

CHAPTER 1

Big Feet, Small Planet

This book is about novel ways of looking at urban living. In the last 100 years we have acquired the capacity to see the earth from above—first looking down from airplanes, then taking pictures with cameras mounted on satellites. These views have revealed vast land areas across the world punctuated by dense urban clusters. The growth of large cities and their transport systems—connecting urban districts, and linking cities to each other and to the remotest regions of the planet—is a novel development that has enormous consequences for humanity, and for all life on earth.

As we take off or land in a plane, we can observe the awesome urban structures we have created—clusters of tall buildings in city centres; roads full of motor vehicles; factories and warehouses; high-rise apartment buildings and suburban sprawl; and farms and forests beyond the edge of the city, intersected by railway lines and motorways. The crucial dependence of cities on the land beyond their periphery seems obvious when seen from above, yet it gets barely a mention in the literature. An urbanising humanity has come to dominate much of the surface of the earth.

The job of urban planners and managers is to create spatial structures that satisfy the needs of city people. We want them to provide a secure habitat for us, to allow us to move about our cities efficiently, and to provide pleasant spaces for work, for recreation and for meeting people. We want urban environments that are free from pollution and in which wastes don't accumulate.

But it is time that we also got to grips with our impacts beyond the boundaries of our cities.

Humans have always affected the environment from which they draw their sustenance. Hunting and the use of fire by our ancestors had significant impacts on living creatures and their habitats. Farmers throughout history have significantly modified the landscapes they work and inhabit. But urban society, with its fossil fuel-powered industrial, farming and transport systems, has had unprecedented impacts on nature. Our numbers are larger than ever before, and our power to affect the global environment, has reached a critical stage. We need to reverse the collision course between humans and nature on which we now find ourselves, and this book suggests that this is, above all else, a challenge for city people.



Hong Kong

This urban landscape could not have existed 100 years ago. It is entirely dependent on vast inputs from elsewhere—food, energy, timber and other resources.

Urban consumption and waste disposal are threatening both nature and human existence. In the last 30 years a third of the natural world has been obliterated.¹ But as a consequence, we are also starting to learn an important lesson—that we damage the world’s life-support system at our peril. We are faced with a new imperative: modern living needs to be in harmony with the planet—and this is a challenge to individuals, business and government, and also to urban planners. Science, technology, individual action and government policies can be harnessed for restoring the health of our planet. Today, millions of people across the world are working to try to improve the condition of the global environment.

These are the main themes that this book is seeking to explore: can a world of ever-larger cities be sustainable—environmentally, socially and economically? Can cities continue to prosper if they significantly increase their resource productivity? Can they mimic natural ecosystems and transform themselves into circular, not linear, systems? How can we create cities of physical beauty, social diversity and cultural vigour that are also sustainable economically and environmentally? How can we put the pulsing heart of conviviality back into our cities?

Across the world, we need a revolution in urban problem solving, finding ways of making cities ‘future proof’. The director general of the 1992 Rio Earth Summit, Maurice Strong, sums these issues up well: ‘The battle to ensure that our planet remains a hospitable and sustainable home for the human species will be won or lost in the major urban areas.’²

AN URBAN PLANET

In the last 100 years, an extraordinary change has occurred on the face of the earth: cities are becoming our primary habitat. In 1900, 15 per cent of a global population of 1.5 billion people lived in cities. By 2000, 47 per cent of a global population of 6 billion lived in cities. In 1900, four cities of around one million—Beijing, Tokyo, Delhi and London—were the largest cities on earth. By 2000, there were 200 cities of one million, 100 between one and ten million, and some 20 megacities of more than ten million people. By 2030, 60 per cent of the world population, or 4.9 billion people, are expected to live in urban areas.³

All-out urbanisation is fundamentally changing the condition of humanity and our relationship to the earth. We have been undergoing a staggering transformation: from living in a world of farms, villages and small towns, we are

transforming ourselves into an urban species. From relying primarily on nature's local annual harvest, more and more of us are drawing on global food and timber supplies. From drawing on local energy sources, we have switched to tapping into stores of non-renewable energy resources across the world. From leading locally self-sufficient lives, more and more of us are becoming citizens of a human-centred planet.

