

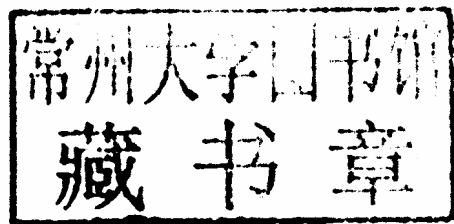
GOVERNING FOR SUSTAINABLE URBAN DEVELOPMENT

Yvonne Rydin



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List of Acronyms and Abbreviations

ACE	Association for the Conservation of Energy
AECB	Association for Environment Conscious Building
BedZED	Beddington Zero Energy Development
BER	Building Energy Rating
BRE	Building Research Establishment
BREEAM	Building Research Establishment's Environmental Assessment Method
CCHP	Combined Cooling Heating and Power
CCS	carbon capture and storage
CCTV	Closed Circuit Television
CCX	Chicago Climate Exchange
CERT	Carbon Emissions Reduction Target
CHP	combined heat and power
CIEH	Chartered Institute of Environmental Health
CLG	Department of Communities and Local Government
CoPs	communities of practice
CRC	Carbon Reduction Commitment
CSH	Code for Sustainable Homes
DEC	Display Energy Certificate
DECC	Department of Energy and Climate Change
ECU	Environmental Change Unit
EIA	environmental impact assessment
EIP	examination in public
EIU	Economist Intelligence Unit
EPBD	Energy Performance of Buildings Directive
EPCs	Energy Performance Certificates
ESCO	energy service company
ETS	Emissions Trading Scheme
EU	European Union
FGD	flue gas desulphurization
GDP	Gross Development Product
gha	global hectares
GLA	Greater London Authority
GOS	Government Office for Science
HDI	Human Development Index

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Sustainable Development and the Urban Agenda

Introduction

Sustainable development is now widely acknowledged to be an important policy goal, possibly the most important policy goal. This curious and not always well-understood mix of environmental protection, sustained economic activity and social welfare has become the public face of much policy activity. Its profile has been raised by the continuing and growing evidence of the scale and significance of climate change, by the enduring nature of profound social inequalities and even by the reversal of economic fortunes as economies slide into recession.

Sustainable development offers the prospect of a very different world and this includes our urban areas, our towns and cities and the built environments that they comprise. Urban areas are central to all aspects of sustainable development. They are centres of economic wealth-creation and yet, at the same time, locations of social deprivation. They can be associated with all sorts of environmental degradation – loss of green space, air pollution, greenhouse gas emissions linked to energy use, waste generation and excessive water consumption to name but a few key aspects – and yet offer the scope for considerable resource efficiencies.

This raises the prospects of changing our urban areas to contribute more fully to sustainable development rather than undermine it. Change can, of course, occur within the exist-

ing physical fabric but there has been increasing interest in using the processes of urban development to drive change. Understood broadly, urban development can encompass new build, demolition and rebuild, refurbishment, regeneration and area improvement. These all have considerable potential for reshaping the built environments of urban areas.

This book looks at the role that urban development can play in delivering sustainable development. It considers how activity at the urban scale is related to the broader concept of sustainable development (the remainder of Chapter 1) and elaborates what sustainable urban development means at the scale of the building, the development site, and the urban area or region (Chapter 2). After an account of the market processes that drive urban development (Chapter 3), the main emphasis of the book is on how processes of governing can shape the delivery of sustainable urban development. Chapters 4 and 5 build a conceptual approach that highlights the importance of different modes of governing and different policy tools for achieving sustainability. In particular, it emphasizes the scope for learning within governing.

The next four chapters are structured around different tools for delivering sustainable urban development, unpacking the processes of governing and learning involved. Chapter 6 considers the role of information in a variety of forms, while Chapter 7 goes on to discuss financial

incentives including subsidies, taxes and the influence of tradable permits such as carbon allowances. Chapter 8 looks at spatial planning and the management of the spatial distribution of urban development, with Chapter 9 covering regulation, focusing particularly on planning regulation. The book concludes with a summary of the main argument together with a consideration of the prospects for delivering sustainability through urban development (Chapter 10). It begins though by putting an interest in sustainable urban development in the context of broader debates about development and sustainable development in general.

