: The Case of Hong Kong, China

Hong Kong, China’s urban areas are besieged with numerous environmental problems such as air, water and noise pollution, and high accumulation of waste. To tackle these problems, the Government has undertaken various environmental protection measures ranging from legislation and regulatory control to implementation of numerous programmes and services. The ultimate responsibility rests with the Environmental Protection Department (EPD) which implements pollution prevention and control measures and help formulate environment-related policies, including planning of Hong Kong, China’s sewage and waste management programmes.

The backbone of environmental protection and control are the strategic environmental assessments that have been increasingly used in land-use development and sectoral planning and appropriate studies are integrated in the formulation of district plans. All designated projects must follow the statutory environmental impact assessment (EIA) process and carry out mitigation measures or other actions recommended. Appropriate legislation is also in place governing air, water, waste and noise pollution. Air pollution is controlled through the Air Pollution Control Ordinance, which was extended in 1998 to tighten emission standards for diesel cars and light duty vehicles other than taxis. The Ozone Layer Ordinance bans the import and manufacture of substances that deplete the ozone layer and enables Hong Kong, China to meet its obligations under the 1987 Montreal Protocol on the issue. Water pollution is controlled through Water Pollution Control Ordinance, which manages discharges through a licensing system. The Dumping at Sea Ordinance, which enables the country to fulfil its obligations under the London Convention, prevents dumping of waste into the marine environment. Pollution caused by livestock waste is controlled under the Waste Disposal Ordinance, which also covers the import and export of waste. Shipments of hazardous waste from developed countries to Hong Kong, China were banned in 1998. The 1997-amended Noise Control Ordinance tightened control of percussive piling noise as well as vehicle burglar alarms.

Alongside legislation, a number of programmes and services have been introduced to combat pollution problems, with special emphasis on waste. Three strategic landfills were built, a Chemical Waste Treatment Centre on Tsing Yi Island began its operation, and a Waste Reduction Plan, which aims to reduce waste through incineration, recycling and other measures, was unveiled. The Strategic Sewage Disposal Scheme aims to collect and treat the sewage discharged at Victoria Harbour via an outfall off East Lamma by 2008. Other initiatives on waste include the clearing up of 13 major blackspots in the New Territories and extending services at several refuse transfer stations to the private sector.

A one-year trial of liquefied petroleum gas taxis was successfully completed in 1998 and it is planned that beginning year 2000, all taxis will run on the gas. Tighter emission standards for new light duty diesel vehicles were introduced and a more effective test for smoky vehicles was implemented. In 1998, around 380 000 people exposed to heavy noise from aircraft got relief when the airport was transferred from the highly populated Kowloon to Chek Lap Kok. A programme to phase out noisy diesel, steam and pneumatic hammers has been completed. Technologies for quieter surfaces for low-speed roads and more silent equipment for piling and construction were also tested.

Community awareness and participation is encouraged through the Green Living Campaign, under which a Waste Recycling Competition is undertaken. Secondary and primary schools are provided with environmental education packages and environmental programmes are extended to universities. The territory also celebrates World Environment Day and Environmental Protection Festival, during which most of the talks and workshops are organized for various sectors of the community. Cross-border cooperation continues through the Hong Kong-Guangdong Environmental Liaison Group which at present, concentrates on addressing pollution problems in Deep Bay and conserving Mirs Bay.

The package of actions including strategic and regulatory planning supported by appropriate legislation, promotion of cleaner technology and community awareness and participation have enabled Hong Kong, China not only in cleaning its environment but also safeguarding it from further deterioration.

Source: EPD-Hong Kong 1999
influenced by the standard property market factors of, among other things, location, size, physical conditions and forms of tenure. However, at the low cost end of the market, much of the property is in poor physical condition due a lack of regular maintenance or repair. Typically located in the older sections of the cities, these properties are characterized by a low standard of infrastructure and high person-to-floor space ratios.

Various studies have documented the scale and range of housing sub-markets within cities, particularly those used by low-income groups. For instance, in Dhaka, the major housing sub-markets where the poorest two-thirds of the population live are: squatter settlements; refugee rehabilitation colonies and squatter resettlement camps; ‘bastis’ (cheap rental accommodation in one or two-storey buildings); inner city tenement housing; and employee housing (including accommodation provided by government agencies for some of their staff and accommodation provided by middle or upper income households for servants). Aside from these, about three per cent of the city’s poor live in other accommodation including, for example, boats, vehicles or multiple occupancy rooms that are widely used by single women shift workers.

Some countries, including Indonesia and Pakistan, have managed to integrate most illegal settlements into the wider city by, for example, introducing tenure legalization. Elsewhere, however, the adoption of such pragmatic approaches has been limited and in most of the large cities in the developing countries, little or no action has been taken to resolve the issue of illegal settlements (Durand-Lasserve and Clevc 1996). As squatter settlements are typically established on unused, marginal land, many are to clean drinking water and that 50 per cent lack adequate toilet facilities (Planet Earth 1999). The level of provision with respect to solid waste collection and disposal, transportation and other infrastructure is often much worse.