Megacities of 10 million people or more are by far the largest structures ever to appear on the face of the earth. They reach deep underground, rise hundreds of metres into the air and stretch out horizontally over several hundred thousand hectares, with transport routes linking them to each other and to a global hinterland. With millions of citizens pursuing a vast diversity of activities—in commercial enterprises, markets, service industries and cultural endeavours—large modern cities are the most complex manifestation of human activity ever to emerge.

For simplicity's sake I use the word *city* to encompass both towns and cities. The definition of the word city varies greatly, depending on how much surrounding countryside is included within urban boundaries.

For instance, the current population of most of the world's largest areas including London, Los Angeles, Shanghai, Beijing, Jakarta, Dhaka and Bombay can vary by many millions of inhabitants in any year, depending on which boundaries are used to define their populations.⁴

The main task of this book is to outline imaginative and realistic options for change. More often than not, the tools, techniques and partnerships that can help us create liveable cities can also be central to creating a sustainable relationship between people and planet. Urban growth has been well documented, but less so the growth of urban ecological impacts. My primary concern is not with urban growth per se, but rather with its implications both in terms of global use of resources and human living conditions. To make current urban lifestyles possible, cities are sucking in resources from all over the world. Located on just 2 per cent of the world's land surface, they use 75 per cent of its resources.⁵ If the energy use of urban food supply systems was included, this figure would be even higher. In the USA, the number of people fed per farm worker has grown more than sixfold, from 15 in 1950 to 96 in 1998, by a massive scaling up of the use of farming technology.⁶ In an urbanising world, the combined ecological footprints of cities extend to much of the earth's productive land.



São Paulo panorama

Never have urban landscapes, such as São Paulo with 18 million people, and sprawling over hundreds of thousands of square kilometres, been possible before.

Large modern cities, as centres of human endeavour, tend to regard themselves as centres of the universe and have effectively declared their independence from nature. And yet, they are vitally dependent on its integrity. American economist Robert Constanza has valued the world's 'ecosystem services' at \$33 trillion per year—almost twice the combined global GNP of \$18 trillion, which is primarily generated by urban-based economic activity.⁷ Ecosystem services include absolute necessities such as water supply, climate regulation, nutrient cycling, soil formation and pollination, as well as recreational services, all of which city people ultimately require for their existence.

As the urban visionary Patrick Geddes insisted half a century ago, it is crucial to understand cities as being embedded in their rural hinterland. Today, on a globalising planet, cities need to see themselves as part of a worldwide hinterland on whose ecosystem services they ultimately depend.

Can we lead enjoyable urban lives while minimising our impact on the local and global environment? City officials are usually preoccupied with pressing issues such as housing provision, public works, policing, transport, education

and health care. Yet it is vital not to lose sight of wider and longer-term perspectives that underpin the viability of their cities. Ecology is the science of 'home making'. In a world of large cities, we urgently need to learn to create sustainable urban habitats. It is therefore very important to understand our cities as complex systems that coexist in a dynamic relationship with the world's ecosystems. This approach adds a new dimension to urban planning and management, and requires us to address local and global issues at the same time. These are new challenges for city authorities as well as citizens. For this purpose we need vibrant new partnerships between governments, local authorities, urban communities, NGOs and the private sector.

CREATING SUSTAINABLE CITIES

What, then, is a sustainable city? Here is my attempt at a definition:

A 'sustainable city' enables all its citizens to meet their own needs and to enhance their well-being, without degrading the natural world or the lives of other people, now or in the future.

