Two Complementary Approaches to Monitoring Target 11: "Improving the Lives of 100 Million Slum Dwellers by 2020" A Research Note

Shlomo Angel

Abstract:

This research note proposes two complementary procedures that can supplement the present efforts of the UN Human Settlements Programme (UN Habitat) in monitoring Target 11 of the Millennium Development Goals: "By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers." The proposed procedures rely on two sources of data: (a) available national population censuses for the two latest census periods; and (b) new data—involving both remote–sensing data (e.g. air photographs), household surveys, and structured institutional surveys in a global sample of 120 cities. Estimates of the built–up area of the cities in this sample are presently being calculated with the use of *Landsat* satellite imagery by the Urban Land Management Initiative. The proposed new work with the global sample of cities will yield statistically–reliable answers to a number of important questions regarding "slums," among them the share of dwellings in informal settlements; basic shelter deficiencies in these settlements including security of tenure; the relative value to dwellers of different shelter attributes; the total amount of wealth accumulated by the poor in land and shelter in these settlements; and progress on policies and procedures that affect 'secure tenure.'

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"Improving the Lives of 100 Million Slum Dwellers by 2020"
A Research Note

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Table of Contents:

1. The two objectives of this research note:

The United Nations assigned the UN Human Settlements Programme (UN Habitat) the task of monitoring Target 11 of the Millennium Development Goals (MDGs): "By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers." UN Habitat has, in turn, defined the term "slum" operationally, produced global estimates of the world's slum population given its definition, initiated a Global Campaign for Secure Tenure aimed at improving slums, and published a guide for member states on how to monitor Target 11.

The information produced by UN Habitat to–date suggests that the *proportion* of the urban population living in slums has not changed significantly between 1990 and 2001, but it is not clear from its estimates whether *actual living conditions* in slums are improving or getting worse. The first objective of this research note is to propose a census–based data collection and analysis initiative that can yield provisional answers to this question by the end of 2004. As the proposed method relies mostly on published census data, it can produce future estimates of improvement in living conditions in cities on a regular basis. This method is slightly different from the method employed by UN Habitat, and the two are not really comparable. But, because they measure similar

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[1]   Dr. Angel, Adjunct Professor of Urban Planning at New York University, is the Principal Investigator of the first phase research project of the Urban Growth Management Initiative, financed by the Research Committee of the World Bank and administered by the Bank's Transport and Urban Development Department .

shelter attributes, they can enrich the discussion of the living conditions of the urban poor and complement each other.

A second objective of this note is to propose a second initiative for monitoring "slums," — or, more specifically "informal settlements" — in a global sample of 120 cities, so as to produce a check on estimates arrived at using census data. This second initiative will require a longer time period, possibly of the order of 2–3 years, to generate and analyze new data. Data collection will rely on (a) remote–sensing data (mostly air photographs) of a 10% sample of the built–up area of these cities to identify informal settlements and to calculate several measures of size, growth, and consolidation; (b) household surveys of the sampled areas to collect data on shelter and community attributes, including several dimensions of tenure security; and (c) structured interviews with municipal officials on issues of secure tenure and urban governance issues affecting shelter.

2. On the underlying rationales for introducing Target 11 into the MDGs:

Before focusing on monitoring Target 11, it is important to gain a better understanding of the rationales underlying its introduction into the Millennium Development Goals (MDGs). These rationales have not been articulated in detail, but, given UN Habitat's agenda, its previous publications, and its historical commitments, it is not difficult to list seven of the most important goals that the introduction of Target 11 into the MDGs strives to attain:

1. Draw attention to *the urban agenda* as a key component of the development agenda;

2. Legitimize *the gradual approach* to shelter and land development as a viable way of creating adequate shelter over time;

3. Focus attention on *combating urban poverty through housing interventions,* rather than by other means;

4. Promote *national urban upgrading programs* as well–targeted, place–based interventions that reach the urban poor;

5. Advance *viable alternatives to new slum formation* as the urban population in developing-country cities doubles in size during the next 30 years;

6. Propose a series of mechanisms that will *facilitate the absorption* of large numbers of poor people into the cities of the developing countries; and

7. Introduce the *granting of secure tenure rights* as a key component of development policy.

Indeed, introducing Target 11 and monitoring progress towards attaining it can advance these important goals to a significant degree in the coming years. Properly done, it can yield valuable and convincing information that can generate greater commitment and direct more resources towards attaining these goals. Improperly done, however, it can lead to a loss of credibility in the institutions championing these numbers, to a loss of faith in these goals, and to a more negative and destructive attitude of governments towards the budding settlements of the poor, which inevitably start as

"slums" and only gradually develop into neighborhoods. The two complementary approaches to monitoring Target 11 proposed here are both based on a commitment to the attainment of these goals.