What is sustainable development?

Much ink has been spilt trying to define the term 'sustainable development' and it has become commonplace to count the number of such definitions available and to point to the ambiguity surrounding the concept's use. This ambiguity may well have contributed to the widespread use of the term in all sorts of contexts – policy statements, corporate reports, community initiatives – in the 1990s and 2000s. But it has also led to a certain dilution of the term so that it can be used to mean almost anything. The word 'sustainable' has been attached as a descriptor to many nouns and verbs: sustainable communities, sustainable consumption, sustainable business, sustainable oil and so on.

However, sustainable development had a quite clear and precise meaning in the document that is usually taken as the key reference point: *Our Common Future* or the Brundtland Report (WCED, 1987). The agenda for a United Nations' commission, under the chairmanship of the former Norwegian Prime Minister Gro Harlem Brundtland, was keenly debated before the commission started its work and was amended to cover the interrelationship between development and environmental concerns. As such it was seeking to address the extent of poverty on a global scale alongside the emerging global environmental agenda: pollution, resource exploitation, loss of biodiversity and global warming. Global warming in particular was achieving prominence

as a new environmental threat at the planetary scale, although the well-established threat of nuclear war was also considered. Poverty, peace and the planetary environment were the three main themes of this keynote report.

Sustainable development was defined here as development that 'meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED, 1987, p8). This sees the central problem as existing patterns of economic activity. These are deficient since they do not ensure that basic needs for today's global population are being met. They also threaten future generations by effectively stealing the planet's resources and environmental capacities from them to support current lifestyles. These two aspects are interconnected since the Brundtland Report makes the argument that poverty is also an important contributory cause of environmental degradation.

The solution lies in a 'new era of economic growth' (p8), which radically departs from prevailing patterns of economic activity to ensure that development provides for the world's poor and respects environmental limits. So, in the Brundtland definition, sustainable development is very much about development, economic development but rethought to meet social and environmental goals. The radical nature of the Brundtland Report's core message has, however, been softened and changed by the way that the term was used in the decade after the report's publication. Box 1.1 provides some examples taken from national and international sustainable development strategy documents.

In response to this apparent looseness in how sustainable development is being understood, attempts have been made to provide a more rigorous definition. Three of these are represented graphically in Figure 1.1. The Venn Diagram is one of the most commonly used. It suggests that sustainable development has economic, social and environmental dimensions:

- The economic dimension is about using market-based dynamics to meet people's needs, wants and desires and thereby provide the material basis for quality of life

Box 1.1 Definitions of sustainable development

United Nations: 'The achievement of sustainable development requires the integration of its economic, environmental and social components at all levels. This is facilitated by continuous dialogue and action ...' (www.un.org/esa/dsd/index.shtml accessed 25.3.09).

European Union: 'Sustainable Development stands for ... a better quality of life for everyone, now and for generations to come. It offers a vision of progress that integrates immediate and longer-term objectives, local and global action, and regards social, economic and environmental issues as inseparable and interdependent components of human progress' (www.ec.europa.eu/environment/eussd/ accessed 25.3.09).

United States of America: 'our broad development goals of promoting economic growth, social development and environmental stewardship in such areas as forests, water, energy, climate, fisheries, and oceans management' (www.state.gov/g/oes/sus/ accessed 25.3.09).

United Kingdom: 'The past 20 years have seen a growing realization that the current model of development is unsustainable. In other words, we are living beyond our means. ... Our way of life is placing an increasing burden on the planet' (www.defra.gov.uk/sustainable/government/what/index.htm accessed 25.3.09).

India: 'Progress has been monopolized by the chosen few at the unbelievably and indescribably large cost of the majority of mankind. The most disconcerting manifestation of this lop sided progress has been our planet's ravaged ecology' (www.envfor.nic.in/ accessed 25.3.09).

