Sustainable Cities or Cities that Contribute to Sustainable Development?

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Summary. This paper outlines a framework for assessing the environmental performance of cities in regard to the meeting of sustainable development goals. It also considers how the environmental goals fit with the social, economic and political goals of sustainable development and the kinds of national framework and international context needed to encourage city-based consumers, enterprises and governments to progress towards their achievement. In a final section, it considers the extent to which the recommendations of the Habitat II Conference helped to encourage national governments and city and municipal authorities in this direction.

Introduction

The past ten years have brought examples of considerable innovation among city and municipal authorities in most parts of the world in regard to sustainable development. In Europe and North America, many cities have put in place long-term programmes to improve their environment, reduce resource use and reduce waste (Mega, 1996a; UNCHS, 1996; European Commission, 1994). A growing number of cities have local authorities who have committed themselves to sustainable development goals—as in the European Campaign of Sustainable Cities and Towns—and have shown a greater willingness to share knowledge and experiences with other city authorities (Mega, 1996a; UNCHS, 1996). Certain cities in Latin America have also put in place long-term programmes to address environmental prob-

lems—for example, Curitiba in Brazil (Rabinovitch, 1992) and Ilo in Peru (Díaz *et al.*, 1996)—while in many cities in all regions of the world, there has been considerable innovation by city authorities in addressing environmental problems. There is also a worldwide movement of 'Healthy cities' in which local authorities in more than 1000 cities have sought new ways to work with the many different actors and interests within their boundaries in the promotion of health and prevention of disease (WHO, 1996).

The discussion of sustainable development in regard to cities has also gained greater official recognition. For instance, the terms 'sustainable cities' and 'sustainable human settlements' were much in evidence at Habitat II, the second UN Conference on Human

Settlements (also known as the City Summit) held in Istanbul in June 1996. Despite the disagreements between the different groups represented at the Conference—for instance, between the European Union, the Group of 77 and the US—all government delegations appeared to support the idea of 'sustainable human settlements' or 'sustainable urban development'.

But this apparent unanimity is misleading because there was no clear, agreed definition as to what the terms 'sustainable cities' and 'sustainable human settlements' mean. Such a diverse range of environmental, economic, social, political, demographic, institutional and cultural goals have been said to be part of 'sustainable development' that most governments or international agencies can characterise some of what they do as contributing towards sustainable development. This can include goals whose achievement in one sector or location implies a move away from the achievement of sustainable development goals in another sector or location. For instance, one reason why the environmental quality of wealthy cities can improve is because the consumers and producers they concentrate can import all the goods whose production requires high levels of resource use and usually includes high levels of waste (including serious problems with hazardous wastes), pollution and environmental risk for their workforce (Satterthwaite, 1997).

Governments in the world's wealthiest nations can also support the notion of 'sustainable cities' without admitting that it is consumers and enterprises in their cities that need to make the largest reductions in resource use and waste generation. Most governments in the North also continue to view economic growth as the main means by which unemployment is to be reduced and incomes increased and it is difficult if not impossible to combine these with significant falls in the use of non-renewable resources and the generation of greenhouse gases, unless there is an explicit linking of employment generation with such goals. The simultaneous achievement of the social and environmental goals inherent in the Brundt-land Commission's definition of sustainable development (meeting the needs of the present without compromising the ability of future generations to meet their own needs) implies very different policies to reduce unemployment and increase incomes among those with inadequate incomes—that address more directly the problem than 'trickle-down' from economic growth and that support reduced resource use and waste. And while many national governments may claim that they are promoting sustainable development, few have begun to put in place the fiscal and institutional framework that supports a move towards the achievement of the complete set of sustainable development goals in the urban (and rural) areas within their boundaries (see for instance O'Riordan, 1989; Haughton and Hunter, 1994).

This lack of progress among the nations in 'the North' discourages progress among nations in 'the South'. The fact that 'the South' includes three-quarters of the world's population and a large and growing share of its economic activity and high-level consumers also means a large and growing share in global resource use, waste generation and greenhouse gas emissions. But despite the diversity of nations within 'the South', they can collectively point not only to higher levels of resource use, waste and greenhouse gas emissions per person in the North, but also to much higher historical contributions to these problems. Without a strong commitment by governments in the North to reduce resource use, waste and greenhouse gas emissions, and to support the achievement of sustainable development goals in the South, the governments in the South are reluctant to act. This delays the actions that could make the (often) rapidly urbanising nations' settlement patterns and transport systems less dependent on high levels of private automobile use and their buildings less dependent on high levels of energy for lighting and heating or cooling. As will be discussed in more detail later, it is difficult to adjust buildings, settlement patterns and transport systems that developed during a long period of cheap oil and (generally) growing prosperity to much

lower levels of fossil fuel use. However, in nations which are urbanising rapidly, putting in place the institutional and regulatory framework that encourages energy conservation in all sectors, minimises the need for heating or cooling in buildings and encourages settlement patterns that limit the need for high levels of private automobile use can ensure the development of cities that are more compatible with some of the main sustainable development goals. A framework encouraging efficient use of water within all sectors and promoting the re-use of waste water where appropriate can also considerably reduce the prospect of water scarcity.

The ambiguity as to what 'sustainable cities' or 'sustainable human settlements' means also allows many of the large international agencies to claim that they are the leaders in promoting sustainable cities when, in reality, they have contributed much to the growth of cities where sustainable development goals are not met. For instance, most international agencies give a low priority to meeting directly human needs—for example, in supporting provision of safe and sufficient supplies of water and provision for sanitation, primary education and health care. Most also give a low priority (or allocate nothing) to improving garbage collection and disposal, energy conservation and public transport in cities, despite their importance for the achievement of sustainable development goals.[1]

This paper contends that to progress towards the achievement of sustainable development goals, the environmental performance of cities has to improve not only in terms of improved environmental quality within their boundaries, but also in terms of reducing the transfer of environmental costs to other people, other ecosystems or into the future. This presents considerable institutional difficulties for city and municipal authorities whose official responsibilities are to the citizens within their boundaries. Within a competitive world market, it is difficult for city authorities to reconcile the need to attract or retain new investment with a commitment to the full range of sustainable

development goals, especially those sustainable development goals that raise costs within the city to reduce environmental costs for people outside these cities. This is a subject to which this paper will return, after describing a framework for assessing the environmental performance of cities.

A Framework for Considering the Environmental Performance of Cities

The Difficulties of Comparing Environmental Performance between Diverse Urban Centres

Perhaps the main difficulty facing any researcher or institution intent on comparing the environmental performance of different cities (including those in the North and in the South) is the range of problems that are 'environmental'. For instance, from the perspective of environmental health, cities in the North perform much better for their inhabitants than most cities in the South, as can be seen in the much smaller role of environmental hazards in illness, injury and premature death (WHO, 1996; UNCHS, 1996). But from the perspective of average levels of resource use or waste or greenhouse gas emissions per person, most cities in the South have much lower levels than cities in the North (Hardoy *et al.*, 1992; UNCHS, 1996).

There is also the difficulty of knowing how to judge the environmental performance of cities when the achievement of a high-quality environment in many cities is in part achieved by transferring environmental problems to other people or locations. For instance, sewage and drainage systems that take the sewage and waste water out of the city bring major environmental advantages to city-dwellers and city businesses. However, the disposal of untreated waste water in nearby water bodies usually brings serious environmental and economic costs to others—for instance, through damage to local fisheries or to water bodies that are then unfit for use by communities downstream. The transfer of environmental costs can also be

over much greater distances or into the future.

This suggests the need to distinguish between different kinds of environmental problem when making comparisons between cities, so that like can be compared with like. But there is a danger that this reduces intercity comparisons on environmental performance to those indicators that are easily measured. For instance, it is easier to get information on the concentration of certain air pollutants such as sulphur dioxide in major cities in the South than the proportion of their population with adequate provision for piped water and sanitation or the contribution of motor vehicle accidents to injury and premature death. This means that discussions of sulphur dioxide concentrations probably get more prominence than they deserve within the discussions of environmental hazards in cities, while the inadequacies in provision for water and sanitation and in limiting traffic accidents get insufficient attention. In assessing the environmental performance of cities, there is a need both to distinguish between different environmental problems and to seek a more comprehensive coverage of all environmental problems including those for which there are often few data. There is also a need to ensure that improved environmental performance in one area is not at the expense of improved performance in another.

