Another 2 billion people will be added to the global population over the next 25 years, most of them in poorer countries, generating huge new demands for goods and services and affordable shelter and housing and requiring faster economic growth and higher energy use. It is widely recognized that faster economic growth is the key to meeting the Millennium Development Goals by 2015. But if growth is not achieved in an environmentally sustainable way, its effect on poverty and human well-being will be disastrous.

Economic development has led to dramatic improvements in the quality of life in developing countries, producing gains unparalleled in human history. But the gains have been unevenly distributed, and a large part of the world's population remains desperately poor. Natural resources—land, water, and air—are being degraded at alarming rates in many countries. And environmental factors such as indoor and outdoor air pollution, waterborne diseases, and exposure to toxic chemicals threaten the health of millions of people. These concerns can be addressed by achieving the Millennium Development Goals.

A healthy environment is an integral part of meeting the Millennium Development Goals, which call for integrating principles of sustainable development into country policies and programs and reversing environmental losses. The environmental Goal sets a target of halving by 2015 the proportion of people without sustainable access to safe drinking water and basic sanitation. It also calls for achieving a significant improvement in the lives of at least 100 million slum dwellers by 2020, bringing to fore the inadequacy of shelters and housing conditions in many poor countries (see table 3.a for selected indicators of housing conditions). All this requires measuring and monitoring the state of the environment and its changes—with better data on access to safe water and sanitation and a minimum set of indicators to monitor the conditions of shelters and housing. It also requires measuring and monitoring the links between economic growth and environmental change.

Many such indicators are presented here. But despite greater awareness of the importance of environmental issues and efforts to improve environmental data, information on many aspects of the environment remains sparse. Data are often uneven in quality, cover different periods, and are sometimes out of date. The lack of adequate data hampers efforts to measure the state of the environment and to design sound policies. Many environmental indicators are not meaningful at the national level. Climate change has impacts that go beyond national boundaries. Environmental factors such as air and water pollution may have relevance only to the locality where they are measured. So global, regional, or city indicators (tables 3.11 and 3.13) are often more meaningful than national aggregates.

Indicators of economic growth and environmental change

Human activity and economic growth affect the natural environment. In a chapter dedicated to environmental protection, the 2000 Millennium Declaration explicitly referenced climate change,

desertification, biodiversity, and forest and water management and established a set of indicators to monitor the state of natural resources and to measure environmental change. Most of these indicators are covered in the tables in this section.

Forest coverage and protected areas. Forests are shrinking, and with them the diversity of the plants and animals they support. With growth and development, forests are being converted to agricultural land and urban areas. At the beginning of the 20th century the Earth had some 5 billion hectares of forested area. Now it has less than 4 billion hectares. The loss has been concentrated in developing countries, driven by the growing demand for timber and agricultural land, exacerbated by weak monitoring institutions. Low-income countries lost some 60 million hectares—about 7 percent of their forest—in the 1990s. By contrast, high-income countries reforested about 8 million hectares of forest in the same period (table 3.4).

Closely linked to changes in land use is biodiversity, another important dimension of environmental sustainability. Many countries have designated a share of their land as protected areas (table 3.4). But even where protected areas have expanded and environmental regulations are respected, losses of biologically diverse areas cannot be reversed. About 12 percent of the world's nearly 10,000 bird species are vulnerable or in immediate danger of extinction, 24 percent of 4,800 mammal species, and 30 percent of fish species.