(a) Water Supply

The declaration by the United Nations of the 1980s as the International Drinking Water Supply and Sanitation Decade aimed to focus attention on the improvement and expansion of water supply, but, as indicated in Figure 7.5, many people in the developing countries of the region still do not have access to a safe and reliable supply of water (AMCB Bulletin 1996; UNCHS 1996; Planet Earth 1999). Whilst the extent of water supply provision varies across the region (see Chapter 4), even within different urban areas of the same country significant differences in the level of supply occur. For example, in Pakistan availability of piped water ranges from 35 per cent in Faislabad to 92 per cent in Karachi, whilst in Thailand, it varies from 78 per cent in Bangkok to less than 10 per cent in Nakhon Si Thammarat. Among the megacities of the region, only Seoul and Shanghai have 100 per cent water service coverage with 24 hours of water supply (ADB 1996). Most megacities have 65-83 per cent water service provision, although the daily duration of water supply varies from 10 to 19 hours daily, except for Dhaka and Karachi where water is supplied for only 6 and 4 hours, respectively.

A major issue in urban water supply is the high rates of unaccounted for water, due to leakages and illegal connections. Rates of unaccounted for water are particularly high in the cities of Dhaka, Hanoi, Mandalay, Metro Manila, Phnom Penh, Calcutta and Apia (Figure 7.6).

Studies have also shown that the reduction of water lost during transmission enables the servicing of a larger number of people at a lower per capita cost, when compared to the costs of providing new water supply capacity. In response, a number of cities have already undertaken actions to reduce losses. For example, the Metro Manila’s Metropolitan Waterworks and Sewerage System (MWSS) has already begun repairing and replacing aged and broken water distribution lines in the city, testing and replacing metres and removing illegal connections to reduce the quantities of non-revenue water (ADB 1996). Improvements in the security of water supply systems have been such that cities such as Jakarta, Metro Manila and Bangkok, all of which

Figure 7.5 Urban Population without Access to Safe Water Supply in Selected Countries of Asia and the Pacific

Source: 1. ADB 1997b
2. UNDP 1997
3. UNICEF 1998
were heavily reliant on groundwater extraction, are now drawing less than five per cent of their water supply from underground aquifers (UNCHS 1996).

(b) Sanitation

The provision of wastewater and sewerage infrastructure is also very poor in the cities of the low and middle income countries of the region, with over a third of all city residents still lacking adequate sanitation services (AMCB Bulletin 1996). In total, only some 10 per cent of the region’s population is connected to public sewers, with the remainder either without facilities at all, or served by septic tanks or illegal connections to stormwater drainage systems and open water bodies.

In response, in recent years the provision of sanitation infrastructure has been the focus of considerable multi-lateral and bi-lateral investment and many urban centres are in the process of improving their wastewater and sewerage facilities. Non-traditional approaches using natural biological processes and appropriate technology are also being increasingly promoted. For example, an approach has been adopted in Fiji whereby secondary effluent is dispersed through mangrove areas as an effective means of filtering nutrients and avoiding eutrophication in the receiving water bodies. In Central Asia, Uzbekistan is planning a sewerage system that will provide 60 per cent urban coverage by the year 2005 as well providing 100 per cent access to clean drinking water.

Amongst the countries of the region, People’s Republic of China has the highest numbers of people without access to adequate sanitation, followed by India (Figure 7.7), although, relative to the total urban population, Afghanistan, Myanmar, Viet Nam and Bhutan have a significantly high proportion (>50 per cent) of urban population without access.

In the absence of basic sanitation infrastructure, much of the untreated wastewater and raw sewage is discharged directly into the lakes, rivers, streams, canals, gullies and ditches of the region’s urban areas. It is estimated that over one million tonnes of sewage is produced daily in the cities of the region and that less than two per cent of this quantity is adequately treated before being discharged into watercourses (UNEP 1997).

(c) Transport

In many cases, the expansion of the cities in the Asian and Pacific Region has occurred with little or no development planning or strategic overview. As a consequence, the provision of transportation infrastructure has lagged far behind the development
process and the subsequent provision of road or rail networks has had to be accommodated within an existing urban structure. The greater capital investment required to develop rail infrastructure has delivered a preference for road-based forms of transportation, with consequential impacts associated with congestion, longer and inefficient journey times, less efficient fuel consumption and greater levels of noise and air pollution.

Although in recent years, primary road improvements have been undertaken or planned in most cities of the region, few cities have well-integrated primary, secondary and tertiary road systems. In the cities of the high income countries, road and rail developments are constrained by the effects of land price speculation that often leads to prohibitive costs for the provision of transport infrastructure. For example, by 1987, land prices had become so high in Tokyo that the cost of a seven kilometre road connecting the city centre to a new urban satellite would have been over one trillion yen, 95 per cent of which was for real estate acquisition (Douglas 1989).

The impact of poor transport planning manifests itself in the evident indicators of urban dysfunction particularly severe traffic congestion with uncontrolled mixes of traffic types, long journey times, lack of traffic management, accidents, poor environmental conditions and high costs for the movement of goods.

The transport challenge for the developing nations of the region is to improve the mobility of urban residents while enhancing the efficiency of transportation systems. In cities such as Singapore, Hong Kong, China, Tokyo, Sydney, Kuala Lumpur and Bangkok, light rail, tramway or mass transit systems have been developed to alleviate pressures on the road systems and to provide an opportunity to re-appraise aspects of the city’s transportation system. The second Railway Development Study (Hong Kong, China, Government 1999) and third Comprehensive Transportation Study (Hong Kong, China, Government 1999) have each identified a preference for rail-based strategies in the future planning of Hong Kong, China’s transportation system, whilst the introduction of measures to curb road traffic in city centres has been considered in a number of cities.