Within a commitment to sustainable development, there are five broad categories of environmental action within which the performance of all cities should be assessed. These are:

1. Controlling infectious and parasitic diseases and the health burden they take on urban populations, including reducing the urban population's vulnerability to them. This is often termed the 'brown agenda' or the sanitary agenda as it includes the need to ensure adequate provision for water, sanitation, drainage and garbage collection for all city-dwellers and businesses. It should include more than this—for instance, in controlling the infectious and parasitic diseases that are not associated with inadequate water and sanitation, including acute respiratory infections (the single largest cause of death worldwide) and tuberculosis (the single largest cause of adult death worldwide) and the many diseases that are transmitted by insect or animal vectors.

2. Reducing chemical and physical hazards within the home, the workplace and the wider city.

3. Achieving a high-quality urban environment for all urban inhabitants—for instance, in terms of the amount and quality of open space per person (parks, public squares/plazas, provision for sport, provision for children's play) and the protection of the natural and cultural heritage.

4. Minimising the transfer of environmental costs to the inhabitants and ecosystems surrounding the city.

5. Ensuring progress towards what is often termed 'sustainable consumption'—i.e. ensuring that the goods and services required to meet everyone's consumption needs are delivered without undermining the environmental capital of nations and the world. This implies a use of resources, a consumption of goods imported into the city and a generation and disposal of wastes by city enterprises and city-dwellers that are compatible with the limits of natural capital and are not transferring environmental costs on to other people (including future generations).

The first three categories can be considered as the environmental aspects of meeting city-dwellers' needs. These fit within the conventional mandate of local authorities—although there is great variety in the ways in which local authorities promote their achievement. The fourth and fifth are more problematic since they are concerned with environmental impacts that generally occur outside the jurisdiction of the local authorities with responsibility for environmental management in cities.

Separating a consideration of the environ-

mental performance of cities into these five categories allows a consideration of the common elements that all cities share within an understanding of how priorities must differ. For instance, perhaps the main environmental priority in most cities in the North is to reduce levels of resource use, wastes and greenhouse gas emissions while also maintaining or improving the quality of the urban environment. But this does not mean neglecting the other aspects—for instance, in most cities, much remains to be done to reduce physical hazards (such as those caused by motor vehicles) and chemical pollutants—and, as outlined below, there are also new threats to be confronted in the control of infectious diseases. In addition, in most cities in the North, there are still a proportion of the population that live or work with unacceptable levels of environmental risk. By contrast, the environmental priorities in most small cities in the lower-income countries of the South will centre on the first two categories—although building into their urban plans a concern for a high-quality urban environment, efficient resource use, good management of liquid and solid wastes and a minimising of greenhouse gas emissions will bring many long-term advantages. Considering cities' environmental performance across the five categories also helps to clarify how environmental problems change for cities that become increasingly large and/or wealthy (see Bartone *et al.*, 1994; Satterthwaite, 1997).

Controlling Infectious and Parasitic Diseases

By concentrating people and economic activities, cities have many advantages over a more dispersed settlement pattern for the control of infectious and parasitic diseases—especially the concentration of people which lowers the unit costs of most forms of infrastructure (including piped water, drainage and most kinds of sanitation) and services (including health care, emergency services and garbage collection). With good manage-ment in public health and environmental health and with all sectors of a city's society contributing to health, cities can be among the most healthy places to live in, work and visit (WHO, 1996).

However, in the absence of such management, there are many infectious and parasitic diseases that thrive when provision for water, sanitation, drainage, garbage collection and health care is inadequate or where it breaks down. As a result, cities can become among the most health-threatening of all human environments as disease-causing agents and disease vectors multiply, as the large concentration of people living in close proximity to each other increases the risk of disease transmission, and as health care systems become unable to respond rapidly and effectively. If provision for sanitation, drainage and garbage collection breaks down or fails to keep up with a city's expanding population, this greatly increases health hazards, especially from the many diarrhoeal and other diseases spread by human excreta and from diseases spread by vectors that breed or feed on uncollected garbage or breed in standing water (for instance malaria, filariasis, yellow fever and dengue fever, in the climates where the mosquito species that are their vectors can survive). At any one time, close to half of the urban population in the South is suffering from one or more of the main diseases associated with inadequate provision for water and sanitation (WHO, 1996). If health care systems break down, or fail to keep up with the growth in population, the health problems of those who catch diseases are much magnified—for instance, acute respiratory infections as among the main causes of infant and child death, although they are easily cured if diagnosed and treated appropriately. In addition, if health care systems cannot implement immunisation programmes, diseases such as measles and diphtheria can become major causes of death.

Most cities also concentrate large numbers of people who are particularly vulnerable to infection. For instance, most cities in the South have high proportions of infants within their populations and these have immune

systems that have not developed to protect them from common infectious diseases. In many such cities, a large proportion of infants and young children (and adults) have immune systems that are compromised by undernutrition and worm infections. Many cities or particular city districts in the North and some in the South also have a high concentration of older people who are more vulnerable to many infectious diseases. Most cities also have a constant movement of people in and out of them which can mean the arrival of newcomers who bring new infections to which the city population has no immunity (WHO, 1996).

There are also two further problems. The first is the growing number of what are usually termed 'new' or 'emerging' diseases, of which AIDS is the best known and one of the most widespread. These are new in the sense that they only recently became a significant public health problem, but in most instances it is their incidence and geographical range that is new, as they previously existed either in nature or in isolated communities (WHO, 1996). The second is the re-emergence of well-known infectious diseases that until recently were considered under control. For instance, cholera and yellow fever are now striking in regions that were once thought to be safe from them. Malaria and dengue fever have become among the most serious health problems in many urban centres. Tuberculosis remains the single largest cause of adult death in the world—and its incidence has been increasing rapidly over the last decade, in the North as well as in the South. The main reason why emerging and re-emerging diseases have become such a serious problem is the low priority given by most governments and international agencies to public health and health care. But part of the reason is also the greater difficulties in preventing and controlling infectious diseases as societies urbanise and as population movements increase (including the very rapid growth in the number of people crossing international borders), and as disease-causing agents develop resistance to public health measures or adapt to changing ecological circumstances

in ways that increase the risks of infection for human populations. For instance, the control of malaria has become more difficult in many places as the *Anopheles* mosquitoes can no longer be killed by many insecticides and many of the drugs used to provide immunity or to treat malaria are no longer effective. Various species of the anophelines have also proved able to adapt to urban environments (WHO, 1992, 1996). Similarly, many bacterial disease-causing agents including those that cause pneumonia, tuberculosis and typhoid fevers and some diarrhoeal diseases and forms of food poisoning have become resistant to many antibiotic drugs (WHO, 1996). Meanwhile, the development and distribution of new antibiotics cannot keep up with the speed at which many disease-causing agents develop a resistance to them, especially in the lower-income countries in the South (Leduc and Tikhomirov, 1994).

Urbanisation can also create foci for disease vectors and new ecological niches for animals which harbour a disease agent or vector. This may be the result of the expansion of built-up areas, the construction of roads, water reservoirs and drains and land clearance and deforestation (WHO, 1992) or, the result of increased volumes of human excreta, garbage or waste water that are not cleared away. In addition, as cities expand, it is common for low-income groups to develop settlements on land subject to flooding or on or beside wetlands, as this land has less commercial value and the inhabitants have more chance of being permitted to stay there. But this may also mean close proximity to places where various insect vectors can breed and so putting their inhabitants at risk from, for instance, malaria or dengue fever or yellow fever (from *Aedes* mosquitoes).