China: 'China should make low carbon the strategy for the country's social and economic development' (www.chinasourcingnews.com/2009/03/10/411160-cas-releases-china-sustainable-development-strategy-report-for-2009/ accessed 25.3.09).

- The social dimension is about the non-material dimensions of quality of life and equity, including a sense of community, local well-being and security, and the elimination of poverty, perhaps even the achievement of a more equal society
- The environmental dimension encompasses all those environmental goods, assets and services on which we depend and which are threatened by pollution, carbon emissions, resource exploitation and destruction of habitats.

Typically, in non-sustainable development, economic considerations dominate. Movements towards more sustainable development can be achieved by incorporating social or environmental concerns into decisions about economic development and, ideally, both would be integral to such economic decision making. Hence, truly sustainable development is indicated by the area of overlap at the centre of the Venn Diagram.

The Russian Doll diagram again identifies economic, social and environmental dimensions as the key aspects of development but sees these as nested one inside each other. At the centre lie

the environmental constraints that any development depends on; one layer out is the social dimension, indicating the importance of social structures for development activity. Economic considerations – understood as market processes and associated values – are only then considered, as the outside surface layer. As the Russian Doll metaphor suggests, economic considerations may be the most apparent facet of development but taking the doll apart makes clear the dependence of economic processes on society and the environment. By implication, sustainable development is economic activity that operates within the constraints of the environment (that is, does not cause irreversible environmental damage) and of society (that is, does not cause damage to the fabric of society through inequitable outcomes or exploitative processes).

The final diagram in Figure 1.1 illustrates the metaphor of four Pillars of Sustainability. Again the economic, social and environmental are all identified as pillars but they are joined by a fourth pillar – institutional. This fourth pillar harks back to another theme of the Brundtland Report: that government needs to work in a different way to

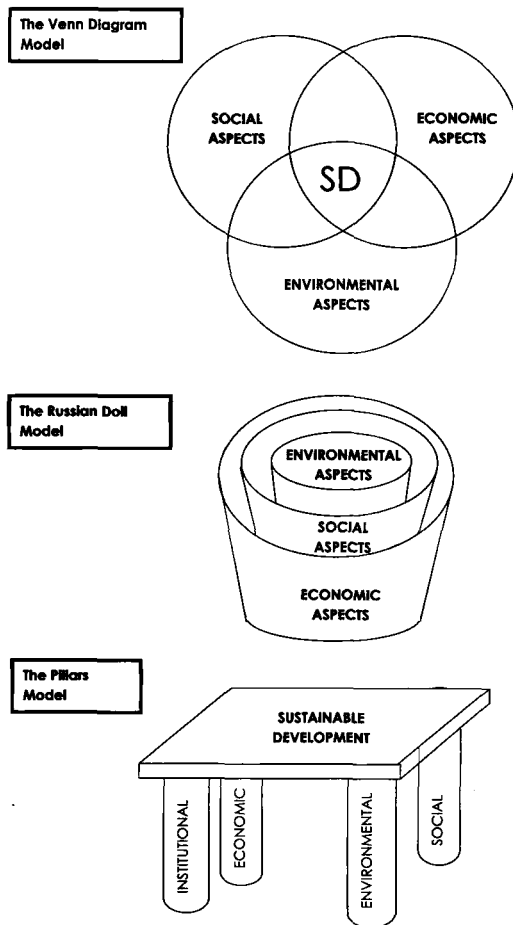


Figure 1.1 Three models of sustainable development

deliver sustainable development. In particular, the report argued that a much more participatory approach was needed that engaged with and involved the communities affected by economic development with all its social and environmental consequences. All four pillars together are needed to hold up the slab of sustainable development suggesting an essential and equal emphasis on each dimension.

What all these diagrams have in common is the recognition that, while contemporary patterns of economic activity may have important negative impacts on society and the environment, nevertheless economic dynamics do play an important role in generating wealth within

society, in providing for people's needs and supporting investment for the future. Sustainable development is not an anti-economic concept. Rather it queries how economic activities currently interface with the social and environmental dimensions of our lives.