3. Two complementary definitions of "slums":

UN Habitat, in a recent report entitled *The Challenge of Slums: Global Report on Human Settlements 2003*, has estimated that 31.6 percent of the world's urban population—924 million people—lived in slums in 2001 (see table 1). Slum dwellers were defined as follows: "A slum dweller was deemed to have one or more of the following attributes: insecurity of tenure; low structural quality/durability of dwelling; poor access to safe water; poor access to sanitation facilities; and insufficient living area/space."[2]

Table 1: UN Estimates of the World's Slum Population, 2001

Region	Urban Population	Slum Population	
		Total	Percent
World	2,923	924	31.6
Developed Countries	902	54	6.0
Developing Countries	2,022	870	43.0
Asia	1,313	554	42.2
Africa	307	187	60.9
Latin America & the Caribbean	399	128	32.1
Least Developed Countries	179	140	78.2

Source: United Nations Human Settlements Programme, 2003, *The Challenge of Slums: Global Report on Human Settlements 2003*, table 1.3, 14.

This definition is not a typical definition of a slum dweller. The Oxford English Dictionary, for example, defines a slum as "a thickly populated neighborhood or district where the houses and the conditions of life are of a squalid and wretched character." A slum is a *place*, a concentration of dwelling units that house poor people and that may be lacking in the basic attributes of decent shelter. As defined by UN Habitat, slum dwellers do not necessarily inhabit slums if by slums we still wish to refer to a neighborhood or a district.

There is, no doubt, a correlation between the number of people living in slum neighborhoods or districts and the number of people lacking minimum decent shelter. The numbers are not necessarily the same, but there are good reasons to believe that one can be a good proxy for the other.[3] Surely, there are numerous people living in inadequate shelter, but not in slums; and there are numerous people living in slums that

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[2]   United Nations Human Settlements Programme (UN Habitat), 2003, *The Challenge of Slums: Global Report on Human Settlements 2003*, London: Earthscan Publications, 13.

[3]   In fact, one of the objectives of measuring "slums" with two complementary approaches, as proposed here, is to establish to what degree measures of "slums" as inadequate shelter correspond to measures of "slums" as informal settlements.

already have decent shelter. This is especially true in "slums of hope," the places that start with minimal shacks and amenities and gradually grow into viable neighborhoods.

In this sense, the use of the term "slums" to identify the budding residential neighborhoods of the urban poor in developing countries in unfortunate. They have been characterized much more positively in the literature during the last few decades: as spontaneous settlements, young settlements, progressive settlements, informal settlements, or irregular settlements. These definitions suggested that the urban poor are engaged in building thousands of residential neighborhoods, often on a grand scale — in the absence of mortgage credit, minimal infrastructure, technical and professional assistance, or modern technology — with little, if any, initial support by governments and in many cases in the face of resistance by governments.

Indeed, modern housing policy is now predicated on *enabling* the poor to build and improve their own houses and communities by allowing them to settle in under-serviced lands, and by gradually providing them with basic infrastructure services, secure property rights, well–targeted subsidies for house expansion and improvement, micro–credit or mortgage credit, and an affordable regulatory environment that allows for progressive development. It is of vital importance to demonstrate, again and again, that this way of building cities works and works well; that houses and neighborhoods — if provided with *de facto* tenure security and a minimum complement of infrastructure services — improve substantially over time through the efforts and savings of families.

In the context of monitoring Target 11, it is therefore important to distinguish between "slums" as identifiers of people living in *inadequate shelter* as proposed by UN Habitat, and "slums" as the *settlements* of the poor. The two complementary approaches proposed here seek to do exactly that in a systematic fashion and, at the same time, to compare them and to establish the degree to which one is a good predictor for the other.

The first approach proposes to use published census data to calculate national, regional and global estimates of the number of urban dwellings that must be considered *inadequate shelter* in the sense that they do not have the full complement of the minimal attributes that will qualify them as "decent shelter." At the very minimum, the four basic attributes of decent shelter are four of the five attributes used by UN Habitat to define "slums":

1. The absence of overcrowding;

2. Improved water supply;

3. Improved sanitation facilities; and

4. Durable structures.

Data on all four attributes is generally available in national census publications that can be obtained — for the two latest census dates for all countries — from U.S. libraries, from the Internet, and from national statistical offices. Typically, there are no reliable census data on the fifth attribute of slums proposed by UN Habitat — insecure tenure.