The means enormously to reduce these problems are well known and have long been applied in cities in the North and in some cities in the South. In such cities, although some of the emerging or re-emerging diseases are causing serious difficulties for public authorities, the contribution of infec-

tious and parasitic diseases to ill-health and premature death has been enormously diminished. The speed of this transformation in the health of urban populations is often forgotten. It is only in the last 100 years or so that societies have developed the knowledge, capacity and competence to protect against diseases that formerly thrived, especially in cities. This can be seen in the infant mortality rates that existed only 100 years ago in the world's most prosperous cities. Today, infant mortality rates in healthy, well-served cities are around 10 per 1000 live births and it is very rare for an infant or child to die from an infectious or parasitic disease. Most prosperous European cities 100 years ago still had infant mortality rates that exceeded 100 per 1000 live births; in Vienna, Berlin, Leipzig, Naples, St Petersburg and many of the large industrial towns in England, the figure exceeded 200 and in Moscow exceeded 300 (Bairoch, 1988; Wohl, 1983).

In most of the South, much remains to be done. Infant mortality rates of 100 or more per 1000 live births still remain common in cities in the South or in the urban areas where low-income groups live. Even higher infant mortality rates are common in the informal or illegal settlements where there is inadequate provision for water, sanitation and health care. A 1990 estimate suggested that 600 million urban dwellers in the South lived in shelters and neighbourhoods where their lives and health were continually threatened because of the inadequate provision of safe, sufficient water supplies, sanitation, removal of solid and liquid wastes, and health care and emergency services (Cairncross *et al.*, 1990; WHO, 1992).

Reducing Chemical and Physical Hazards within the Home, Workplace and Wider City

The scale and severity of many chemical and physical hazards increase rapidly with increasing industrial production and with the growth in road traffic. While controlling infectious and parasitic diseases or reducing

the urban population's vulnerability to them centres on provision of infrastructure and services to the populations of entire cities (whether through public, private, NGO or community organisation provision), achieving progress in this second category is largely achieved by regulating the activities of enterprises and individuals. Probably the most important factor in terms of improving health is controlling occupational hazards—including people's exposure to dangerous concentrations of chemicals and dust, inadequate lighting, ventilation and space and a lack of protection from machinery and noise. Action is needed in these areas from the large factories down to small 'backstreet' workshops (WHO, 1996).

One of the most serious chemical hazards in many cities is indoor air pollution from smoke or fumes from open fires or inefficient stoves (WHO, 1992). This is especially so when coal and biomass fuels are used as domestic fuels. High levels of indoor air pollution can cause inflammation of the respiratory tract which, in turn, reduces resistance to acute respiratory infections while these infections in turn enhance susceptibility to the inflammatory effects of smoke and fumes. There are also many other health problems associated with high levels of indoor air pollution (WHO, 1992).

There is also a need to reduce to a minimum the risk from accidents within the home and its immediate surrounds. Accidents in the home are often among the most serious causes of injury and premature death, especially in cities in the South where it is common for a high proportion of the population to live in accommodation with three or more persons to each room in a shelter made from temporary (and inflammable) materials and with open fires or stoves used for cooking and (where needed) heating. It is almost impossible to protect occupants (especially young children) from burns and scalds in such circumstances.

There are also tens of millions of urban-dwellers in the South who are at high risk from floods, mudslides or landslides. In most cities in the South, a considerable proportion

of the population live on land sites that are subject to floods, mudslides or rockfalls. Low-income households choose such hazardous sites because they are often the only sites within easy reach of employment that are available to them. Safer sites are too expensive and any attempt to occupy these illegally and develop housing on them would result in eviction.

As in the control of infectious and parasitic diseases, a good primary health care system and provision for emergency services are also important so that those who are injured or poisoned can rapidly get appropriate treatment. There is also a need for traffic management which minimises the risk of motor vehicle accidents and which protects pedestrians and for ensuring an adequate provision for play and recreation for the entire urban population. Clean, safe and stimulating playgrounds for children are needed most in the poorest residential areas where there is the least space within and around homes in which children can play. City-wide, there is an urgent need for a full range of measures to promote healthy and safe working practices in all forms of employment and to penalise employers who contravene them.

There is also a need to control air and water pollution. As cities become larger, more industrialised and wealthier, so there is a growing need for more comprehensive and effective control of emissions and wastes from industries and motor vehicles. Worldwide, more than 1.5 billion urban-dwellers are exposed to levels of ambient air pollution that are above the recommended maximum levels and an estimated 400 000 additional deaths each year are attributable to ambient air pollution (WHO, 1996). Once problems of indoor air pollution are greatly reduced by the use of cleaner fuels and better stoves and ventilation, and occupational hazards are greatly reduced by effective enforcement of health and safety regulations, governments usually have to turn their attention to reducing ambient air pollution. If industrial pollution has been much reduced, it is usually motor vehicles that become the main source of urban air pollution.

Achieving a High-quality Urban Environment

Action in the two above categories is essentially to reduce or remove the health problems that arise from the concentration of people, enterprises and motorised transport systems within a city. Their focus is on prevention and on rapid and effective treatment for any illness or injury. This third category is qualitatively different in that it centres on ensuring provision of those facilities that make urban environments more pleasant, safe and valued by their inhabitants. It includes ensuring sufficient area and quality of open space per person (for instance, in terms of parks, public squares/plazas, provision for sport and provision for children's play) and a concern that all city-dwellers have access to such provision. Integrated into this would also be a concern to protect natural landscapes with important ecological and/or aesthetic value—for instance, wetland areas, river banks or coasts. It includes a concern to preserve a city's cultural heritage There are obvious links between this and the first two categories. For instance, ensuring adequate provision for children's play in each neighbourhood of a city that is safe, well-maintained, accessible and managed in ways to serve the needs of different income groups and age groups can greatly reduce accidents as fewer children play on roads, on garbage tips or in other unsafe areas. Such provision can also contribute much to children's physical, mental and social development (Hart, 1997). Such provision is particularly important in the lower-income areas of cities in the South which lack adequate provision for water, sanitation and drainage and where housing is generally overcrowded—as it allows children to play without exposing them to the risk of faecal contamination or garbage or infection from disease vectors (Satterthwaite *et al.*, 1996).

There are also many other ways in which improving the urban environment can be combined with reducing environmental hazards. For instance, provision for water bodies in parks and the protection of wetlands can

be integrated into systems for treating stormwater and for reducing the risk of flooding or limiting flood damage when it occurs. Planting trees in cities and suburbs can not only be justified for their aesthetic value, but also for their contribution to, among other things, reducing cooling costs, absorbing pollutants and acting as wind-breaks and noise barriers. Support for urban agriculture can be integrated into provision for open space and the re-use of waste wa-ters—and can prove particularly important for improving the diets and livelihoods of low-income groups in most urban centres in the South (Smit *et al.*, 1996).

Ensuring provision for public space within each neighbourhood in ways which respond to the diverse needs and priorities of the different groups within the population is rarely given much attention in rapidly grow-ing cities in the South. As a result, little or no provision for public space becomes built into the urban fabric and as all land sites are developed for urban activities, it becomes almost impossible to remedy this deficiency. In addition, pressure from middle- and up-per-income groups for public action to ad-dress this may be much lessened as their purchasing power allows them exclusive ac-cess to such resources—through purchasing or renting homes with gardens or homes in areas with good provision for open space or through membership of clubs which allow members access to open space or beaches or provision for sports. The capacity of middle- and upper-income groups to pay for such provision may not only reduce the pressure from such groups for more public provision, but the country clubs, sports clubs, golf courses and private beaches may also pre-empt land and natural resources that had previously been open to use by all the city's inhabitants.

Minimising the Transfer of Environmental Costs to the Inhabitants and Ecosystems Sur-rounding the City

The fourth and fifth categories for environ-mental action are both about minimising the transfer of environmental costs to the ecol-ogy and the people living outside the city. The fourth category concentrates on the transfer of costs to the 'city-region' while the fifth concentrates on the transfer to more distant peoples and ecosystems (including those in different nations) and to the future. The distinction between the two is important in that improved performance in the former is often achieved at the expense of the latter.