There are two aspects of these interrelationships that are particularly important. The first concerns how conflicts and tensions between the different aspects of sustainable development – between the economic, social and environmental – are handled, whether trade-offs are possible and, if so, how they can be effected. The second looks, more positively, at the prospects for synergies between these different aspects and the possibility of identifying win-win outcomes (that is, outcomes that deliver at least two of environmental, social and economic benefits) or even win-win-win outcomes.

The trade-off issue is particularly well handled by the differentiation between strong and weak variants of sustainable development (Neumayer, 2003). This approach derives from ecological economics and focuses on different types of capital. Economics typically distinguishes between the different forms of capital that contribute to production and hence the generation of profit and wealth. These forms usually extend to financial capital (money), physical capital (raw materials and machinery) and human capital (labour, skills and knowledge). However, concern with unsustainable patterns of economic activity has led to environmental capital being added to this list. Environmental capital covers the services and resources that environmental systems provide – resources, climate control, pollution sinks, food production, the gene pool of biodiverse ecosystems – and frames them as a form of capital that contributes to production processes. Some analysts would also add social capital as capturing the contribution of social interactions to economic activity but this is of less relevance to the consideration of trade-offs in pursuit of sustainability; as Chapters 4 and 8 discuss, social capital can be a means of delivering sustainable development.

The essence of weak sustainable development is that different types of capital can be freely substituted for each other. Thus if development

results in some kind of environmental degradation – say, damage to a nature reserve, the erosion of a landscape, the loss of a rare species, pollution or the use of a non-renewable resource – then it would be possible to compensate for these losses by generating more financial, physical or human capital. What is important in this view is that the overall stock of capital grows or stays the same. So it would be acceptable, under the rules of weak sustainable development, to argue that the damage to a nature reserve from construction activity was justified provided that the benefits of the new urban development sufficiently compensated for the damage caused. The techniques involved in making these kinds of judgement are returned to below.

Adopting a weak sustainability perspective is politically attractive because it offers the prospect of continuing with patterns of economic activity that are only marginally altered, primarily to compensate for environmental damage. In economic jargon, this approach internalizes environmental externalities, that is, environmental harms that are not taken into account within market processes. It does so, though, in a way that does not fundamentally alter the nature of economic decision making as currently practised; it just siphons off part of the profits to deal with consequent environmental damage. Similarly, negative social impacts of economic activity can be compensated through reallocating some of the profits of this activity. Community centres, local employment schemes, nature conservation initiatives, energy efficiency schemes and more stringent pollution control measures could all come within the compass of compensatory payments generated by economic wealth-creation.

For some this is a flaw in the weak sustainability approach. It is too close to business-as-usual, so these critics would argue, to be able to deal effectively with the fundamentally unsustainable nature of current development patterns. It enables many different combinations of economic, social and environmental benefits to be considered as sustainable so that the term 'sustainable development' becomes debased. And, further, since social and environmental benefits have to be paid for from economic gains (that is, profits), this creates

an argument for more economic growth. Indeed such a weak sustainability approach underpins much current thinking on achieving sustainable urban development: without growth and associated new urban development, social and environmental benefits cannot be cross-subsidized from economic activity.

The contrast with weak sustainability comes from strong sustainability. In this version, rather like the Russian Doll model outlined above, environmental systems are seen as playing such a significant role in supporting economic and social activity that it is inadvisable to substitute environmental capital with other forms of capital. No amount of compensation with these other forms can really cover the services and resources that these systems provide. Proponents of this view point to three features of environmental systems to support their argument (Pearce and Turner, 1990).

First, many aspects of environmental systems are unique. From an economic perspective, the categories of human, physical and financial capital cover units that are more or less similar. Certainly one unit of money is identical to another unit. People, their skills, physical equipment and machinery may be more distinct but, again from an economic perspective, they are substitutable. One person with certain experience and qualifications can be replaced by another with similar experience and qualifications; one piece of equipment might be unusual but can be rebuilt and/or replaced by new machinery. More importantly, it is possible to substitute human, financial and physical capital for each other. Manpower can be replaced by equipment or the reverse. Labour or machinery can be turned into financial capital or the reverse.