We have to ask ourselves what specific measures need to be taken to create sustainable urban habitats, and how environmental and social concerns can be brought together into one compelling win-win scenario. The world community has vigorously addressed these issues since the early 1990s, starting with Agenda 21, the primary outcome of the 1992 Rio Earth Summit.⁸ The Aalborg Charter, which was produced by the cities and towns of Europe in 1994, states this:

We understand that our present urban lifestyle, in particular our patterns of division of labour and functions, land-use, transport, industrial production, agriculture, consumption, and leisure activities, and hence our standard of living, make us essentially responsible for many environmental problems humankind is facing. This is particularly relevant as 80 per cent of Europe's population live in urban areas.⁹

It further states that environmental sustainability means maintaining rather than depleting the world's natural capital, and that actions should urgently be taken to assure that the consumption of renewable material, water and

energy resources does not exceed the rate at which natural systems can replenish themselves. Many new jobs can be created that contribute to both the environmental and economic sustainability of communities.

The Istanbul Declaration on Human Settlements, arising out of the Istanbul UN City Summit of 1996, endorses the universal goals of ensuring adequate shelter for all and making human settlements more liveable, equitable and sustainable.

In order to sustain our global environment and improve the quality of living in our human settlements, we commit ourselves to sustainable patterns of production, consumption, transportation and settlements development; pollution prevention; respect for the carrying capacity of ecosystems; and the preservation of opportunities for future generations. In this connection, we shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem.¹⁰

In the Local Government Declaration to the 2002 UN Johannesburg Earth Summit, representatives from cities around the world issued expressed similar ideas:

With half of the world's population now living in urban settlements, and with the world's population due to grow to 8 billion by 2025 . . . sustainable urban management and development is one of the critical issues for the 21st century. National states cannot, on their own, centrally manage and control the complex, fast-moving, cities and towns of today and tomorrow—only strong decentralised local governments, in touch with and involving their citizens, and working in partnership with national governments, are in a position to do so.¹¹

CITIES AND NATIONAL ECONOMIES

An important issue for conceptualising sustainable urban development is to understand that cities are engines of economic power. They are the places where production is concentrated, where great wealth is generated and where most consumption takes place. They are the control centres of economic, political and media activity. National economies are embedded in and controlled

from cities: 'the steady increase in the level of urbanisation since 1950 reflects the fact that the size of the world's economy has grown many times since then'.¹² In fact, the world economy has grown no less than fifteenfold since 1950 and this has certainly helped to improve people's standard of living. But there is a price to pay: for instance, in many parts of the world forests are shrinking as the value of global trade in forest products has climbed, from \$29 billion in 1961 to \$139 billion in 1998. And fisheries are collapsing as fish exports rise, growing nearly fivefold in value since 1970 to reach \$52 billion in 1997.¹³

With half of humanity living and working in cities, the other half increasingly depends on them for their economic survival. They profoundly affect rural economies far beyond urban boundaries. As better roads are built and access to urban products and information systems is assured, rural people aspire to urban standards of living, and the mindset to go with them. Cities have come to define the state of human consciousness. It is therefore vital for city people to understand more clearly that the deteriorating condition of the global environment is primarily due to urban resource use.

The concentration of intense economic processes and high levels of consumption in cities stimulate their demands for resources. Urban agglomerations and their consumption patterns have become the dominant feature of the human presence on earth, fundamentally changing humanity's relationship to its host planet and ecosystems. Since most population and economic growth in the coming decades will continue to occur in urban areas, the over-exploitation of natural resources could become even more acute, unless we find different ways of managing them.

In developing countries people migrating from rural to urban areas usually expect substantial increases in living standards, which also means per capita increases in resource consumption. A critical issue for the coming years is that the two most populous and traditionally rural countries, China and India, are urbanising rapidly. In China in particular, economic growth has been hovering between 7 and 9 per cent a year since the 1980s, with industrialisation and urbanisation closely linked. In the last ten years, some 400 new urban centres have been created. In the next two decades, about 12 million people are expected to relocate from rural to urban areas every year and China is planning to build another 400 new cities with populations averaging 600,000 people.¹⁴

India too, with economic growth of 6 to 8 per cent a year, is engaged in a rapid process of industrialisation and urbanisation. In both countries, as disposable incomes grow, substantial increases in energy consumption are occurring as people switch from using firewood and charcoal to electricity

and kerosene and to utilising energy-intensive products and services.¹⁵ Major changes in diet towards greater meat consumption and increases in per capita demand for timber and paper also have major environmental implications, with impacts often occurring far away.