The ecology of the regions around large and prosperous cities has generally been much changed by the demand for resources and the generation of wastes concentrated within the cities. As Ian Douglas has de-scribed, the development of cities transforms the ecology of their regions as land surfaces are reshaped, valleys and swamps filled, large volumes of clay, sand, gravel and crushed rock extracted and moved and water sources tapped—and rivers and streams channelled (Douglas, 1983, 1986). This re-arrangement of water, materials and stresses on the land surface combined with the natu-ral tendency of city-dwellers and urban busi-nesses to dispose of their wastes in the region around the city brings damaging conse-quences. Changes brought to the hydrologi-cal cycle by the city's construction and its system for water, sanitation and drainage usually bring damaging consequences 'downstream'. In addition, as provision for sewers and drains improves in the city, the impact of the waste water on the wider re-gion increases, as it is disposed of untreated into a river, estuary or sea, close to the city. Solid wastes (including toxic and hazardous wastes) are often disposed of on land sites around the city, often with little or no pro-vision to prevent these from contaminating local water resources. Air pollution from city-based industries, space heating, thermal power stations and motor vehicles often re-sults in acid precipitation that damages ter-restrial and aquatic ecosystems outside the city. Tall smokestacks for thermal power sta-tions and city enterprises can also simply transfer environmental costs from in and around the power station and enterprise to 'downwind' of the city, although the impact

may be pushed far beyond the city-region. There is also the damage to vegetation arising from ozone generated by the complex photochemical reactions involving urban air pollutants and sunlight—with ozone concentrations often higher downwind of large and wealthy cities than over the city itself (Conway and Pretty, 1991).

It was only in the 1960s that this aspect of the environmental impact of cities began to be addressed in the North. The growth in environmentalism from the 1960s onwards pressed for major reductions in air pollution, for large investments in the treatment of liquid wastes and in the management of solid wastes (with special provision for hazardous wastes) and in more controls on the extraction of building materials in the city surrounds. In the world's wealthier nations, this has considerably reduced the environmental impact of city-based production and consumption on the region around cities. It has also begun to set limits on the environmental impact that city-based demand for fresh water can inflict on local or increasingly distant watersheds. However, in most major cities in the South, much remains to be done to lessen the transfer of environmental costs to the region surrounding the city. In addition, at least part of this problem has been solved by transferring the environmental costs to more distant peoples and ecosystems.

Sustainable Consumption

The fifth category for environmental action in any city is reducing or eliminating the transfer of environmental costs to people and ecosystems beyond the city-region, including their transfer into the future. This could be considered as ensuring that the environmental performance of the people and businesses the city concentrates becomes compatible with the goals of sustainable development at national and global levels.

For the largest and wealthiest cities, a large part of the transfer of environmental costs to their region has now been transferred to other region and to global systems. The demands they concentrate for food, fuel and raw materials are largely met by imports from distant ecosystems with much less demand placed on the surrounding region—which makes it easier to maintain high environmental standards in this region and, for instance, to preserve forests and natural landscapes. In addition, the goods whose fabrication involves high levels of fossil fuel consumption, water use and other natural resource use, and dirty industrial processes (including the generation of hazardous wastes) and hazardous conditions for the workforce can be imported. The possibilities for enterprises and consumers to import such goods is much helped by the low price of oil.

Other cost transfers are into the future. For instance, air pollution may have been cut in many of the world's wealthiest cities, but emissions of carbon dioxide (the main greenhouse gas) remain very high and in most cities may continue to rise—for instance, because of increasing private automobile ownership and use. This is transferring costs to the future through the human and ecological costs of atmospheric warming. The generation of hazardous non-biodegradable wastes (including radioactive wastes) and non-biodegradable wastes whose rising concentrations within the biosphere are having worrying ecological consequences are also transferring costs to the future. Current levels of consumption for the products of agriculture and forestry are also a concern where the soils and forests are being destroyed or degraded and biodiversity reduced.

While there is disagreement as to where the limits are for the use of non-renewable resources, the exploitation of soils and forests, and the use of the global sink for greenhouse gases, it is clear that the level of waste and greenhouse gas emissions per capita created by the lifestyles of most middle- and upper-income households in the North could not be sustained if most of the world's population were to have comparable levels. Wealthy households in the South may have comparable levels of consumption, but it is the concentration of the world's high-consumption households in the North and the much greater historical contribution of the

population in the North to existing global environmental problems that makes this a North–South issue.

When judged only in terms of resource use and waste generation, most urban centres in the lower-income nations of the South perform well in that the low levels of economic activity and limited consumption levels of most of the population ensure that figures for resource use per person are very low. So too are per capita levels of greenhouse gas emissions and stratospheric ozone-depleting chemical emissions. Low-income urban citizens are also models of 'sustainable consumption' in that they use very few non-renewable resources and generate very little waste. They are also among the most assiduous collectors and users of recycled or reclaimed materials. But these are also generally the people who face the most serious poverty and have the most serious environmental problems in terms of exposure to infectious and parasitic diseases and to chemical and physical hazards. This is a reminder of the need to assess the environmental performance of cities in all five of the above categories.

Assessing Cities' Regional and Global Ecological and Human Footprints

It is difficult to estimate the ecological costs that arise from producing the large and diverse range of raw materials, intermediate goods and final goods that meet the demands of urban producers and consumers. Certain concepts have helped to map out and to begin to quantify the scale and nature of these inter-regional or international transfers of environmental costs. One is the calculation of cities' 'ecological footprints' developed by William Rees (Rees, 1992; Wackernagel and Rees, 1996) which makes evident the large land area on whose production the inhabitants and businesses of any city depend for food, other renewable resources and the absorption of carbon to compensate for the carbon dioxide emitted from fossil fuel use. Rees calculated that the lower Fraser valley of British Columbia (Canada)

in which Vancouver is located has an ecological footprint of about 20 times as much land as it occupies—to produce the food and forestry products its inhabitants and businesses use and to grow vegetation to absorb the carbon dioxide they produce (Rees, 1992). London's ecological footprint is estimated to be 125 times its actual size, based on similar criteria (Jopling and Giradet, 1996). However, care is needed in comparing the size of different cities' ecological footprints. One reason is that the size of the footprint as a multiple of the city area will vary considerably, depending on where the city boundary is drawn—and this is the main reason why London's inhabitants appear to have a much larger individual ecological footprint than the inhabitants of the Fraser valley.[2] A second reason is differences between cities in the quality and range of statistics from which a city's ecological footprint is calculated. Finally, the calculation of ecological footprints for cities should not obscure the fact that particular enterprises and richer income groups contribute disproportionately to these footprints. For example, Wackernagel and Rees (1996) calculate that the average ecological footprint for the poorest 20 per cent of Canada's population is less than one-quarter that of the wealthiest 20 per cent.

The concept of ecological footprints can also be applied to particular activities—for instance, Wackernagel and Rees (1996) consider the ecological footprint of different kinds of housing, different commuting patterns, road bridges and different goods (including tomato production and newspapers). Another concept that helps to reveal the reliance of wealthy cities on non-renewable resources is the 'material intensity' of the goods consumed in that city (or what is sometimes termed the 'ecological rucksack' of the goods) The material intensity of any good can be calculated, relative to the service it provides, as a way of providing a quick and rough estimate of its environmental impact (Schmidt-Bleek, 1993). This calculation can include all the energy and material inputs into any good—from the extraction or fabrication of materials used to make it, through

its use, to its final disposal. It can also include consideration of how much service that good provides, including how long it lasts—so, for instance, a fridge or car that lasted 20 years would have less material intensity than one that lasted 10 years. It has been calculated that a home fridge designed to lower its 'material input: intensity of service ratio' could be constructed with available technologies and materials to achieve a resource productivity of roughly six times that of currently available models (Tischner and Schmidt-Bleek, 1993). There is also the long-established practice of calculating the energy-intensity of different goods which can take into account the energy used in their fabrication, transport, preparation for sale, sale, use and disposal. Since, in most instances, most or all of the energy input comes from fossil fuels, this allows an idea of how the use of this good contributes to the use of fossil fuels and the generation of carbon dioxide (the largest contributor to atmospheric warming)—and perhaps also some idea of the air pollution implications of its fabrication, use and disposal.