However, environmentalists argue that there are many aspects of environmental systems that are irreplaceable. They point to species of flora and fauna that are at risk of extinction, perhaps carrying with them the part of the gene pool that could yield important medical discoveries. Individual landscapes and nature reserves cannot be automatically substituted even with another landscape or nature reserve. Exploitation of a non-renewable resource reduces the stock of

that resource; the stock cannot be increased again without discovery of new reserves. The broader systemic functions of the environment in providing the physical environment, in which we can breathe, eat, live and reproduce with a degree of security and well-being, are also irreplaceable.

Next, environmental systems often exhibit features of irreversibility so that damage, once done, cannot be undone. A species once lost cannot be regenerated outside of science fiction. Even where there is some potential for reversing the direction of environmental change, environmental systems can be bifurcated, which means that it is much more difficult to reverse a trend than to set it in motion. Climate change is considered to exhibit such bifurcation due to the circulation of the deep oceans and the impact of global warming on the oceans' salinity (Maslin, 2004, Ch. 7).

Scientists also point to the considerable uncertainty that exists about the environmental impacts. In particular, it seems that environmental systems often involve thresholds; up to the threshold, a certain level of polluting emissions, say, has a limited effect but, once that threshold had been reached, then the resulting damage can be much more extreme. In the climate change arena, scientists are concerned that the current upward trend in global temperatures may turn in to a runaway exponential phenomenon. Here the feedback loops within the climate system may result in change reinforcing itself so that all possibility of limiting climate change is lost.

Finally, there are cocktail effects, with multiple sources of damage combining to create new and, as yet, little understood kinds of environmental degradation. This is particularly the case with different types of pollution occurring together and creating new chemical reactions and chain effects.

So environmental capital is different because it exhibits irreplaceability, irreversibility, bifurcation, threshold effects, negative feedback loops and cocktail effects. For all these reasons, strong sustainability proponents argue that we need to treat environmental systems differently and to be much more careful about assuming that we can compensate for environmental damage and loss

by investment in financial, physical and human capital. In this view of sustainable development, priority must be given to environmental protection before considering economic and social development and without assuming that trade-offs between environmental and other goals are acceptable.

This can seem a very conservative view; it can suggest an approach in which economic activity should be resisted in all cases except those where no environmental damage can be demonstrated. This would be a considerable bar to economic growth. So the challenge is to find a new form of economic activity that does not rely on environmental degradation in the way that past growth has done. There have been alternative measures of economic activity that seek to capture this: see Box 1.2. This leads on to consideration of the other key theme: the search for synergies within sustainable development.

Focusing on synergies has two advantages over focusing on trade-offs. First, it searches for outcomes that benefit a number of parties: a synergy between the economic and social dimensions of sustainable development generates profits for economic interests while at the same time delivering social benefits for certain groups. While the trade-off approach is all about compensating for losses resulting from economic activity (and hence, in one sense, buying off opposition to development), the synergies approach is politically much more attractive as it tries to create multiple winners.

Secondly, the synergies approach creatively looks for new ways to undertake economic development, ways that are structured to deliver these multiple gains. Rather than considering how the negative side effects of economic activity can be dealt with – as in the trade-off approach – it considers the actual dynamics of that activity and looks for new ways of generating profits within a broader sustainability frame. There are two possible synergies or win-win scenarios that are generally considered.

The search for a form of economic development that can deliver social gains, particularly for the poorest communities, alongside economic growth has long concerned development studies

Box 1.2 Alternative measures of development

The New Economics Foundation (NEF) has developed a number of different ways of measuring well-being and sustainability to contrast with the conventional measure of economic growth – Gross Development Product or GDP – which emphasizes traded economic activity within a market system. The following table shows the rankings of the biggest national economies according to GDP, and then the UN Human Development Index or HDI (which takes into account health and education levels) and NEF's Happy Planet Index or HPI (which takes into account the ecological efficiency with which well-being is delivered) (NEF, 2006). It emphasizes that conventional measures of economic activity may not be good bases for defining progress on sustainable development with its broader emphasis on social and environmental aspects.