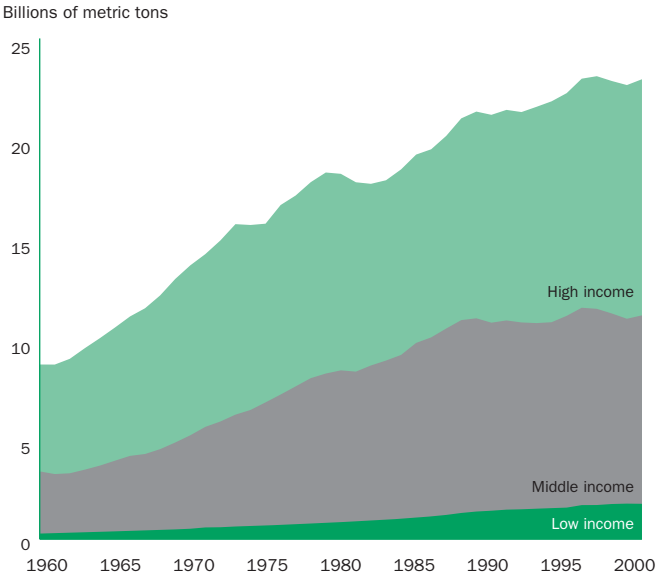
Energy use and carbon dioxide emissions. Energy, especially electricity, is important in raising people's standard of living. High-income countries use more than five times as much energy per capita as developing countries, and with only 15 percent of the world's population they use more than half of its energy (table 3.7). Energy use and electricity generation also have environmental consequences. Generating energy from fossil fuels produces emissions of carbon dioxide, the main greenhouse gas contributing to global warming. Anthropogenic (human-caused) carbon dioxide emissions result primarily from fossil fuel combustion and cement manufacturing, with high-income countries contributing half (figure 3a and table 3.8). Among countries in all income groups, per capita emissions vary widely (from 22 tons in Kuwait and 20 tons in the United States to 0.016 tons in Chad). How energy is generated largely determines the environmental damage. Burning coal releases twice as much carbon dioxide as burning an equivalent amount of natural gas (see About the data for table 3.8, and table 3.9 for the sources of generating electricity).

Access to safe water and sanitation. While water supply and access to safe drinking water receive considerable attention at the international level, sanitation problems are seldom mentioned. Yet water supply issues are closely linked to sanitation. Evidence suggests that sanitation is at least as important as water supply in preventing diseases, and many of the health benefits from access to water cannot be realized without improved access to sanitation. Lack of access to adequate water and sanitation has enormous health and economic costs for households, with consequences for national economies and the environment. It contributes to illness and death, especially in children. Every year 2.2 million children under age five die from diarrhea—closely linked to inadequate access to safe water and sanitation. In addition, almost half the people in developing countries suffer from diseases caused directly or indirectly by inadequate sanitation and consumption of contaminated water. In addition to diarrhea, these include intestinal infections, trachoma blindness, cholera, and schistosomiasis. Improving access is crucial for reducing illness and death among children under age five. World Bank estimates suggest that achieving the water target would save the lives of 400,000 children a year, while halving the proportion of people without access to sanitation would save the lives of 550,000 children a year.

Improvement in the lives of slum dwellers. The Cities without Slums Initiative was endorsed at the Millennium Summit, which included in the Millennium Declaration the goal of improving the lives of 100 million slum dwellers (target 11; see section 1). This initiative focuses on upgrading unhealthy and often threatening urban slums and squatter settlements by improving basic municipal services over the next 20 years. Improving slum dwellers' lives includes better housing; more secure tenure; greater access to water, sanitation, and waste management services and cleaner fuels; reduced urban air

3a

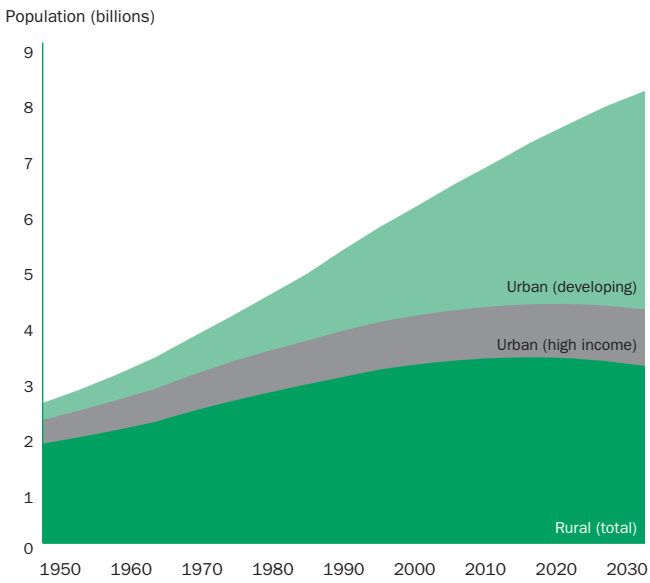
High-income countries account for half the world's carbon dioxide emissions



Source: Carbon Dioxide Information Analysis Center data.