While these concepts have helped to make apparent the extent to which modern cities generate environmental costs far from their boundaries, it is difficult to quantify all such transfers. For instance, the long-term health and ecological consequences of many chemical wastes are unknown—including those arising from the accumulation of certain persistent chemicals. It is also difficult to estimate the scale of the health risks faced by the workers and their families who make the goods which the consumers and enterprises within wealthy cities use. It is also difficult to adjust the calculations for a city's 'ecological footprint' to take account of the goods and services that its enterprises produce for those living outside its boundaries. To take an extreme example, a city which produced high-fuel-efficiency buses or solar panels would have the fossil fuel inputs into their fabrication taken as part of the city's ecological footprint, but no allowance made for these goods' contribution to reducing the ecological footprint in other locations.

Constraints on Action in the Five Categories

The distinction between the five categories for environmental action outlined above is reflected in the historical evolution of government intervention in the urban environment—as the first category became a major concern during the second half of the 19th century (and is often referred to as the sanitary revolution) with the second and third following soon after, although progress on many aspects of these had to wait until citizen pressure helped to ensure that safeguarding environmental quality became an accepted part of governments' responsibilities. The fourth and fifth are more recent in terms of their widespread discussion among governments and international agencies, although there is a literature dating back at least 20 years on the need to move in this direction (see, for instance, Ward, 1976, and the discussions about a 'conserver society' within Canada during the mid 1970s).[3] This should not be taken to imply that environmental action in cities has to go through these five categories sequentially—and there are many long-term advantages for city authorities in recognising the validity of all five, as long as their priorities do not become distorted (as in a concern for 'sustainable consumption' detracting from more pressing and immediate needs for improved environmental health).

This distinction between these five categories is also useful in considering the political economy of environmental problems since there are differences between the categories in terms of who is responsible for the problems; who is most affected by them; the possibilities for those who are affected to get the problems addressed; how the problems are addressed; and by whom. Addressing the environmental problems in the first category has long been understood as the responsibility of public authorities—in public health and environmental health—even if many of the actions may be delegated or contracted to private enterprises, non-government organisations or community-based organisations. In category 2, it is again recognised as the role

of public authorities to set standards and to enforce them—with unions and other worker organisations having a major role in promoting solutions for occupational health and safety and consumer groups and democratic political structures having importance in getting action on other chemical and physical hazards. Democratic political structures also have great importance in category 3, in ensuring that the environmental priorities of all the urban population are addressed.

There are obvious vested interests that oppose public action in each of these categories as they imply higher costs for certain enterprises or citizens or controls over what they can do within their enterprise or on land that they purchase or with the wastes they generate. But in categories 1–3, at least city authorities can seek compromises between those involved; it is one of their central functions to do so. In most cities, there are areas of broad agreement among diverse groups for the promotion of health, prevention of disease and achievement of environmental quality—and it is developing and promoting this common agenda that is at the core of Healthy City programmes (WHO, 1996).

One important institutional difficulty arises if environmental problems or costs are being transferred from one area to another and the local authority structure is made up of different, largely autonomous local authorities with no mechanisms to manage inter-municipality disputes and resource transfers. The transfer of environmental costs from richer to poorer areas within nations or regions is what underlies what is often termed 'environmental racism' as polluting industries or wastes are systematically located in lower-income areas. There is also the institutional difficulty in addressing environmental problems in category 4, where urban authorities have no jurisdiction in the wider region and where the power of the city-based vested interests to use resources or sinks in the region around the city in environmentally damaging ways is generally greater than is that of its inhabitants to prevent such uses.

The institutional difficulties in categories 1–4 have greater possibilities of being resolved since they fall within the boundaries of one nation. For category 5, most do not and it is difficult to foresee how to prevent such transfers. There has been some progress on this front in recent years, mostly through pressure brought on governments and business by consumer groups or NGOs (see, for instance, Harrison, 1997). For example, what is termed 'green consumerism' (where purchasers choose goods whose fabrication or use has less damaging environmental consequences), and which is supported by 'eco-labelling' by environmental groups, has put pressure on many manufacturers to address the environmental implications of their products' fabrication, use and disposal. 'Fair-trade' campaigns and the sale of 'fair-trade' goods have helped to raise issues such as the wages and/or working conditions of those who make the goods or the human rights records of their governments. These have also put pressure on producers and retailers to take what is usually termed 'ethical sourcing' more seriously—for instance, to avoid the use of goods produced in countries or by companies with poor human rights or environmental records. Many companies' unethical investments or products or poor environmental performance have been exposed by campaigns—for instance, to promote consumer boycotts of their products—or by environmental or human rights campaigners purchasing some shares and bringing pressure on the company at shareholder meetings. There are examples of companies (including multinational corporations) who have made explicit commitments to improving environmental performance or better wages and working conditions for their workforce or for those working in major sub-contractors—and even a few that allow independent audits to check on their claims. There are examples of governments who have promoted or supported eco-labelling and the control of certain imports for ethical or environmental reasons. But the people who are affected by the international transfer of environmental costs have no direct political influence on the

governments of the nations into which the goods they helped to produce are imported.

There is some international action to prevent the most obvious and blatant international transfer of environmental costs—as in the controls on the export of hazardous wastes and on the trade of endangered species or products derived from them. But the basis of international trade would be threatened if action extended to address all such transfers—for instance, through governments in the North only permitting imports from countries in the South where good standards of occupational health and safety were maintained. Or where the import of goods produced by multinational corporations was only permitted if the corporation and its main sub-contractors met agreed standards for good environmental practice in the use of resources and generation and management of wastes in all its operations in different countries—with independent groups allowed to monitor their performance. Such controls appear at odds with the process of globalisation, but it is difficult to foresee how to prevent this transfer of environmental costs to other people or ecosystems without such measures (see Goodland, 1995, and Redclift, 1996). The initiatives to promote green consumerism and fair trade can only have limited impact if the goods they promote have to compete with those whose lower price reflects the inadequate wages and poor working conditions of those who made them and the avoidance of costs through no attention to pollution control and waste management.

Integrating Improved Environmental Performance into the Social, Economic and Political Goals of Sustainable Development

One of the more contentious issues in discussions of 'sustainable development' is what the 'sustainable' refers to. A review of the literature on sustainable development found that much of it was almost exclusively concerned with ecological sustainability, with little or no mention of 'development' in the sense of the meeting of human needs (Mitlin,

1992). Perhaps partly in reaction to this, there are also discussions of sustainable development that focus almost exclusively on meeting human needs with little consideration of ecological sustainability—as in, for instance, the Habitat II documents, as will be discussed later. There is also a third set of literature, most of it coming from international agencies, where the term 'sustainable development' is used in discussions about whether the projects of international agencies will continue to function, after the removal of foreign aid; here, too, little or no consideration is generally given to ecological sustainability. Perhaps what makes the Brundtland Commission's statement so important is its insistence that meeting human needs must be combined with ecological sustainability—to meet 'the needs of the present without compromising the ability of future generations to meet their own needs' (World Commission on Environment and Development, 1987, p. 8).

In previous work with Jorge Hardoy and Diana Mitlin, we suggested that the 'sustainable' part of sustainable development be considered as avoiding the depletion of environmental capital (or concentrating on ecological sustainability) while the 'development' part of sustainable development be considered the meeting of human needs (see, for instance, Hardoy *et al.*, 1992; Mitlin and Satterthwaite, 1996). This led to an elaboration of the social, economic and political goals, based on the Brundtland Commission's statement given above—within a commitment to limit or stop the depletion of the four kinds of environmental capital (see Table 1). The upper part of this table summarises the social, economic and political goals inherent in meeting human needs; these will not be elaborated here, since the purpose of this paper is to concentrate on the environmental aspects of sustainable development.[4]

However, some mention should be made of the issue of population growth since this affects both the 'sustainable' and the 'development' components—and the issue of population growth is rarely given much attention within the discussions of sustainable devel-

Table 1. The multiple goals of sustainable development as applied to cities

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Meeting the needs of the present....

Economic needs—includes access to an adequate livelihood or productive assets; also economic security when unemployed, ill, disabled or otherwise unable to secure a livelihood.

Social, cultural and health needs—includes a shelter which is healthy, safe, affordable and secure, within a neighbourhood with provision for piped water, sanitation, drainage, transport, health care, education and child development. Also, a home, workplace and living environment protected from environmental hazards, including chemical pollution. Also important are needs related to people's choice and control—including homes and neighbourhoods which they value and where their social and cultural priorities are met. Shelters and services must meet the specific needs of children and of adults responsible for most child-rearing (usually women). Achieving this implies a more equitable distribution of income between nations and, in most, within nations.