Country	GDP ranking	HDI ranking	HPI ranking
USA	1	15	114
Japan	2	8	75
China	3	94	20
Germany	4	23	51
France	5	11	71
UK	6	21	74
Italy	7	19	69
Russia	8	73	108
Spain	9	16	76
Canada	10	3	89

Source: EIU (2009); www.hdr.undp.org accessed 1.10.09; www.happyplanetindex.org accessed 1.10.09

specialists (that is, those focusing on lower-income countries) as well as socialpolicy analysts within higher-income economies. They have tended to begin from a critique of how large-scale capital has driven development that exploits local communities rather than distributing the rewards of that development equitably. In response they have built models of community-based or grassroots development that emphasize the capacities of those communities to provide for themselves and ensures that the profits from development stay within the locality (Young, 1997). Micro-credit schemes, Local Exchange and Trading Schemes, community shops, urban and peri-urban agriculture are all examples of forms of local economic development that both involve and reward local communities as a priority. These are all small-scale initiatives but nonetheless important; the hope is that fostering many such schemes in many localities would not only benefit those communities but would begin to change contemporary pat-

terns of economic activity from the bottom up.

The focus of synergies that emphasize the win-win connections between environmental and economic benefits is rather different in kind. Here the emphasis has been on finding forms of economic investment and production that contribute towards environmental protection. This means 'green growth' in the sense that the environmental degradation associated with the economic activities is kept to a minimum: no pollution to air, water or land; minimization of waste; and careful location of economic activities to avoid local environmental harms. The aim is that economic growth can be delinked from environmental impacts, including ultimately resource take. Jänicke and Weidner (1995) argue that such a decoupling of material from economic flows could be discerned in the mid-1980s onwards in countries such as Germany, Japan, the Netherlands, Sweden and Denmark. Economic growth with an absolute decline in environmental burden

could thus be a distinct possibility, as promulgated by the Factor 4 (or 10 or more) proponents (Weisacker, 1998).

One urban example of this approach is the eco-park, a kind of industrial estate that is designed to reduce the impact on the environment through careful landscaping, management of water use and generation of on-site renewable energy (Haskins, 2007 and Domenech and Davies, 2007). But eco-parks also actively manage the relationships between firms on the estate so that unavoidable waste products from one firm are used as inputs by another firm. In this way the eco-park attempts to close the resource loop by minimizing total resource take from the environment into the park and the total emissions and waste generated and exported from the park (see Box 1.3).

Green growth can have another dimension though; it can refer to economic activity that

contributes to a reduced environmental impact more broadly through the kinds of goods and services produced. This describes a pattern of economic production concentrating on sectors such as land decontamination, recycling within waste management and renewable energy. At a national level, economic policy can seek to restructure the country's economy so that these sectors increase in importance and take a central role in driving national economic growth. Taken together with the decoupling of economic growth from environmental impacts described above, these win-win strategies come under the umbrella term of 'ecological modernization' (Mol and Sonnenfeld, 2000).

Such economic strategies have become increasingly apparent in recent years. For example, Sweden adopted an ecological modernization approach as a response to the economic pressures it faced in the 1990s from globaliza-

Box 1.3 An eco-park example

In Kalundborg, Denmark a small industrial estate has evolved into an eco-park by virtue of developing links between the different companies in terms of materials and energy flows. This activity is centred on the Asnæs power station, which is Denmark's largest power station with 1500MW capacity. It also provides district heating to 20,000 residents in the local town. The other main partners are: Statoil Refinery; Gyproc, making plasterboard; and Novo Nordisk, a biotechnology company producing pharmaceuticals and industrial enzymes. What were originally bilateral exchanges to generate income from waste products has become over time a fully fledged system of exchanges to generate environmental as well as economic benefits. The extent of these exchanges now amounts to about 3 million tonnes a year with consequent benefits in terms of reduced pollution to land, air and water and resource conservation.