However, the development of alternatives to road transport is not a short or medium term option for many of the cities of the region, due to the capital investment required and, in some cases, due to the political difficulties associated with seeking to counter the current trend toward private vehicle ownership.

Most of the growth in motor vehicle fleets in the developing countries is concentrated in large urban areas. For instance, in Iran (the Islamic Republic of), the Republic of Korea and Thailand, about half of the countries’ motor vehicles are in the capital city. In Shanghai, the number of cars doubled between 1985 and 1990 and, in recent years, has exceeded half a million (Miankang et al 1997).

The increase in motor vehicles in the region’s urban centres has not been matched by investment in infrastructure and many cities suffer persistent traffic congestion. It has been estimated that congestion in Bangkok costs between US$272 million and over US$1 billion per year (UNEP 1997) and it is estimated that drivers spend, on average, 44 full days a year sitting in traffic jams. Average travel speed in the centre of Bangkok during peak hours is about 12 km/hr (World Resource Institute 1997). The inefficiencies associated with slow moving urban traffic also have implications for economic productivity; the link between traffic congestion and economic performance in key Asian cities is illustrated in Figure 7.8.

As a consequence, the number of passenger cars in many of the more prosperous Asian and Pacific cities, has tripled or even quadrupled over the past 10-15 years. In Bangkok, for example, the number of road vehicles grew more than sevenfold between 1970 and 1990 and, whilst the economic crisis of 1997-98 led to a slow down in this trend, for each year of the last decade some 300 000 new vehicles were added to the streets of Bangkok (UNEP 1997). In People’s Republic of China, it is projected that by 2015, there will be 30 million trucks, and 100 million cars (Livernash 1995).

Figure 7.8 Annual Cost of Time Delay (in US$ million) in Some Asian Cities Due to Traffic Jams

<table>
<thead>
<tr>
<th>City</th>
<th>Annual Cost (US$ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangkok</td>
<td>272</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>100</td>
</tr>
<tr>
<td>Jakarta</td>
<td>30</td>
</tr>
<tr>
<td>Kuala Lumpur</td>
<td>15</td>
</tr>
<tr>
<td>Manila</td>
<td>5</td>
</tr>
<tr>
<td>Seoul</td>
<td>20</td>
</tr>
<tr>
<td>Singapore</td>
<td>300</td>
</tr>
</tbody>
</table>

Source: WRI 1997
Note: Bar shows cost of time delay in million US$
In many cities of the low and middle income countries, the growth in the vehicle fleet results primarily from increases in the numbers of motorized two-wheel and three-wheel vehicles, which are more affordable for large segments of the population and often serve as a stepping-stone to car ownership. In Thailand, Malaysia and Indonesia, for instance, two- and three-wheelers make up over half of all motor vehicles. The number of two- and three-wheel vehicles is expected to grow most rapidly in People’s Republic of China, India and in other densely populated low-income countries. In People’s Republic of China, it is projected that there will be 70 million motorcycles by 2015. Production of motorcycle and cars in India is also increasing by 20 per cent annually, outstripping that for buses which is growing at three per cent per year (Livernash 1995). In Nepal, the number of registered two-wheelers in 1998 was over 100,000, with more than half of these concentrated in Kathmandu.

In many cities of the region, alternatives to road-based forms of transportation are limited. Rail infrastructure, where it exists, is often run down and starved of available investment, which is invariably directed toward expanding the road network. A recent study (EPD 2000) analysed the environmental and social benefits of rail over road-based forms of transportation and found that rail was preferred under each of the comparative assessment criteria, including levels of air and noise pollution, impacts to existing landuses and implications for societal and passenger risk. As stated above, the provision of new or improved railway infrastructure currently lies outside the financial and political reach of many of the region’s municipal authorities; in the interim, the rise in motor vehicles, and the associated environmental, economic and social disbenefits, is set to continue.

**Policies and Programmes for Urban Environmental Management**

A. National Actions

In the Asian and Pacific Region, experience has shown that the management of urban areas by central government has simply not been effective (Stubbs 1996), whilst a reliance upon the public sector to provide environmental services (financed by taxation) has frequently resulted in unsatisfactory standards of delivery. In response, several governments in the region have embarked on programmes to reform their urban environmental management policies and promote decentralized and participatory development. This has enabled the mobilization of resources for the provision of improved urban infrastructure at a cost that imposes a lesser burden on scarce governmental finances. In general, urban management policies in countries of Asia and the Pacific have concentrated around five principal areas: i) enhancing urban management through decentralization and institutional and capacity strengthening; (ii) improving financial administration and mechanisms; iii) improving housing and shelter stocks; iv) funding urban infrastructure improvements, such as water supply, sanitation, solid waste management, transport, health, parks and playground, etc.; and v) enacting and improving legislation and regulatory standards for urban environmental management.

1. **Enhancing Urban Environmental Management**

A number of countries in the region have strengthened local administration through the devolution of functions and responsibilities. In the Philippines, one of the most influential initiatives in this direction was the implementation of the Local Government Code of 1991, under which local governments were given increased autonomy, more responsibilities for provision of services and greater access to financial resources (ADB 1996). Following the code’s enactment, Metro Manila’s local government has substantially increased its development activities. In the Republic of Korea, environmental management has also been entrusted to local government, especially the management of pollutant-discharging industries; the regulation of waste collection, transportation and recycling; the reduction of noise and vibration; and the control of vehicle emissions (Whang 1999).