3b

Most future urban growth will be absorbed by developing economies



Source: United Nations Population Division 2004.

pollution; and easier access to safe transport services. In developing countries an estimated 38 percent of urban residents live in slums. As the urban population increases, the number of people living in slums will likely rise, increasing the challenges of providing services. The plight of slum dwellers has brought forward the more general issue of housing conditions, particularly in cities and urban areas.

Rapid urbanization and higher demand for shelter

The world is becoming increasingly urban. Urban areas are home to 48 percent of the world's population—two of five people in low- and middle-income countries and almost four of five in high-income countries. Most of Latin America is as urbanized as Europe, with 77 percent of the population living in urban areas. Asia is urbanizing rapidly. Even such traditionally rural countries as China, India, and Indonesia now have hundreds of millions of people living in urban areas, with both the number of people and the share of the population in cities growing rapidly (table 3.10).

In 1950 only 18 percent of people in developing countries lived in cities. In 2005 the proportion exceeded 40 percent, and by 2030 it is forecast to be 56 percent. Most future urban growth will be absorbed by urban centers in developing countries, which have a high average annual urban population growth rate of 2.2 percent, in contrast with the less than 1 percent rate in high-income economies.

Expanding cities serve many needs—with many consequences. Urbanization can yield important social benefits, improving access to public services such as education, health care, and cultural facilities (table 3.11). It can also lead to adverse environmental effects that require policy responses. Greater urbanization usually means greater pollution, which can overwhelm the natural capacities of air and water to absorb pollutants. The costs of controlling pollution can be enormous. And pollution exposes people to severe health hazards. Several major urban air pollutants—lead, sulfur dioxide, suspended particulate matter—are known to harm human health (table 3.13). A big source of urban air pollution is motor vehicles, whose numbers are strongly linked to rising income. The number of passenger cars increased from 16 cars per 1,000 people in 1990 to 27 in 2002 in developing countries and from 400 cars per 1,000 people to 440 in high-income countries, with New Zealand having the highest number, at 613, up from 438 in 1990 (table 3.12).

While there is no evidence of a population threshold beyond which cities generate more negative than positive effects for their inhabitants, the rapid pace of population growth and enormous size of the population in many cities have overwhelmed the capacity of municipal authorities to respond. Millions of people in cities in developing countries cannot meet their basic needs for shelter, water, food, health, and education.

Demand for housing and emergence of the slums. Ever since there have been cities, there has been demand for housing and shelter and there have been poor living quarters. But only since the sixteenth century have there been slums—places that are "squalid, overcrowded, and wretched."

The unmet demand for affordable housing, along with urban poverty, has led to the emergence of slums in many poor countries. Slums have been the only large-scale solution to housing for low-income people. In cities, where competition for land and profits is intense, slums are the only type of housing that is affordable and accessible to most poor people.

In 2001, 924 million people, or 31.6 percent of the world's urban population, lived in slums (UN-HABITAT 2003). The majority were in developing economies, accounting for 43 percent of the urban population, with Sub-Saharan Africa having the largest proportion of the urban population living in slums (72 percent). The expected growth rate of the urban labor force far outpaces the rate of creation of formal sector urban jobs, so in all likelihood the majority of new urban residents will eke out a living in the informal economy and many will end up living in slums.

3c

Data initiative

Global monitoring of housing conditions and data requirements

Improving shelter requires a better understanding of the mechanisms governing housing availability. That requires better data and better policy-oriented analysis so that housing policy can be formulated in a more global comparative perspective and the accomplishments and lessons learned in one country can be drawn on by others. This comparative perspective can help countries chart their paths, formulate realistic development objectives, and measure their achievements over time and compare them with other countries in similar circumstances.