The exchanges involve:

- the provision by Statoil of excess gas to Gyproc, reducing flaring;
- the substitution of gas from Statoil for some of the coal used by Asnæs power station (after investment in flue gas desulphurization or FGD);
- the extension of district heating using surplus steam from the power station to Novo Nordisk and Statoil;
- the use of local salt water from the fjord instead of freshwater from a lake for cooling by the power station; this also produced hot salt water, some of which is used by a local fish farm;
- the use of sludge from Novo Nordisk's activities and from the fish farm's water treatment plant by a local farm as fertilizer;
- the use of gypsum produced as a by-product of FGD by Asnæs to Gyproc; gypsum is the basic raw material of plasterboard;
- the sale of liquid sulphur from FGD to a local sulphuric acid producer;
- the use of surplus yeast, produced by Novo Nordisk as a by-product, by local pig farmers for pig food.

Source: www.indigodev.com/Kal.html accessed 25.3.09

tion and social change. Fudge and Rowe (2001) argue that Sweden was able to fit this with the prevailing expert-led and 'techno-corporatist' approach of Swedish governmental systems but that the outcome has not necessarily delivered the sustainability benefits that were expected. In the UK, Revell (2005) traces a 'paradigm shift' towards ecological modernization with a strong emphasis on the absence of conflict between economic growth and environmental protection, alongside the encouragement of innovation in and diffusion of clean technologies. She suggests one weakness in the UK's ecological modernization approach is the lack of integration of this approach across governmental policy, limiting how much this approach has actually delivered in terms of a shift from conventional economic growth.

These two European examples fit within a well-established emphasis on ecological modernization at the European level (Gouldson and Murphy, 1998; Hertin and Berkhout, 2003; Roberts, 2003). Again, the approach has not been universally applied and integration across policy domains remains difficult to achieve; nevertheless the direction of the policy approach is clear. Meanwhile the idea of a 'Green New Deal' as a response to the economic recession of 2008 onwards also fits within the ecological modernization paradigm. Here investment in 'green-collar' jobs in industries that will deliver carbon reductions and other environmental benefits has been promoted by the UK and US governments, among others, as well as the United Nations. Whether this delivers a different type of economic activity when the recovery arrives remains to be seen.

What is urban sustainability?

The above discussion has looked at the general meaning of the term 'sustainable development', considering the interrelationships between economic, social and environmental dimensions within overall development patterns. Attention now turns to what meaning this term can have in an urban context. In this section, the term 'urban

Table 1.1 Urbanization across the world

% population in urban areas in	2010	2050
World	50.6%	69.6%
United Kingdom	90.1%	94.0%
United States of America	82.3%	90.4%
China	44.9%	72.9%
India	30.1%	55.2%

Source: www.esa.un.org/unup/ accessed 26.3.09

Table 1.2 Top ten cities across the world

By population 2020	By growth rate 2006–2020
Tokyo, Japan	Belhai, China
Mumbai, India	Ghaziabad, India
Dehli, India	Sana'a, Yemen
Dhaka, Bangladesh	Surat, India
Mexico City, Mexico	Kabul, Afghanistan
Sao Paulo, Brazil	Bamako, Mali
Lagos, Nigeria	Lagos, Nigeria
Jakarta, Indonesia	Faridabad, India
New York, USA	Dar es Salaam, Tanzania
Karachi, Pakistan	Chittagong, Bangladesh

Source: www.citymayors.com accessed 26.3.09

sustainability' is discussed before turning to the meaning of 'sustainable urban development' in the next chapter.

Urban sustainability has become a significant concern with increased urbanization across the globe. By the end of 2008, a milestone had been reached in that half of the world's population now live in urban areas (as defined by the United Nations). By 2050, this figure is expected to reach 70 per cent (see Table 1.1). There will be at least 27 megacities with a population of at least 10 million (compared to 19 today) but at least half the growth will be in the large number of small cities of up to 500,000 people (see Table 1.2). The main world regions where the growth will be concentrated in the future will be in Asia and Africa, where urbanization rates have in the past been lower than in Europe and North America.

It is, therefore, of significance to the broader goal of sustainable development that urban areas