However, one other attribute of the national housing sector, for which data are readily available in the census, is

5. Persons per dwelling unit.

This indicator is a measure of the degree to which the formal and informal housing production system is keeping up with the demographic growth of cities. It is also, in an important sense, a measure of the absence of a quantitative housing "deficit." The key quantitative housing question that it addresses is this: Is net housing production (new units minus units destroyed) keeping up with the growth of the population?[4]

Collecting national census data for urban areas for two time periods for these five indicators will allow us to determine whether *shelter conditions* are improving, staying the same, or getting worse in both absolute and relative terms. This can be done in the short term. Work on this initiative at the World Bank has already commenced and early results are expected before the end of 2004. As we noted earlier, the results will not be completely equivalent to the "slum" estimates calculated by UN Habitat.

The second approach, complementary to the first one, proposes to focus on "slums" as informal *settlements* and to produce global estimates of (a) the number of persons and dwellings in these settlements; (b) the key characteristics of these dwellings and settlements; and (c) the local and national policy environment in which they exist and flourish. This is a medium–term effort that can yield reliable initial results in 2–3 years, and that can be repeated in 5–10 years time to monitor changes. It involves (a) the identification of informal settlements from remote–sensing imagery in a global sample of 120 cities[5] in two time periods, five or more years apart; (b) the conduct of household surveys in these settlements; and (c) the collection of additional data in structrured questionnaires on the municipal and national policy environment in the sample of cities.

This second approach defines "slums" as informal settlements that grow and develop over time. They are typically unplanned and haphazard, but they also include informal land subdivisions that are more orderly. They are characterized by the initial absence of a full complement of infrastructure services, most notably the paved roads that characterize formal land subdivisions. They are also characterized by the progressive construction of houses over time, so that one community may have houses at different stages and in different sizes.[6]

4. Counting shelter deficiencies with Full Complement Equivalents (FCEs):

The first proposed approach to complement the monitoring Target 11 focuses on being able to *measure improvements* in the living conditions of slum dwellers over time. These improvements typically occur in a number of ways:

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[4] A more refined question would be: Given the gradual reduction of household size with economic development, is net housing production keeping up with the growth of the number of urban households? The indicator that typically measures this is "dwelling units per household." Data on this indicator is also readily available in census documents, although in some cases no distinction is made between households and dwelling units.

[5] This sample has already been selected for the study of urban expansion in the Urban Growth Management Initiative (see Annex below).

[6] All these attributes can be identified from high–resolution satellites, such as Ikonos or Quickbird, and such images can be used both to identify informal settlements and to count houses in these settlements.

1. Through the action of dwellers who improve their homes by using better building materials and by extending them to make more room;

2. Through the actions of communities, often supported by civic organizations, that initiate and implement infrastructure improvement projects;

3. Through the actions of private–sector developers and builders who move down–market to provide affordable new land–and–house packages to former slum dwellers;

4. Through the regulatory actions of municipalities that allow for progressive development of residential subdivisions and the progressive building of houses;

5. Through the action of metropolitan planning authorities that prepare for the expansion of built–up areas, for the acquisition of rights–of–way for roads, for the preservation of open space, and for timely investments in infrastructure expansion;

6. Through the actions of legislatures that pass laws allowing for the regularization of illegal communities and for the provision of secure land titles in both public and private lands;

7. Through the actions of housing ministries that provide subsidies, micro–loans, or mortgage loans for urban upgrading or for title registration.

Again, it is proposed to measure improvement in two complementary ways: (a) by using census data for two time periods; and (b) by studying changes in slum communities over two time periods, 5–10 years apart.

Initially, it is proposed to measure *past* improvements in *shelter conditions* using the two latest censuses for each country, with the aim of producing results by the end of 2004. In parallel, it is proposed to start a *baseline survey* of slum communities in the global sample of 120 cities, with the aim of resurveying them again 5–10 years from now to measure improvements.

In the short term, we have to limit the research effort to examining *shelter conditions* using published census data. Specifically, we would like to know if minimum basic housing conditions in urban areas are improving or getting worse over time. Fortunately, key data on the four minimum attributes—at the very least for the country as a whole, for urban areas, and for rural areas—is regularly collected in national censuses, typically every ten years or so. This implies that if we knew the values for the four basic attributes for the urban areas of all (or most) countries for two census periods, we would be able to tell whether conditions were improving or getting worse. Not surprisingly, data on most *other housing attributes* (to be discussed later)—including data on insecure tenure—are not collected in typical censuses.

Typically, data on the four key housing attributes are published separately for each one of them. That is, information is given on the number of dwelling units without an improved water supply, on the number of dwelling with inadequate sanitation facilities,

on the number of overcrowded dwellings[7], and on the number of dwellings with non–durable structures. But it is not at all clear exactly how many dwellings have one, two, three, or four of these deficiencies. For each census period, we do know how many dwelling units (or households) have the *full complement* of basic attributes, and how many dwellings are missing any *one* attribute. Those that have the full complement of attributes can be considered "minimum decent housing" and should definitely not be counted as "slum" dwellings.