Housing is viewed increasingly as a commodity with an exchange value, rather than as a good to be produced and allocated outside the marketplace. It is also viewed as a commodity driven by market forces—especially supply and demand—that have a powerful influence across all parts of the market despite the existence of apparently distinctive submarkets. Housing demand and supply are both affected by the regulatory, institutional, and policy environment. Housing policies and outcomes in turn affect such broader socioeconomic conditions as the infant mortality rate, inflation, household saving, manufacturing wage and productivity levels, capital formation, and the government budget deficit. A good understanding of housing condition thus requires an extensive set of indicators within a reasonable framework.

Data deficiencies and a lack of serious quantitative analysis hamper decisionmakers in making informed choices on desirable policies to improve housing. As a result, costly policy failures have impeded development of the housing sector and frustrated broader development objectives. There is a strong demand for quantitative indicators that can measure housing conditions on a regular basis, so that decisionmakers can determine whether conditions are improving or worsening or whether broad housing policy goals are being attained—which are not possible now. Nor is it possible to determine how a particular country compares with other countries, whether its performance is above or below expected norms given its circumstances, or which policies lead to better outcomes and so are worthy of emulation.

The Millennium Development Goals have identified improving housing conditions as an integral part of the global development agenda. The United Nations Human Settlements Programme (UN-HABITAT) is charged with monitoring target 11 for improving the lives of slum dwellers and has proposed four measures of housing deprivation as proxies for the number of households living in slum conditions:

- Individuals lacking access to an improved water supply.
- Individuals lacking access to improved sanitation.
- Individuals living in overcrowded conditions.
- Individuals living in nondurable structures.

Data on these indicators are collected in national censuses using similar definitions and in household surveys such as Demographic and Health Surveys, Multiple Indicator Cluster Surveys, and Living Standards Measurement Study surveys. They are reported for the first time in World Development Indicators in the new table 3.a. In conjunction with data in tables 1.3, 3.5, and 3.10 on water and sanitation, they allow for the monitoring of most aspects of target 11 on a global scale. Table 3.a was constructed using available census data and will later incorporate household survey data as well.

Because published census tables do not provide data on the distribution of housing deprivations, it is not possible to tell how many households suffer from how many of the four housing deprivations—only the total number of households that suffer from any one housing deprivation. A recent investigation by UN-HABITAT's Monitoring System Branch of the distribution of housing deprivations in 20 Sub–Saharan African countries suggests that—even in the worst of circumstances—very few households suffer from all four basic shelter deprivations. The average number was 1.7. On average, 47 percent of slum dwellings in these countries had only one shelter deprivation, 33 percent had two, 17 percent had three, and only 2 percent had four.

Table 3.a focuses attention on urban areas, where housing conditions are typically most severe. Not all compiled indicators are presented in the table because of space limitations. More indicators for many more countries will be available in the online version of World Development Indicators, including data on housing deficits. Beyond the qualitative dimensions of available shelter, it also measures the quantitative housing deficit—the share of households in excess of available dwelling units—considering that a well-functioning housing sector should have a separate dwelling unit for each household. Quantitative housing deficits in most countries—even very poor ones—are relatively small, suggesting that the housing problem is still largely a qualitative rather than a quantitative one. Shelter is still being produced in adequate quantities in most countries. Though much of it is substandard, in some places it has improved over time. The data in table 3a will allow, for the first time, the monitoring of both quantitative and qualitative dimensions of the housing sector over time on a global scale, adding an important dimension to the mission of World Development Indicators to monitor all the key dimensions of development.