CITIES, ENERGY AND CLIMATE

The foundations for the world's unprecedented urban growth were laid in the 19th and early 20th centuries. It was occurring mainly in the north, as a result of the spread of industrialisation and the rapid increase in the use of fossil fuel-based technologies. Today, the world's largest and fastest-growing cities are emerging in the south, because of urban-industrial development, mechanisation of agriculture and also, in some places, as a result of dramatic rural decline.

Large modern cities are, first and foremost, products of the development of fossil fuel technologies. The cover image of this book shows how, looking down from space at night, astronauts can see a 'new Milky Way', our brilliantly illuminated planet—vast city clusters lit up by millions of light bulbs and by the flares of oil wells and refineries. While our ancestors sought to assure steady supplies of firewood and charcoal, we turn on electric or gas appliances with the flick of a switch, hardly aware of the power station, refinery or gas field that we tap into.

Today's cities are gas guzzlers par excellence. They use energy very differently from those in the past. Most of the world's energy is used in cities and for their benefit—by cities themselves and by the farming, industrial production and transport systems that supply them. Historically there has never been a city of more than a couple of million people that was not running on fossil fuels. Without routine use of coal, oil and gas, the growth of megacities would not have occurred. All their internal activities—local transport, electricity supply, home living, services provision and manufacturing—crucially depend on using fossil fuels.

In 1992, seven million Londoners used around 20 million tonnes of oil equivalent per year, or two supertankers a week, and discharged some 60 million tonnes of carbon dioxide into the atmosphere. But at least the same amount of fuel again is required to bring in goods and products from outside, with more and more being flown in halfway around the world.¹⁶

Moving people and goods across vast distances is becoming the norm. Low transport costs have rendered distances irrelevant, plugging cities into an

increasingly global hinterland. The actual location of settlements is becoming less important as cities are connected together in a global transport web based on cheap fossil fuels. This process is often facilitated by substantial government subsidies on transport infrastructure.¹⁷

Today we don't really live in a *civilisation* but in a *mobilisation*—of natural resources, people and products. The world's major transport systems start and end in cities. They are the nodes from which mobility emanates, along roads, railway lines, aircraft routes and telephone lines. Cities in the rich countries also sprawl ever outwards along urban motorways and railway lines to their suburbs and shopping malls and beyond, while their centre is often devoid of life outside business hours. They are both the origin and the destination of this mobilisation that has come to define our new existence as *amplified humans*—people amplified by the power of modern technology. We have changed profoundly as a result, with technologies now merged into our very being and the experience of nature becoming ever more distant.

We rarely have cause to reflect on the environmental impacts of our daily energy use, unless we choke on exhaust fumes on a busy local street. But again, there is a price to pay: waste gases, such as nitrogen dioxide and sulphur dioxide, discharged by chimneys and exhaust pipes, affect the health of city people themselves and, beyond urban boundaries, that of forests and farmland downwind. And most of the increase of carbon dioxide in the atmosphere is attributable to combustion in the world's cities. Concern about climate change is now shared by virtually all the world's climatologists. The earth's atmosphere has become the sink for billions of tonnes of urban waste gases every year.

Since the beginning of the industrial revolution, carbon dioxide in the atmosphere has increased by some 30 per cent, from 280 to 370 parts per million, and average temperatures on earth have risen by 0.6 degrees centigrade. According to the Intergovernmental Panel on Climate Change (IPPC), by the year 2100 average temperatures are expected to rise by up to 5.8 degrees centigrade. And the climate boomerang could hit cities especially severely: rising sea levels in particular will take a heavy toll on cities because many are located on low ground close to the sea. Already the sea level has risen by around 20 centimetres and could rise by up to 90 centimetres by 2100.¹⁸ Robert Watson, former head of the IPCC, says:

The 1990s was the hottest decade of the last century and the warming in the 20th century was warmer than anything in the last



Flyover in Tokyo

Today we don't really live in a 'civilisation', but in a 'mobilisation', of resources, products and people.