Political needs—includes freedom to participate in national and local politics and in decisions regarding management and development of one's home and neighbourhood—within a broader framework which ensures respect for civil and political rights and the implementation of environmental legislation.

.... without compromising the ability of future generations to meet their own needs

Minimising use or waste of non-renewable resources—includes minimising the consumption of fossil fuels in housing, commerce, industry and transport plus substituting renewable sources where feasible. Also, minimising waste of scarce mineral resources (reduce use, re-use, recycle, reclaim). There are also cultural, historical and natural assets within cities that are irreplaceable and thus non-renewable—for instance, historical districts and parks and natural landscapes which provide space for play, recreation and access to nature.

Sustainable use of finite renewable resources—cities drawing on fresh-water resources at levels which can be sustained (with recycling and re-use promoted). Keeping to a sustainable ecological footprint in terms of land area on which city-based producers and consumers draw for agricultural and forest products and biomass fuels.

Biodegradable wastes not overtaxing capacities of renewable sinks (e.g. capacity of a river to break down biodegradable wastes without ecological degradation).

Non-biodegradable wastes/emissions not overtaxing (finite) capacity of local and global sinks to absorb or dilute them without adverse effects (e.g. persistent pesticides, greenhouse gases and stratospheric ozone-depleting chemicals).

Source: Developed from Mitlin and Satterthwaite (1994).

opment and cities (Drakakis-Smith, 1996). Discussing population growth is complicated by the scale of the differentials between the largest and the smallest consumers in terms of their contribution to the depletion of natural capital. There is a tendency to assume that the size of a city's, nation's or region's population is the main influence on its depletion of natural capital and that the rate of population growth is the main influence on the rate of change in this depletion. But a significant proportion of the urban population in the South (including many of the people in cities which have had rapid population growth rates in recent decades) have consumption levels that are so low that they contribute little or nothing to the use of non-renewable resources and the generation of wastes, including the generation of greenhouse gases. Worldwide, most resource use and waste generation arise from the consumption patterns of middle- and upper-income households (most with very low fertility rates) and the enterprises which produce the goods they consume. In addition, countries in the South which have had the fastest growing economies in recent decades are also likely to be the countries with the most rapid growth in the use of natural capital and generally the largest decreases in population growth.[5] In regard to sustainable development, perhaps the most important issue to stress is that meeting human needs as outlined in Table 1, which includes meeting

the sexual and reproductive health needs of men and women, also supports a rapid decrease in fertility rates in countries with high population growth rates (see, for instance Sen *et al.*, 1994). But it may also provide the basis for far more people to choose high-consumption lifestyles—which is why the meeting of human needs has to be combined with considerations of how to minimise the depletion of environmental capital.

This distinction between the 'ecological sustainability' and the 'development' components of sustainable development has the advantage of avoiding the ambiguities inherent in such terms as 'economic sustainability', 'social sustainability' and 'cultural sustainability' where it is not certain what is to be sustained and how sustaining it would affect environmental capital. For instance, the concept of social sustainability might be taken to mean the sustaining of current societies and their social structures when the meeting of human needs without depleting environmental capital implies major changes to existing social structures. If social sustainability is taken to mean the social measures needed to prevent social disruption or conflict—and the reduction of poverty justified by this—as McGranahan *et al.* (1996) point out, the legitimate objection to poverty is not because it undermines 'social sustainability' as the poor protest, but the suffering the poverty causes.

Phrases such as 'sustainable cities', 'sustainable human settlements' and 'sustainable urbanisation' are also unclear for similar reasons.[6] It is not cities or urbanisation that sustainable development seeks to sustain, but to meet human needs in settlements of all sizes without depleting environmental capital. This means seeking the institutional and regulatory framework in which democratic and accountable urban and municipal authorities ensure that the needs of the people within their boundaries are addressed while minimising the transferring of environmental costs to other people or ecosystems or into the future. This in turn requires consideration of the kinds of national policies and legal and institutional frameworks and the kinds of international agreements that encourage urban and municipal authorities in this direction.

The Local, National and International Frameworks for Promoting Sustainable Development and Cities

The beginning of this paper noted the many examples of progress by urban and municipal authorities in different regions of the world towards sustainable development goals. There are examples of innovations by such authorities in all five of the categories of environmental action described above. This highlights the relevance for all cities of the point made by the European Commission's report on *European Sustainable Cities* (European Commission, 1994) that local governments with their many and varied roles are in a strong position to advance the goals of sustainable development as direct or indirect providers of services, regulator, leader by example, community informer, advocate, adviser, partner, mobiliser of community resources and initiator of dialogue and debate. There are also examples of how what might be termed a 'sustainable consumption' logic can be institutionalised in building codes and zoning and sub-division regulations, in planning for transport, water supply and waste water disposal, recreation and urban expansion, in local revenue-raising (through environmental taxes, charges and levies) and through local authorities bringing in environmental considerations when budgeting, purchasing and tendering.

But there are also the limits on the capacities of urban and municipal authorities to act. This is especially so in most of Africa, Asia and Latin America where their powers and the resources at their disposal severely limit their capacity to act on the five categories outlined above. Although there has been some decentralisation of decision-making power and considerable progress in more democratic and transparent urban authorities in many nations in the South over the past 10–15 years, most urban authorities have very limited funds for capital investment at

their disposal (UNCHS, 1996). They depend on higher levels of government or international development assistance (negotiated through higher levels of government) for this and it is obviously difficult to develop a long-term programme to improve their environmental performance without an assured source of funding. Privatising public services can draw on another source of capital for investment, although private enterprises are generally only interested in those aspects of environmental improvement for which the beneficiaries can be charged and can pay. In addition, the extent to which privatisation is able to compensate for weak and ineffective local authorities in the South has been exaggerated (see, for instance, Sivaramakrishnan, 1997). Ironically, although privatisation was seen as a solution to weak and ineffective city authorities, privatisation is likely to work best where the local authorities are able to set appropriate terms for private-sector enterprises and monitor the cost and the quality of any services they provide—and, where needed, to enforce compliance with agreed standards and prices.

In the North, urban and local authorities generally have far more resources, better-trained staff and a more assured source of capital investment, although urban and municipal authorities in the poorest urban areas face particular problems. But all urban and municipal authorities are limited in what they can achieve in regard to the fifth category, 'sustainable consumption', although sustainable development cannot be achieved if there is not progress in this category. The reviews of recent experiences in European cities point to a large range of environmental innovations—for instance, expanding the pedestrianisation of streets, in public transport, in waste management (including recycling and waste reduction) and urban 'greening' (European Commission, 1994; Mega, 1996a, 1996b). They point to many examples of good governance as urban authorities become more explicit in their goals to improve health and environmental performance, more transparent and co-operative in the ways they work and with a greater commitment to en-

vironmental auditing. However, much of what is being done is only local and regional in scope and thus covering only the first four categories in which action is needed. Improving each city's environment and protecting its cultural heritage (and by doing so increasing its attraction to new investment and tourism) and reducing the environmental damage done to the surrounding region do not necessarily reduce greenhouse gas emissions (although some of the initiatives can do so by reducing fossil fuel use).

This implies the need for international agreements that set enforceable limits on each national society's consumption of scarce resources (or resources whose use implies unacceptable ecological costs) and their use of the global sink for wastes. But it is also clear that most action to achieve sustainable development has to be formulated and implemented locally. The fact that each village, province or city and its insertion within local and regional ecosystems is unique implies the need for optimal use of local resources, knowledge and skills for the achievement of development goals within a detailed knowledge of the local and regional ecological carrying capacity (see, for instance, Drakakis-Smith, 1996). As Pugh notes,

> At all levels of policy and programme application (for government agencies), there are situational complexities in endeavouring to balance economic efficiency, the operation of markets, regard to the public goods and economic externality aspects of the environment, and attention to issues affecting poverty and social justice (Pugh, 1996, pp. 234–235).