As emphasized in the Habitat II Report (see Box 7.3), policy approaches aimed at effective decentralization are needed to provide a framework and a new model for addressing human settlement development issues. Such decentralization should strengthen democracy and provide local authorities with the institutional structures that are accessible to local communities, with the legitimacy to voice the specific concerns and aspiration of their citizens. However, evidence shows that efforts within cities themselves also help in decentralization and the promotion of good governance. The case of the Japanese city of Kitakyushu (see Box 7.4) provides a good example of the benefits of decentralization in providing effective remedies to counter metropolitan pollution (Kojima, et al 1995).

Although urban governments are gradually increasing their powers in the Republic of Korea, People’s Republic of China, and the Philippines, in most countries of the region national authorities remain responsible for establishing environmental
policy and for developing appropriate legislation and standards for its implementation at the local government level. In recent years, provincial and state governments have also been increasingly entrusted with carrying out urban environmental management, requiring considerable investment in planning, institutional strengthening, capacity-building and community participation. However, few local and city authorities, particularly in the developing countries, are granted the financial resources or provided the revenue raising powers necessary to effectively implement and maintain environmental management activities. The process of decentralization is thus severely constrained by a lack of institutional capacity among local governments, limited resource mobilization at the local level and limited access to long-term financing for investment programmes (World Bank 1998).

The concept of self-government in local affairs has long been in existence in some countries, for example, in India where the Collector remains the dominant figure in local decision-making and often holds sway over village authorities ('panchayats') and district boards (Turner and Hulme 1997), whilst in Thailand and Indonesia the adoption of a “mixed authority approach” has effectively enabled central government to retain control while creating an impression of some local autonomy and participation. Although the process of decentralization and devolution is slow it is, nevertheless taking place, for example, in Pakistan, where the devolution of the responsibility for housing and facilities from federal to local governments, and from public to private and community-based organizations is underway (Qadeer 1996). In addition, Papua New Guinea has embarked on a radical decentralization programme, although the success of the process has been severely hampered by the initial lack of administrative capacity, within existing local government.

Another common barrier to effective decentralization is the conflicts of interest both within and between local authorities regarding the benefits of economic development versus environmental protection. With little or no legal accountability, this has led to serious consequences for the environment. For example, in the Republic of Korea local governments seem to have a tendency to favour rapid development over sustainable development (Whang 1999).

2. Improving Financial Administration and Mechanisms

It has been estimated (Hardoy, Mitlin & Satterthwaite 1992), that city governments in low and middle income countries often have one hundredth or (in the most extreme cases) one thousandth of the revenue per capita available to most cities or municipal governments of the high income, developed countries and yet their range of responsibilities are broadly comparable.

The implications of the disproportionately high costs imposed by the subsidization of urban services are becoming all too clear within the region. In Dhaka, Hyderabad and Shenyang, for example, it is estimated that the future costs of obtaining water supplies will be three times the current costs, and the prohibitive costs associated with improving solid waste management in Colombo have prevented the implementation of planned actions as the municipal authority examines different financing options.

Box 7.3 Policy Objectives of the Habitat II Agenda

i) mobilize private and collective actors from all members of the society including informal sector in housing and urban development, by adopting special measures to strengthen people’s participation in decision making and to improve the general level of education and training,

ii) mobilize local resources for the production of housing infrastructure and services at a sustainable cost, including cost recovery, public-private partnerships, elimination of legal barriers, setting up of financial and credit mechanisms for the whole spectrum of housing needs, promotion of the use of local building materials and application of low-cost technologies,

iii) changes in and revision of inappropriate standards, property regulations, land registration, legalization and recognition of informal settlement,

iv) increase the capacity of local authorities by providing useable and timely information, improve management of services and infrastructure, improve research and local planning, promote inter- and intra-urban networks of actors, improve monitoring and assessment of conditions and trends, and help mitigate the potential effects of natural and human-made disasters, and

v) strengthen the policy making and enabling role of central governments by promoting and integrating national urbanization policies with macro-economic policy; promote political, administrative and fiscal decentralization; promote the role of governments as facilitators; and reform subsidy systems.

Source: UNCHS 1996
Nevertheless, the range of financing options is expanding with the region-wide trend of providing local governments with greater discretion in the levying of taxes, fees and service charges. In recent years, for instance, Metro Manila has awarded the city’s water supply and sewerage services to private concession contractors, whilst Singapore has shown that charging road tolls can work and that the advantages are multiplied when licensing entry into the city’s central business district is coupled with an efficient MRT system. A range of pollution fees, fuel taxes and elevated vehicle taxes are all being examined as a means of targeting traffic congestion in the urban areas of the region.

Box 7.4 Environmental Responsibilities in Local Government: The Case of Kitakyushu

The Government of Japan is composed of a three-tiered structure, operating at the national, prefectural and municipal levels. Central Government policies are also implemented through this structure. The Central Government, prefectures and municipalities, depending on their characteristics hold various powers, authorities and licensing rights. However, unlike the general municipalities, large cities have a special autonomous system. At present, 12 cities are entitled to this status including Kitakyushu.