*1,000 years in the Northern Hemisphere. We will see a drier summer in arid and semi-arid areas which will make water management much more difficult in the future. Major ecosystems such as coral reefs and forests will suffer from the rising temperatures as never before.*¹⁹

Global climate change is becoming an irrefutable reality and energy consumption by cities is directly implicated. All over the world glaciers are melting. Billions of people are experiencing the ever-growing incidence of storms, floods, forest fires and irregular weather patterns. In December 2003 Munich Reinsurance, the world's biggest reinsurance company, expressed alarm about a sharp increase in weather-related disasters. Some 20,000 people were killed by that year's summer heat wave in Europe, which is widely attributed to global warming.²⁰

CITIES AS ECO-TECHNICAL SYSTEMS

Much effort has been taken to define the identity of modern cities. In Chapter 6, I describe them as 'eco-technical systems'. Biology still characterises cities in many ways: in gardens, ponds and urban forests, they invariably contain the remnants of a great variety of ecosystems; they rely on farming for a steady supply of food; and their human inhabitants continue to reproduce and have children. But modern cities have increasingly become a new fusion of ecology and technology. In the last 100 years, they have come to be defined ever more by fossil fuel-based energy and transportation systems, technical infrastructure, industrial production and global communications.

Worldwide, urbanisation is closely associated with increased production and consumption. Compared with rural dwellers, city people in developing countries have much higher levels of consumption, with massively increased throughput of fossil fuels, metals, timber, meat and manufactured products. On the one hand this means significantly increased standards of living, on the other hand there is the need to deal with much larger amounts of solid, liquid and gaseous wastes. With determination, modern cities *can* make efficient use of resources. How can we assure that appropriate policies to achieve this potential will be implemented?

Recent proposals for improving the resource productivity of modern production and consumption by a factor of four, or even ten, apply directly



The return of the tram

In the French city of Montpellier a new, state-of-the-art tram system has persuaded many drivers to leave their cars at home and to go to work by public transport instead.

to managing our urban systems.²¹ Cities are centres of human knowledge and today, more than ever before, this must also mean knowledge of the world and how we can reduce our impact on it. This is as much about education, information dissemination and participation as about better uses of technology. The critical issue for a sustainable future is: can cities function as sustainable, self-regulating systems *internally*, as well as in their relationship to the *outside* world?

Optimising the urban use of resources is a global challenge. Says American author Paul Hawken:

We're in a world in which everybody cannot have what the average Japanese or United States citizen has. And the point is that the rest of the world is aiming for that and wants it desperately. And to a certain extent they deserve it just as much as you and I. And so the question is, how can we reconfigure the world in such a way that we dramatically reduce our impact upon the

environment, and at the same time really improve the quality of life for people both in the southern developing countries as well as industrialised countries?

A wide range of new technical options is becoming available to us. Wind and solar power, fuel cell technology, novel solid waste and sewage recycling systems are all on the way to becoming cost competitive with older urban technologies. New insulation materials can make buildings highly energy efficient, minimising the need for heating and cooling. Buildings can become net producers rather than consumers of energy. The market for these technologies is booming worldwide, driven by increased international and national legislation and regulation. In 1999, the OECD estimated that it was worth \$300 billion and predicted a doubling by 2009. A wide range of new local jobs is associated with this market, in many disciplines from research, manufacturing and installation to marketing and consultancy. These new options will be discussed in much more detail in the following chapters.

CREATING LIVEABLE CITIES

In a world in which most people spend most of their time in cities, people need to be able to enjoy stimulating, diverse, clean, safe and healthy urban environments. Innovative planners, architects and civil engineers all over the world are working to make liveable cities a tangible reality, but much more still needs to be done. The key features of liveable cities are the widespread presence of nature; clean, attractive public spaces and buildings; walkable city centres and neighbourhoods; and a vibrant and diverse street culture.

Great cities such as London, New York or Paris are widely celebrated as the epitome of cultural development. But in these cities many people can't afford to go to concerts, the theatre or the opera. A liveable city makes sure that these issues are addressed and that the participation of all people in a diverse variety of cultural activities is assured. We also need to remember that cities aren't only places for people, but that trees, plants and animals also need their own distinct urban habitats.