3.a

Urban housing conditions

	Census year	Household size		Overcrowding		Dwelling structure		Home ownership		Multiunit dwellings		Vacancy rate	
		People		People living in overcrowded dwellings[a] %		Buildings with durable structure % of total		Privately owned dwellings % of total		Households in multiunit housing % of total		Unoccupied dwellings % of total	
		National	Urban	National	Urban	National	Urban	National	Urban	National	Urban	National	Urban
Armenia	2001	4.1	4.0	35	38	93	92	91	90				
Bahrain	1991	5.9	5.8	16				51		28		3	
Bangladesh	2001	4.8	4.8			21[b]	42[b]	88[b]	61[b]				
Belize	2000	4.6	4.4			45	54	63	53	4	5		
Bolivia	2001	4.2	4.3	35		38	54	58	49	3[b]	5[b]	6	4
Botswana	2001	4.2	3.9	54	47	88		61	47	1			
Brazil	2000	3.8	3.7					74	75				
Bulgaria	2001	2.7	2.7			79	89	98	98			23	17
Cameroon	1987	5.2	5.1	67	77	77	76						
Cape Verde	2000	4.6	3.8[b]	55[b]	60[b]	78[b]	88[b]	72[b]	60[b]	2[b]	5[b]		
Central African Republic	1988	5.2	5.8	31	28	77		85	74				
Chad	1993	5.1	5.1			3	1	85	47				
Chile	2002	3.4	3.5			53	59	47	45	13	15	11	10
Costa Rica	2000	4.0		3		68		65		2	2	9	6
Czech Republic	2001	2.4						52		56		12	
Ecuador	2001			25		59	73	58[b]	53[b]	9	14	12	7
El Salvador	1992			56		57	71	62	60	3	5	11	11
Equatorial Guinea	1993	7.5	7.0	29				75	55	14	26		
Ethiopia	1994	4.8	4.7	10			23		47				..
Fiji	1996	5.8	5.6			56	72	78	62				
Ghana	2000	5.1	5.1			45		57		56		5	
India	2001	5.4	5.3	77	71	56	81	87	67			6	9
Iran, Islamic Rep.	1996	4.8	4.6			72	76	73	67				
Iraq	1997	7.7	7.2			88	96	70	66	4	6	13	15
Jamaica	2001	4.4				56[b]		60[b]		1[b]		72	
Jordan	1994	6.2	6.1			97	77	68	63	57	66	20	19
Kenya	1990	4.6	3.4			35	72	72	25			39	17
Lithuania	2001	2.6	2.5	17						71		8	
Macedonia, FYR	2002	3.6	3.6[b]			95[b]	95[b]	48[b]				7[b]	3[b]
Madagascar	1993	4.9	4.8	64	57			81	59				
Malawi	1987	4.3	4.3			48	85	86	48				
Mauritius	2000	3.9	3.8			91	94	87	81			7	6
Mexico	2000	4.4		27[b]		78		76					
Mozambique	1997	4.4	4.9	37	7	6	14	92	83	1	4	0	
Nicaragua	1995					46		77		0		8	
Pakistan	1998	6.8	6.8			58	86	81					
Panama	2000	4.1		25[b]		66	88[b]	68	60[b]	10[b]	17[b]	14	
Paraguay	2002	4.6	4.5	38[b]	38[b]	38[b]	38[b]	78	73	1[b]	2[b]	6[b]	6[b]
Peru	1993					32	46					7	3
Philippines	1990	5.3	5.3			62		83	76	6	12	4	4
Romania	1992	3.1	3.1			58		87	77	42	74	6	4
Rwanda	1991	4.8				75	64	92	55	19	25		
Slovenia	1991	3.1						66		35		9	
Solomon Islands	1999	6.3	6.9	50		23		85	43	1	3		
Sri Lanka	2001	3.8				91[b]	92[b]	65[b]	54[b]	1	13[b]	13	1[b]
Sudan	1993	5.8	6.0					79	58	0[b]	1[b]		
Tanzania	2002	4.9	4.5[b]	33[b]	7[b]			82[b]	43[b]				
Thailand	2000	3.8				93	93	83	65	3			
Trinidad and Tobago	2000	3.7		9[b]		58[b]		64[b]		15[b]			
Tunisia	1994	5.1	5.2					79[b]	89[b]	6[b]	10[b]	10[b]	12[b]
Uganda	2002	4.8	4.0[b]			21[b]		80[b]	24[b]	0[b]	2[b]		
Uruguay	1996	3.3	3.4[b]	22[b]				50[b]	50[b]			13[b]	13[b]
Venezuela. RB	2001	4.4						66		14		16	
Vietnam	1999	4.6	4.5			77	89	73	77				
Yemen	1994	6.7	6.8	52[b]	6[b]			88[b]	68[b]	3[b]	11[b]		
Zimbabwe	1992	4.8	4.2					57	30	4	10		

Note: This table is still a work in progress; coverage and quality are being enhanced.
a. More than two people per room. b. Data are from previous census.