Kitakyushu was born from the union of five neighbouring cities in 1963, and is a city that has developed as one of Japan’s prominently heavy chemical industrial areas. The well known “seven coloured smoke” which formerly symbolized prosperity, rich in dust and sulphur dioxide, was emitted from many large iron and steel, chemical, ceramics, and electric power corporations in Kitakyushu, and has long been a major source of pollution. Water pollution had also started even before the Second World War. The post-war reconstruction period, followed by high level economic growth during 1955-1965, further increased air and water pollution. Many residents in districts surrounded by large factories involved in ceramics, chemicals, iron and steel, etc. suffered from large quantities of dust, smoke and offensive odours. Moreover, in Dokai Bay, fish catches dwindled to nothing from 1950 onward. This was caused by the large quantities of industrial wastewater and sewage that flowed into the bay. Alarmed by the worsening situation, the residents raised demands for improvements to the local industries and submitted petitions to the administration.

In subsequent government responses, various policies were devised in Kitakyushu, including monitoring air pollution and institutional development, which lead to the establishment of a pollution administration organization and a Pollution Control Council in the city. In 1967, the first pollution control agreement was concluded between the city government and the industrial corporations. Following the enactment of pollution-related laws by the “Pollution Diet” at the end of 1970, the pollution countermeasures of the city were markedly reinforced, and were implemented in a comprehensive, and systematic manner.

The history of pollution countermeasures in Kitakyushu is characterized by four significant policy measures. Firstly there was a transfer of the authority of the prefectural governor to the city for the purposes of issuing “smog alarms”. Throughout Japan, this transfer of authority was made to Kitakyushu alone, and was permitted in view of its distance from the city of Fukuoka, which was the seat of prefectural government. Secondly, a cooperative system of industry and government was initiated, strongly supported by the business community. At the city level, the obligation of the co-operative local self-governing body was to seek industrial development while protecting the health of the residents, and a comprehensive administrative management was required which did not lean toward selection of either “industrial development” or “environmental protection” as one of two alternatives. Thirdly, pollution prevention technologies were introduced by the corporations centred on cleaner production (CP), with pollutant removal equipment playing a supplementary role. For example, in the iron and steel industry, this included the development and introduction of the pre-combustion desulphurization system for coke oven gas, and of the so-called OG system, which conducted dust removal by a non-combustion system for converter gas. Lastly, the adoption of Japanese anti-pollution policy started promoting a “non-economic approach”, for instance, the sludge dredging project of Dokai Bay. This project was not conducted on economic principles but on a crisis/risk-management policy designed to cope with future dangers and the actual sense of crisis among local citizenry.

The smog alarm issuance authority which was given to Kitakyushu in 1970, raised the consciousness of both the local administration and a wide range of local citizenry, including the corporations, resulting in the heightened promotion of local pollution prevention initiatives. Meanwhile, the existence and effective operation of a co-operative system of government and industry became extremely effective with regard to industrial pollution prevention. Consultative organs were formed to allow for a full exchange of views and discussions, a process that guaranteed implementation of the concluded pollution control agreements without enacting laws or issuing ordinances accompanied by strict regulations. Pollutant emitting corporations adopted voluntary countermeasures such as improvement of the manufacturing equipment and processes, as well as raising of productivity while striving for resource and energy conservation. The use of cleaner production (CP) technology reduced consumption of raw materials and fuels and lessened generation of by-products that constituted sources of pollution. Finally, the sludge dredging project in Dokai Bay allowed for rehabilitation of the bay and restored the safety of products taken from the bay.

Kitakyushu’s experience indicates that appropriate planning and adoption of preventive measures can solve even severe pollution problems in a highly industrialized city with the cooperation of stakeholders and city government.

Source: MEIP Report, no date
Property and other land-based taxes remain the mainstay of many local governments, even at relatively low levels of collection. However, such taxes need to be better structured to fully capture the potential revenues which exist, and need to be accompanied by more efficient systems of administration. For example, in Mumbai, which has some of the world’s highest property prices, the local government is unable to share in the profits accruing to landlords because of weaknesses in the property tax system. Whilst some progress is being made in a number of cities, for example through World Bank assistance in Dhaka and Jakarta, in most cities there are considerable institutional, administrative and political barriers to reform.

In many of the urban areas of the region, the current mix of locally based revenue sources are inadequate to meet the demands of rapid urban development (Stubbs 1996). The mix includes under-utilization of property taxes and user charges, and the extensive use of cross-subsidies, which often distorts policies to support the poor. User charges are given little emphasis in the region’s urban centres, despite their advantages in raising revenues in a fair and equitable manner and their utility in guiding investment decisions. Learning from experience, various cities in the region have utilized commercial capital markets for basic capital investment, which has provided the additional advantage of enabling leverage to be gained in raising funding from conventional public sources.

3. Improving Housing and Shelter Stocks

During the past two decades, major policy changes have occurred with regard to the role of government in the provision of housing. Most governments in Asia and the Pacific have moved away from the role of housing developer towards that of facilitators, shifting the emphasis of housing provision from the public to private sector (UNHCS 1997). Indeed, many governments now limit their direct involvement to the provision of low-cost housing.

Cognisant of the urgent need to re-focus its housing policies, many countries of Asia and the Pacific are adopting “enabling” policies to support individual households in providing for their own shelter (UMP 1996). Measures such as deregulation, changes in credit mechanisms, and lowering of housing and subdivision standards to promote affordability have captured the interest of private housing developers. Moreover, urban renewal policies now focus both on the physical aspects of neighbourhoods as well as social aspects such as employment, education and health (UNHCS 1997).