Liveability and sustainability are intimately connected, but they are not always the same thing. Here are three examples from London.

When Joseph Bazalgette created London's sewage system in the 19th century, his brief was to stop people's exposure to human wastes. By building

a complex web of sewers, London's rivers were cleaned up and the city's sewage was disposed of into the Thames estuary, out of harm's way. But most of it was not recycled and returned to the land that fed Londoners. London became more liveable, but not more sustainable.

After smog blanketed the city and killed 4,000 people in December 1952, Britain's Clean Air Act of 1956 was introduced as a result. Burning smokeless coal was made mandatory and London's power generation was moved to locations outside the city. As a result, the air quality was greatly improved, making it a much more liveable city. However, the carbon dioxide produced by London's energy system was, if anything, increased due to longer power lines. London became more liveable, but less sustainable.

On the other hand, the London congestion charge, introduced in February 2003, reduced traffic in the inner city by some 18 per cent and substantially increased the use of public transport. This has improved London's air quality and reduced its discharge of carbon monoxide, making it both more liveable and more sustainable.

Creating more liveable urban environments increases people's sense of well-being. After the destruction of cities in the Second World War, planners welcomed the opportunities for rebuilding Europe's cities. In many places they replaced old narrow urban streets with a brave new world of tower blocks and wide thoroughfares for car traffic. But the construction of vast new concrete buildings and the triumph of the motor car combined to create increasingly inhospitable cities. Negative reactions to high-rise living caused a loss of confidence among planners. Cars were a great symbol of individual freedom, but they also became a menace in the urban environment. Many cities made brave attempts to reduce people's dependence on private motor cars and to assure integration of public transport into daily urban life.

Planners have increasingly used public consultation exercises to reach a consensus on liveable and people-sensitive urban design. Allowing people's creativity to become an important input into planning has become a key challenge in the new quest to bring 'conviviality' back into our cities. How can we create cities of cultural vigour, physical beauty, thriving natural habitats and opportunities for lively social encounters that are also economically and environmentally sustainable at the same time?

Liveability is just as important for developed as for developing countries. In the rapidly growing cities of developing countries, poverty and environmental pollution are commonplace. The most urgent issue here is to create acceptable living conditions, rather than reducing urban impacts on the regional and global environment. As many as 50 per cent of people live in

squatter camps without adequate water supplies, sewage systems or any other services. Never before have so many people faced such appalling environmental conditions. Diseases such as cholera, typhoid and TB, well known in Europe 150 years ago, are now occurring in many developing cities, with epidemics threatening particularly the poorest communities.

Urbanist Jane Jacobs says:

*The pseudo science of planning seems almost neurotic in its determination to imitate empiric failure and ignore empiric success. To create better cities all over the world, both active public participation and innovative design are essential. Much work has been done to collect examples of best urban practices and policies around the world, featuring novel approaches to architecture, public space design, energy systems, urban infrastructure and waste management. It is critical for these to be disseminated as widely as possible.*²²

WHAT FUTURE FOR VILLAGES?

The world's two million villages are losing out to cities.²³ Their economic dependence on urban centres is growing all the time and rural–urban migration is continuing to sap their energy. Mechanisation of agriculture is reducing rural job opportunities and is causing the amalgamation of farms. In some parts of the world, major environmental changes such as soil erosion, salinisation and loss of forest cover have been contributing to the decline of rural economies. Villages are being swamped increasingly by the manifestations of urban culture, partly as a result of rural electrification, which has thus become a mixed blessing.

In Europe and North America, there has been some reversal of the outflow of people from villages to cities as a result of the ubiquitous use of the motor car and the desire of city people to own second homes, but this, too, is often being experienced as detrimental by village communities that cannot compete with the prices that city people can pay for village houses and cottages. As a result, villages near cities are often becoming dormitories, and in remoter but picturesque locations, village houses used as second homes stand empty for much of the year.