This requires a considerable degree of local self-determination, since centralised decision-making structures have difficulty in implementing decisions which respond appropriately to such diversity. Nevertheless, national and international frameworks are needed to ensure that individual cities or countries do not take advantage of others' restraint. Cities where businesses, consumers and local authorities improve their environmental performance, including reducing their

transfer of environmental costs to other locations, need to be rewarded, not penalised as enterprises and consumers who want to avoid good environmental performance move elsewhere.

There is the danger that Redclift (1996) highlights—that the 'solution' to what are perceived as global problems may be forms of global environmental management. But these global problems are caused by the aggregation of production and consumption, much of it concentrated within the world's urban centres. Redclift suggests that we cannot 'manage' the environment successfully at the global level without first achieving progress towards sustainability at the local level.

> We are in effect inventing new institutional structures for managing the environment which bear little or no relation to the processes through which the environment is being transformed (Redclift, 1996, p. 1).

But it is also difficult to see how local decisions will incorporate global responsibilities without international agreements among governments to take responsibility for addressing global problems within their boundaries. If the governments of nations within the North commit themselves to reduced levels of greenhouse gas emissions, they will have to develop the incentives and regulations that support reduced greenhouse gas emissions within each locality—but with local decisions about how best to achieve this. And as Redclift (1996) also points out, this must be done in ways that incorporate a knowledge of the consequences of our behaviour into the behaviour itself rather than seeking to invent management techniques to combat the contradictions of development (Redclift, 1996). We need to recover control over consumption rather than set up new institutions to manage its consequences.

National governments have the main responsibility for ensuring that local authorities address categories 4 and 5, as well as the first three. Internationally, they have the responsibility for reaching agreements to limit the call that consumers and businesses within their country make on the world's environmental capital. But there is little evidence of national governments setting up the regulatory and incentive structure to ensure that the aggregate impact of the economic activities within their boundaries and their citizens' consumption is not transferring environmental costs to other nations or to the future—although a few governments in Europe have taken some tentative steps towards some aspects (see European Commission, 1994; UNCHS, 1996; Mega, 1996b). What is also noticeable is the extent to which urban issues are given little attention in most national sustainable development strategies, despite the prominent role of city-based production and consumption in most nations' resource use, waste generation and greenhouse gas emissions and despite the great potential for cities and for urban policies to contribute to addressing sustainable consumption (Mitlin and Satterthwaite, 1996; UNCHS, 1996). Much of the general literature on national environmental and sustainable development plans also ignores or gives very little attention to urban issues—see, for example, Carew-Reid *et al.*, 1994, and Dalal-Clayton, 1996.

The kind of incentive and regulatory structure that is needed to promote the achievement of sustainable development goals in cities is relatively easy to conceive, as an abstract exercise. Certainly, human needs can be met and poverty greatly reduced without an expansion in resource use and waste generation which threatens ecological sustainability. It is also possible to envisage a considerable reduction in resource use and waste generation by middle-and upper-income households, without diminishing their quality of life and in some aspects enhancing it (see, for instance, the many studies showing how fossil fuel use in the North can be cut considerably without reducing living standards—as in Leach *et al.*, 1979). The work of the Rocky Mountain Institute in the US (among other groups) has highlighted the extent to which resource use and waste can be cut within prosperous economies, without compromising living standards (for example, Lovins and Lovins, 1991). There is also con-

siderable potential for employment creation in a shift to lower levels of resource use and waste, although some employment in certain businesses or sectors will suffer (see Mitlin and Satterthwaite, 1996; and, for Europe, Wikima Consulting, 1993).

It is also possible to envisage the poorer nations achieving the prosperity and economic stability they need to underpin secure livelihoods and decent living conditions for their populations and the needed enhancement in the competence and accountability of their government without a much increased call on environmental capital. The knowledge exists on how to develop more productive and sustainable agriculture (see, for instance, Pretty *et al.*, 1992), forestry management (see, for instance, Sargent and Bass, 1992), industrial production (Robins and Trisoglio, 1992) and settlement patterns (Breheny, 1992; Haughton and Hunter, 1994; Blowers, 1993; UNCHS, 1996). But the prospects for translating what is possible into the needed national frameworks and international agreements remain much less certain. Powerful vested interests oppose most if not all the needed policies and priorities. Richer groups will oppose what they see as controls on their right to consume or higher costs that arise from changed pricing structures to encourage conservation and waste reduction. Technological change can help resolve this—for instance, moderating the impact of rising gasoline prices through the relatively rapid introduction of increasingly fuel-efficient automobiles and the introduction of alternative fuels derived from renewable energy sources. But if combatting atmospheric warming does demand the scale of reduction in greenhouse gas emissions that the IPCC's most recent assessment suggests, this will imply changes in people's right to use private automobiles which cannot be met by new technologies and alternative ('renewable') fuels—at least at costs which at present would prove politically acceptable. As Professor O'Riordan recently commented, 'as the scientific case to curb global warming has strengthened, so the politicians have retreated' (quoted in Pearce, 1997, p. 12).

There are also the difficulties in converting buildings, settlement patterns, urban systems and energy, transport and waste disposal systems that developed during the last 40 years of low oil prices which are not easily modified for much-reduced fossil fuel use. So many existing commercial, industrial and residential buildings and urban forms (for instance, low-density suburban developments and out-of-town shopping malls) have high levels of energy use built into them and these are not easily or rapidly changed (Gore, 1991). This means a number of critical consumption areas that are not determined by consumer preference, as individuals are locked into relatively high consumption patterns by physical infrastructure over which they have little or no control—energy, housing, transport and waste collection systems are prime examples (Robins and Roberts, 1996). It is difficult for urban households to maintain a commitment to recycling if it is difficult for them to take the separated materials to recycling points. In many cities in the North, it is difficult for households to avoid purchasing a car, as urban forms have changed to serve car users and not pedestrians, bicyclists and public transport users. Many of the lowest-income households in the North have the worst-insulated housing and the least capacity to pay for addressing this. Many also rent their accommodation and are reluctant to invest in improvements from which the landlord will draw most benefits. There are also consumption habits that have developed among the world's middle- and upper-income groups that are probably incompatible with sustainable development, if extended to more than a small minority of the world's population— for instance, the much-increased use of air transport and the widespread use of private automobiles for leisure.

An Initial Assessment of the Outcome of Habitat II for Promoting Sustainable Development and Cities

In light of the above discussion, the two key documents that came out of the Habitat II

Conference (the Istanbul Declaration on Human Settlements and the Habitat Agenda) can be assessed for the extent to which they addressed the two central points of sustainable development in regard to cities: a strong priority to meeting human needs within a strong commitment to minimise the depletion of the four different kinds of environmental capital listed in the bottom half of Table 1.

In making this assessment, it must be remembered that these large global conferences seek a consensus among the representatives of all governments present. Both the Declaration and the Habitat Agenda had to be acceptable to the representatives of some 150 government delegations and with considerable pressure being brought to bear on government delegations from groups as diverse as the Catholic Church, the US government's delegation (and their strong opposition to housing being considered a human right through much of the preparatory process) and feminist and human rights coalitions. It is easy to point to a lack of precision in some of the language used, the repetition and the tendency to have long lists of 'problems' with little consideration of their linkages (and often their underlying causes). But these are to be expected in a document that had to cover such a large subject area, including many issues which are controversial, *and* to be endorsed by representatives of so many different governments with diverse positions *and* in which so many groups demanded or promoted additional text or changes to the draft text. Where the wording of a paragraph on some controversial issue appears unclear or imprecise, this may be because greater clarity or precision prevented agreement by some government representative or representative of some group of countries. One of the persons involved in drafting the document admitted that on the first day of the Conference itself, nearly seven hours were spent in deciding whether sustainable settlements 'promote' or 'should promote' human rights and this is a reminder of how complex it can be to reach agreement among so many interested parties (Kakakhel, 1996).

A first impression of the treatment of sustainable development and cities within the two key documents could be favourable. Both the Istanbul Declaration on Human Settlements and the Habitat Agenda make frequent mention of 'sustainable human settlements' or 'sustainable human settlements development'; sustainable urban development is also mentioned several times. Sustainable human settlements development is one of the two major themes for the conference, the other being 'adequate shelter for all'. In addition, both documents give a high priority to the meeting of human needs in cities (and other human settlements) including the need for a strong priority for poverty reduction. They also stress the need to address environmental problems and acknowledge the important health components in doing so. There is also a strong stress on the need to strengthen city and municipal authorities.