The importance of mobilising financial resources has also been given emphasis through the privatization of housing-finance institutions; encouraging commercial banks and private developers to invest in the low-cost housing sector with bank quotas, subsidized loans and tax exemption; the promotion of housing mortgages and the secondary mortgage market; and the provision of encouragement and support for community-based finance systems and housing co-operatives (ESCAP 1996).

In India, the National Slum Development Programme is an important post-Habitat II initiative to offer sustainable housing to the urban poor. Other initiatives include rationalising previously complex legislative requirements, such as the Urban Land Act and rental legislation that affects housing and land markets, and the implementation of Constitutional Amendment Acts to install elected local governments, confer land title or tenurial status to squatter settlements, and facilitate the flow of credit to poorer segments of the housing market.

Three main policy solutions have been adopted in the region to address the problems associated with illegal settlements (Fernandez and Varley 1998). Firstly, the review of legislative provisions, which, for instance, in Turkey led to an official tolerance of illegal settlements followed by periodic “amnesty” regularization; although it was widely acknowledged that this approach, in itself, does not solve the problem of access to infrastructure and services. The second form of policy intervention has sought to promote settlement improvement through the relocation of illegal settlers, thereby releasing land for commercial use. Land vacated by illegal settlers is sold at market prices to real estate developers, businessmen, and other parties from outside the settlement and the proceeds are used to subsidize the installation of services within the relocated settlements. This approach has been adopted in a few countries in the region, including the Philippines and Pakistan. Experience in the Philippines, however, shows that relocated illegal settlers often return to the old settlement or seek a new illegal settlement in a location where employment opportunities are more favourable. The third form of policy intervention seeks the regularization of illegal settlements, including the incorporation of such areas within the formal services and infrastructure systems. Such an approach is prevalent in a large number of countries of the region and has been successful in normalising squatter settlements and providing residents with access to minimum standards of service provision, including drinking water supplies, sanitation and street paving.
4. Funding the Improvement of Community Facilities, Services and Infrastructure

Many cities in the region are currently seeking funds to expand and maintain the infrastructure and services required to support growing populations and increasing economic activity (ESCAP 1996). The principle mechanism that is employed to mobilize the considerable investment needs of the developing world’s cities and towns is through increased reliance on the private sector. Several cities in the region are now privatizing or contracting out the delivery of services such as water, power, solid waste collection and transportation, etc. (World Bank 1996). In addition to the private sector, some success has also been achieved by the countries of the region in the creation of special-purpose agencies able to operate in a market environment, including the water distribution systems in the major cities of Thailand and Indonesia.

In successful public private partnerships, it is recognized that the public and private sectors should have clear and distinctive roles (Stubbs 1996). The public sector takes responsibility for planning, regulation and community protection, whilst the private sector manages the direct implementation and operation of services. In Malaysia, Thailand and the Philippines, for example, the Build-Operate-Transfer (BOT) laws allow private corporations to construct highways and power plants and to operate public sector projects before transferring the assets back to the government, usually after a 20-25 year period (Turner and Hulme 1997). Through these arrangements, governments have secured private sector participation in infrastructure development, whilst reducing the public sector fiscal burden and encouraging the inflow of foreign capital, expertise and technology.

In the Philippines, this approach has been particularly successful in the critical area of under capacity in the power generation sector. However, for other sectors the government has reviewed the BOT law and has sought to offer other options, including Build-Own-Operate, Build-Lease-Transfer, Build-Transfer and Rehabilitate-Own-Operate. The last option was adopted for the Metropolitan Waterworks and Sewerage System (MWSS) (ADB 1996). Whilst the success of such initiatives in the region seems to indicate an increase in private sector involvement in service delivery, it has been recognized that government agencies overseeing the private sector firms need to be strengthened to ensure that these firms are operating in a truly competitive environment (ESCAP 1994). Moreover, governments have to ensure that equity considerations are met, as marketed private firms are seldom motivated to service poorer areas where the potential profits are limited.

In order to ensure that equity and social issues are addressed, over the last few decades, many cities have experimented with the development of neighbourhood or community organizations, which are consulted on the planning of new development, implementation of infrastructure improvement and implementation of tariff or tax increases (ADB 1996). In many countries, programmes are being developed under which community organizations can be responsible for their own infrastructure development, with some notable successes including the delivery of services in sanitation (Karachi), public health (Calcutta) and environmental protection (Metro Manila) (Stubbs 1996). Aside from formal public sector community organizations, informal or private sector community organizations exist, which may participate in urban development. These informal or private sector-led organizations include chambers of commerce and industry, religious associations, and associations of slum dwellers.

5. Enacting and Improving Legislation and Regulatory Standards

A number of countries in the region have developed greater integration in their development and environmental policy making and are able to consider the wider issues of metropolitan scale land management, infrastructure investment, financing mechanisms and governance in an integrated manner. Examples include the Klang Valley Environmental Plan in Malaysia and the Ho Chi Minh City Environmental Planning Project in Viet Nam (Stubbs 1996). In the case of land management, various integrated planning and regulatory systems are now linked to institutional, sectoral investment and fiscal policies within improved urban management systems. Planning and regulatory tools are also being improved, such as the “broad brush”, structure planning approaches used in the JABOTABEK Metropolitan Development Plan, the Metro Manila Capital Investment Folio and the current development of plans in Dhaka. In People’s Republic of China, the Beijing Environmental Pollution Control Targets and Countermeasures was formulated in an effort to improve the environment of the city (Jiachen, 1999), whilst in Changchun City, environmental protection is integrated as part of the overall planning of National Economy and Social Development (Defu 1999). In lieu of traditional zoning procedures, new techniques such as strategic environmental assessment are being adopted, most notably in Hong Kong, China, as a means of integrating potential environmental considerations at the early stages of strategic policy formulation.