However, in many parts of the world, village life is by no means dead. Many villages maintain their vibrant, traditional cultures, with tourism sometimes

being a significant element within this trend. Ecotourism can make a substantial contribution to village economies. Another feature of the resurgence of village life in some parts of the world is the desire of people from the city to set up their full-time homes in villages and to try to participate actively in local life. New communication technologies such as broadband have substantially contributed to this trend, allowing people in villages to do work that could only be done in cities until recently.

MAKING IT HAPPEN

Cities cannot exist indefinitely by routinely using non-renewable resources from ever more distant hinterlands, and using the biosphere, the oceans and the atmosphere as a sink for their wastes. In a world of cities, sustainable development must be sustainable *urban* development. There will be no sustainable world without sustainable cities. The challenge is to create a new relationship between cities and nature, while also creating a more equitable relationship between people.



Solar building, Gelsenkirchen

This solar powered building in Germany, gives a vivid impression of the new solar architecture that will transform our cities.

Europe, America, Japan and Australia, with their unprecedented dependence on fossil fuel-based technologies and processes, their complex technical infrastructure and their ever-growing consumerism, are currently the most unsustainable regions of the planet. But as developing countries pursue economic and urban growth, they also have to confront the same problems.

In recent years the social agenda has dominated discussions on the future of cities. In many areas of the world, riots have become part of the vocabulary of people who feel alienated and abandoned. A great deal of effort has gone into addressing unemployment, deprivation, apathy, crime and social discontent.

The convergence of *economic* and *environmental* sustainability offers tremendous new opportunities. In the age of globalisation, local jobs are becoming a rare commodity. In many towns and cities, the commercial priorities of companies, rather than democratic decision making, have come to determine people's well-being. This needs to be challenged. Municipal authorities, as the elected representatives of local people, should seek to play an active role in ensuring a sense of continuity for their populace, and this should certainly include economic stability.

It is beginning to dawn on decision makers that regeneration and environmentally sustainable development offer tremendous new opportunities for creating local jobs, shifting employment from extractive and polluting industries towards resource conservation—enhancing recycling and the energy efficiency of cities and individual buildings. Seeing the potential of their cities as environmentally, socially and economically sustainable systems offers city authorities an exciting range of new policy options.

In recent years, cities all over the world have been wrestling with the implementation of sustainable development. It would be an illusion to think that the necessary changes can be achieved only by top-down public policy. Sustainability can only work with strong popular involvement and participation. In fact, the most successful examples of policy development and implementation are driven by strong public demand and the active collaboration of municipal authorities, NGOs and neighbourhood groups.

LESSONS OF HISTORY

All over the world tourists flock to old cities that excel because of their beautiful buildings and design, such as Prague, Salzburg, Burgos, Kyoto, Udaipur, Taroudant, Xian or Timbuktu. People love visiting cities with an ancient

history because they provide a sense of continuity that is often lacking in modern cities. For creating great cities in the 21st century, it is useful for us to learn from history in the awareness that settlements, at best, are magnificent manifestations of human creativity. From their very origins people have planned their settlements and there is much that we can learn from the ideas and design concepts that have been adopted throughout history. Most cities in the past were small and human-scale places created for walking and this has defined their essence. Can we create convivial, charismatic cities today?

Many old cities are manifestations of a *culture* of sustainability, passing on the baton of urban stewardship from generation to generation. Historically, many traditional cities grew and prospered by assuring sustainable supplies of food and forest products from the surrounding countryside. This is true of medieval European cities such as Siena or Dinkelsbuehl, with their concentric rings of market gardens, forests, orchards, farm and grazing land, as well as of many cities in Asia, where this practice continues today. Future cities can learn a great deal from this model, even if we cannot simply import traditional practices into the 21st century unchanged.

The history of human settlements is full of magnificent achievement as well as misery, decline and despair. While many have existed continuously for hundreds or even thousands of years, others have dissolved into heaps of dust surrounded by desert. They imploded after devastating the local environments from which they drew their resources, or as a result of social cataclysm and war. Such examples show that there are limits to the growth of cities, in the past, as well as today.

The next three chapters try to develop a historical perspective on the rise and, sometimes, the fall of cities, starting with the very earliest human settlements.