However, the documents are weakest where they needed to be strongest—in agreeing on the kind of national and international frameworks that would ensure sustainable development goals are addressed in cities (and other settlements). As one of the World Bank's most experienced urban specialists noted:

> The biggest gap in the Istanbul discussions was the lack of progress in operationalizing the notion of environmentally sustainable development ... While the term 'sustainable development' was mentioned repeatedly, little progress was made in suggesting how it could be operationally applied to urban areas (Cohen, 1996, p. 4).

The Habitat II documents make little mention of the kinds of framework needed to achieve significant reductions in the depletion of environmental capital from the people and enterprises who at present contribute most to these (a high proportion of which are concentrated in cities in the North). It also made little mention of the new resources that need to be directed to the meeting of human needs in the nations where there are insufficient resources to achieve this.

There is also considerable confusion within the Habitat II documents as to what sustainable development is meant to sustain—whether it is settlements or settlement policies or particular activities within settlements. This was not a confusion that arose from the search for consensus at the Conference itself, for it was present in earlier drafts of what became the Habitat Agenda. Within the text, sometimes, it is human settlements that are to be sustainable—for instance, 'sustainable human settlements' or 'sustainable urban centres' or 'sustainable communities'—or aggregates of human settlements, as in sustainable spatial development patterns. In other instances, it is society in general or living conditions that are to be 'sustainable'. In others, it is particular activities within urban areas that are to be sustainable—as in sustainable shelter markets and land development or sustainable transport, sustainable agriculture, sustainable livelihoods, sustainable resource use, sustainable water supply or sustainable energy use. 'Sustained economic growth and equity' are also mentioned as part of sustainable development; clearly, 'sustained economic growth' is not part of sustainable development, although one suspects that what the delegates meant was that the promotion of sustainable development should not inhibit lower-income countries achieving higher incomes and greater economic prosperity and stability.

The worry of government delegates from the South that environmental measures might be the means by which the North inhibits their economic development is still strong in these global meetings—after surfacing as long ago as the 1972 UN Conference on the Human Environment in Stockholm which initiated the cycle of global UN conferences on environment and development issues. The closest the Habitat II documents come to addressing the loss of environmental capital arising from high-consumption lifestyles is several references to 'unsustainable consumption and production patterns, particularly in industrialized countries' (Istanbul Declaration, para. 4), but these are not addressed in the recommendations. And despite the length of the Habitat II documents, there is no mention of the dangers posed to settlements by global warming or of the need to curb greenhouse gas emissions. Perhaps the delegates felt that this was unnecessary, since the Habitat II documentation endorsed the recommendations of previous conferences, and that this was an issue covered by Agenda 21, coming out of the Earth Summit (the UN Conference on Environment and Development in 1992).

The Habitat II documents also have many examples of where it is not human settlements or activities in human settlements, but the development of human settlements that should be sustainable—or particular human settlements policies as in sustainable land-use policies or more sustainable population policies. Sometimes it is broader than this as in sustainable economic development and social development activities. In regard to what constitutes sustainable development, the documents often refer to this being a combination of economic development, social development and environmental protection.[7] These are mentioned as 'interdependent and mutually reinforcing components of sustainable development'.[8] This highlights another flaw in the documents—the assumption that a concern for environmental quality within cities is all that is needed to achieve the environmental component of sustainable development goals. What this misses is the many means by which enterprises and those with high-consumption lifestyles transfer some of their environmental costs to other people, other regions or into the future, as outlined in earlier sections.

Although much of the literature on sustainable development can be criticised for emphasising the sustaining of environmental capital to the virtual exclusion of any consideration of human needs, the Habitat II documents do the opposite. Two factors help explain this. The first, already noted, is the way in which many development agencies came to use the term sustainable development as the label given to ensuring that their development projects continued to operate when these agencies' external support was

cut off at the 'end of the project'. Although this is a problem that was recognised before the term sustainable development became widely used, many international agencies borrowed the new terminology, without taking on board its original meaning. The second is the desire of the United Nations Centre for Human Settlements which was responsible for organising the Habitat II Conference and the government ministries which deal with this UN agency—mainly ministries of housing (Sivaramakrishnan, 1997)—to put human needs at the centre of 'sustainable development'—partly in reaction to the failure of so much of the sustainable development literature to do so. But in doing so, they gave little attention to the fact that sustainable development is also about addressing the depletion of environmental capital (and not just promoting environmental quality in settlements). Perhaps the avoidance of clear positions and specific recommendations that address the more contentious issues within sustainable development is the cost that had to be paid for achieving consensus. But this means that the Habitat II documents include no recommendations on many of the key points in regard to what needs to be done to ensure that sustainable development goals are met in cities (and other settlements).

Conclusions

This paper has outlined a framework for a more comprehensive accounting of cities' environmental performance, within a commitment to other sustainable development goals. It has stressed the importance of taking account of the environmental costs generated or imposed by city-based activities on people or ecological resources outside city boundaries or displaced into the future. It has also stressed the importance of integrating the discussions about cities and sustainable development with the general discussions about sustainable development and ensuring that urban issues are fully considered within national environmental plans and national sustainable development strategies.

Given the tendency for many environmentalists to view cities only as places which generate environmental costs, a greater attention to cities' environmental problems might also ignore the benefits that city-based enterprises and consumers provide (or can provide) for people, natural resources and ecosystems outside their boundaries. Of course, these include the goods purchased by city businesses, governments and consumers which provide incomes from those living outside the city and the goods and services provided by city-enterprises to those living outside the city. Also, care must be taken in ascribing blame to 'cities' for environmental costs transferred from within cities to other ecosystems or people, in that it is particular groups in cities (mostly the higher-income groups) and particular enterprises who are responsible for most such costs.

In addition, the inherent advantages that cities have or can have for combining high-quality living conditions with low levels of resource use, waste and greenhouse gas emissions per person should not be forgotten (Mitlin and Satterthwaite, 1996; UNCHS, 1996). Nor must we forget the fact that wealthy rural or suburban households generally have higher levels of resource use and waste generation than their counterparts living in cities—they own more automobiles, use them more often and have higher levels of energy use within their homes. What this paper has sought to stress is the areas where improved environmental performance is needed in cities and how this should also be integrated with the social, economic and political goals of sustainable development. This is not achieved by focusing on sustainable cities, but on how city consumers, enterprises and governments can contribute more to sustainable development.

Notes

1. IIED monitors the priority given by international agencies to addressing basic needs and to urban development. A summary of the findings of its work in this regard was published in UNCHS (1996).

2. The calculation for London was based on an area of 1580 sq km (virtually all of which is built-up area) with a population of 7 million. The calculation for the lower Fraser valley was for an urban-agricultural region of 4000 sq km with 1.8 million inhabitants.

3. These were published in a quarterly publication *Conserver Society Notes* by the Science Council of Canada in Ottawa.

4. The social, economic and political aspects are described in more detail in Mitlin and Satterthwaite (1996).

5. This association masks the many factors that influence fertility. It also obscures the fact that rapidly increasing or high per capita incomes are not necessary to bring down population growth rates or to have low population growth rates—as can be seen in, for instance, the state of Kerala in India where high priority to education and health care helped to achieve low population growth rates at a low per capita income and without co-ercive population control policies (Sen, 1994; Sen *et al.*, 1994).

6. The justification for avoiding this is discussed in more detail in Mitlin and Satterthwaite (1996).

7. See paragraph 3 of the Istanbul Declaration; also paragraph 4 and paragraph 43(b) of the Habitat Agenda. Paragraph 29 talks of sustainable human settlements development ensuring 'economic development, employment opportunities and social progress, in harmony with the environment'.

8. Paragraph 3 of the Istanbul Declaration; this is also repeated in paragraph 1 of the Habitat Agenda, then again in paragraph 8 and paragraph 43(b); paragraph 21 talks of 'economic development, social development and environmental protection' being 'indispensable and mutually reinforcing components of sustainable development'.

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