One notable example of improved legislation is Japan’s Basic Law on Environment, enacted in 1993,
which integrates the two basic laws on Pollution Prevention and Natural Environment and provides mechanisms for responding to the country’s environmental problems and emphasizes the local, national and global responsibilities of the State, local government, business and citizens (OECC 1996).

Other cities in the region have also enacted appropriate legislation and standards for environmental improvements (see Chapter 7).

B. International and Regional Programmes

International and regional programmes on urban environmental management have generally focussed on providing support to national programmes. A major development in this direction was the organization of the Second United Nation’s on Human Settlements Habitat II held in Istanbul in 1996, which adopted the Habitat Agenda. During the conference, twenty-four countries in the region submitted their national reports with national plans of action outlining priorities for technical cooperation.

The Habitat Agenda provides an operational framework for the implementation of policies and programmes on urban environmental management in the Asian and Pacific Region. Many countries in the region have committed themselves to implementing the Habitat Agenda through local, national and sub-regional plans of action. The Agenda is based mainly on six strategic principles for the implementation of enabling policies for sustainable urban development. These include decentralization, partnership, public participation, capacity building, networking and the use of information and communication technology. The policy objectives of the Habitat II Agenda are presented in Box 7.3.

1. Regional Action Plan on Urbanization

The Ministerial Conference on Urbanization in Asia and the Pacific convened by ESCAP adopted the Regional Action Plan on Urbanization to promote and facilitate economically productive, socially just, environmentally sustainable, politically participatory and culturally vibrant urban areas (ESCAP 1994).

As part of the Regional Action Plan, the Asia-Pacific Urban Forum was established in order to ensure that a regional perspective was maintained and to promote cooperation between national and local urban governments, NGOs, representatives of the formal and informal private sector, the media, academics, research and training institutes and international and regional organizations. Convened once every two years, the Forum has provided a useful mechanism for reviewing on-going regional assistance programmes and their relevance to countries, making these programmes more transparent and demand-driven.

2. Asia-Pacific Initiative 2000

This recently completed project was aimed at capacity building for the sustainable development of urban areas through partnership with private, voluntary and community-based organizations. The programme aimed to support actions that promote improvements in the living conditions of the poor, the empowerment of women, the protection of the environment and the creation of sustainable employment opportunities. Implemented by a partnership of ESCAP, UNCHS and the Metropolitan Environment Improvement Programme (MEIP) of the World Bank, Asia-Pacific 2000 has provided financial and technical support to urban NGOs and NGO coalitions working to strengthen the local resource base of urban poor communities, provided the urban poor with basic affordable environmental services and built the capacity of local community organizations.

3. Land Management Programme (LMP)

The Land Management Programme (LMP) was launched in 1996 as a follow-up to the Habitat II Land Initiative and to capitalize on the various partnership activities which had led to the issuance of the “Global Platform on Access to Land and Security of Tenure as a Condition for Sustainable Shelter and Urban Development: The New Delhi Declaration” (January, 1996). The Habitat II Land Initiative recognized the need to focus on the strategic issues of security of land tenure and enforceable property rights as an essential prerequisite for a nation’s long-term success in developing equitable national land policies and practices in support of economic and social development.

The programme aims to produce and disseminate information on a range of issues including best practices focusing on access to land, security of tenure, informal settlements upgrading and regularization, urban land management and land policy reform. The key clients or client groups served include the governments at national and local level, public/private land and property development organizations, private sector at large including the business and professional sector, community-based organizations, and land owning/using sector. Other clients include the landless, homeless, squatters, informal settlers and the urban poor, including head-of-household women and other vulnerable groups.

4. Local Leadership and Management Training Programme

This programme is being implemented by the UNCHS Training and Capacity-Building Section (TCBS), in partnership with the Government of The Netherlands and a range of local government focussed agencies and organizations. The principal aim of the programme is the improvement of living
and working conditions through the promotion of effective human resource development and institutional capacity-building for management and development of human settlements. This is achieved through three principal components comprising Settlement Management Training, Local Leadership Training and direct support to National and Local Training Institutions. In general, these activities aim to improve effectiveness and efficiency of local government management, enhance and maintain the quality of services provided to citizens, improve the capabilities of elected local government officials and other local leaders, and strengthen the national and local capacity building institutions. The key clients or client groups served are urban management, municipal development and local leadership training institutions; municipal and local governments and their associations; elected and appointed local government officials and other local leaders; and, local development NGOs and CBOs.

5. Localizing Agenda 21: Action Planning for Sustainable Urban Development (LA 21)

The programme aims to localize the Agenda 21 Programme through the enhancement of local sustainable urban planning and management capabilities in a number of selected medium-sized cities worldwide and to support the development and implementation of broad-based action plans for municipal planning and management.

In the Asian and Pacific Region, Vinh City (Viet Nam) has been selected for this programme, although it should be noted that a number of other cities, in People’s Republic of China, Japan, the Republic of Korea and elsewhere in the region, have developed their local Agenda 21 independent of this programme (see Chapter 12).

The localization of Agenda 21 has three main elements: the development of a long-term development vision for the city; the formulation of strategies for implementation and the removal of obstacles, and communication and stakeholder participation in decision making and dispute resolution. Specific areas of focus include urban revitalization, buffer zone development between city and fragile nearby ecosystems, waste management, infrastructure improvement, municipal finance and local economic development.

6. Best Practices and Local Leadership Programme

The Best Practices and Local Leadership Programme (BLP) is a global network of institutions dedicated to the identification and exchange of successful solutions for sustainable development. Between 1996 and 2000, over 700 good and best practices from more than 100 countries have been documented by UNCHS, establishing a unique data set on how enabling principles are being implemented at the local level.

A regional analysis indicates that innovative practices and policy responses are most prevalent in those sectors where the transition from the direct to the enabling approach is most recent. Where globalization is having the strongest impact on people and their communities, e.g., in Asia, the major thrust appears to be on infrastructure development and the reform of local government. The Asian and Pacific countries where best practices have been documented are Australia, People’s Republic of China, India, Pakistan, Philippines and Sri Lanka.

7. Urban Management Programme for Asia and the Pacific (UMPAP)

The Urban Management Programme for Asia and the Pacific provides guidance to national governments on ways in which they can improve the management of urban development in their countries (Kendall, 1997). The programme assists in organising city consultations, providing for stakeholder participation in the implementation of urban management policies and techniques.

Among the programme’s significant achievement are the establishment of the Regional Network of Urban Experts in Asia and the Pacific (URBNET-Asia) with members from Australia, Bangladesh, People’s Republic of China, Hong Kong, China, India, Indonesia, Japan, Korea, Malaysia, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Thailand and Viet Nam, and the establishment of formal partnerships with regional networks of local authorities such as CITYNET and IULA-ASPAC for information exchange as well as technical services for their capacity building and other operational activities.

8. Urban Management Programme-Asia

The Urban Management Programme (UMP) is a global technical cooperation Programme of the United Nations, executed by the United Nations Centre for Human Settlements (UNCHS), with core funding from the United Nations Development Programme (UNDP), and several bilateral agencies. UMP gives advice to local and national governments on ways in which they can improve the management of urban development in their countries. The Programme operates through four regional offices, one of which is in Asia and the Pacific, and a Programme Coordinator at UNCHS (Habitat) headquarters in Nairobi, Kenya. The main focus of the current UMP is to build and strengthen the capacity of governments and other stakeholders to specifically address urban poverty reduction; urban
environmental management and participatory urban governance.

9. **CITYNET**
   The Regional Network of Local Authorities for the Management of Human Settlements (CITYNET) was established to promote the exchange of expertise and experiences among local authorities and NGOs in the cities of the Asian and the Pacific Region. Through technical cooperation at local and grassroots levels, CITYNET's major activities include technical advisory services; training activities and study tours; joint applied research; documentation and dissemination of urban development experiences. A regional data bank on the management of human settlements in Asia and the Pacific is currently being developed.

10. **LOGOTRI**
    LOGOTRI is the network of Local Government Training and Research Institutes in Asia and the Pacific. Its members are both governmental, autonomous and private sector institutions and organizations involved primarily in local government training and research. The network was initiated by the UNESCAP with the objectives of establishing technical cooperation among local government training and research institutes in Asia and the Pacific and to strengthen the institutional and technical capacities of local government training and research institutes. To achieve its objectives, LOGOTRI: organizes advisory services, training workshops, study tours, research studies, documentation and information and staff exchange; develops and maintains a regional information resource centre and issue a newsletter; and organizes any other activities, as may be deemed necessary, from time to time, for the purpose of attaining its objectives.

11. **Other programmes**
    The Safer Cities Programme and the Women and Habitat Programme of the UNCHS are among the other urban environmental programmes being implemented in the region. The Safer Cities Programme aims to address urban violence by developing a range of prevention strategies in consultation with the local authorities. It further aims to undertake a local safety appraisal; set up a dynamic coalition between key agencies and actors from civil societies; strengthen the local authority’s capacity in dealing with crime prevention and delinquency; and building a methodology for crime prevention.
    Meanwhile, the Women and Habitat Programme aims to promote women’s equal participation in urban development planning as well as monitoring other UNCHS programmes, projects and activities to ensure that an appropriate gender perspective is maintained. The mechanisms of the programme include policy formulation and development, capacity building, applied research, development of training materials and networking; these are applied with specific emphasis on poverty alleviation, the promotion of equity and diversity and the recognition of women’s rights.

**CONCLUSION**

The shifting trend from agrarian to industrial economies in the Asian and Pacific Region is being accompanied by high rates of urbanization, the rapid growth in the number of megacities and enhanced primacy.

Despite their potential to offer a better quality of life, the cities in the region are beset by growing problems of environmental deterioration relating to the loss of natural resources, the lack of adequate shelter and dwelling provision, deteriorating ambient air and water quality conditions, an increasing backlog in urban service provision and inadequate infrastructure. These conditions impact directly upon the residents of urban areas in particular the poor, and contribute to an acceleration in the deterioration of the urban environment.

The most urgent actions required relate to the improvement of environmental conditions and the strengthening of overall management capabilities. Despite growing trends towards decentralization, most of the city governments in the region have insufficient resources or capacity to effectively address the range and magnitude of the problems facing them. In terms of resources, city governments in the developing countries of the region have only a fraction of the revenue per capita available to the cities of the developed world, and yet they face similar administrative and management burdens. It is imperative, therefore, that the institutional capabilities of city authorities are enhanced, both in terms of human and financial resources.