This is where the proposed approach differs from that employed by UN Habitat. By UN Habitat's method, a dwelling unit missing any *one* of the four basic attributes[8] must be counted as a "slum" dwelling, and, by definition, once it obtains that attribute it is no longer a "slum" dwelling. But given census data, there is no way of determining how many dwelling units in slums have less key deficiencies than they had before, if they still have one or more deficiencies. Monitoring *improvements* by UN Habitat's method, therefore, cannot make use of readily available census data, the only data presently available on these attributes on a global scale.

There is no doubt that dwelling units that are missing only one basic attribute can be improved more readily than ones missing two or more. In that sense, the former are closer to having the full complement of basic attributes. If we assume for the moment that each one of the basic attributes is equally valuable to a typical household, then we can say that a dwelling unit having three attributes, for example, has three–quarters of the full complement of attributes. If we are willing to make this assumption, then we can measure the number of *Full Complement Equivalents* (FCEs) of homes missing basic attributes, and the share of such FCEs in the housing stock in any given period. What is more, we can also measure the improvement in the housing stock between the last two census periods in terms of FCEs.

We illustrate this with data from Uruguay, for the country as a whole, for the last two census periods.[9]

Table 2: Measuring Shelter Improvement in Uruguay, 1985–1996

Indicator	1985		1996		Change	
	Number	FCEs	Number	FCEs	Number	FCEs
Basic Shelter Deficiencies						
Overcrowded Households	67,098	16,774	65,327	16,332	-1,770	-443

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[7] Or on the number of households per occupied dwelling unit, another important measure of overcrowding; or of the ability of the housing production system—both formal and informal—to keep up with the overall demand for housing units, so that there is no "quantitative housing shortage".

[8] As noted earlier, UN Habitat also includes "insecure residential status" as a fifth basic attribute, but, since typical censuses do not provide reliable data on this indicator, it will be left out of this preliminary analysis and dealt with in a subsequent section of this note.

[9] When examining table 2 below, the reader should be aware that Uruguay is one of the richest and most–urbanized developing countries in the world, and that its housing stock is of exceptionally good quality in relative terms.

Non-durable Structures	50,415	12,604	28,163	7,041	-22,252	-5,563
No Improved Water Supply	59,312	14,828	42,807	10,702	-16,504	-4,126
No Improved Sanitation	84,025	21,006	63,084	15,771	-20,941	-5,235
Full-Complement Equivalents (FCEs)		65,212		49,845		-15,367
Housing Stock Characteristics						
Total Population	2,955,241		3,163,763		208,522	
Total Number of Households	871,400		975,037		103,637	
Total Number of Dwelling Units	988,525	923,313	1,126,502	1,076,657	137,977	153,344
Total Occupied Dwelling Units	922,000		980,567		58,567	
Persons per Dwelling Unit	3.0		2.8		1.5	
Dwelling Units per Household	1.13		1.16		1.33	
Percent of Dwelling Units with FCEs		93.4%		95.6%		2.2%

Source: Calculated from Instituto Nacional de Estadística (INE), 2000, "Indice de Condiciones de Vivienda 1985–2000," July, tables 1–4, on www.ine.gub.uy/biblioteca.

As the table shows, in 1985, for example, there were an estimated total of 65,212 Full–complement Equivalents (FCEs) of dwellings with basic housing deficiencies. This amounts to saying that the deficiencies in the entire housing stock were equivalent to 65,212 dwellings with all four deficiencies. This calculation eliminates double counting. Clearly, the total number of deficiencies in 1985, for example, is exactly four times the total number of individual deficiencies—260,850. This number is the upper bound of the number of dwellings in the country with deficiencies, in the extreme case that every dwelling had *only one* deficiency. Typically, of course, dwelling units with deficiencies are likely to have more than one deficiency. In fact, we arrive at the same number of FCEs for 1985 if we assume that the 50,415 dwelling units with non–durable structures also had the other three basic deficiencies and add one–quarter of the balances of each of the other three to that number.[10]

Unfortunately, measuring the total number of housing deficiencies in a given country with FCEs cannot be compared to the estimate of the "slum" population in the country if, as UN Habitat proposes in its documents, it includes all the people in urban areas who inhabit dwellings with *one or more* basic deficiencies. It is possible, by the way, to arrive at a good estimate of this number by examining a sample of individual census returns in a small number of census data sets, and estimating the *average number of basic deficiencies in all dwelling units with one or more deficiencies*. If, for example, that average for 1985 in Uruguay was found to be 2.0, then the estimated number of dwelling units with basic deficiencies would be 260,849/2 = 130,424. Using the data is table 3, we can calculate the "slum" population to be of the order of 389,900.[11] At any rate, if UN Habitat could calculate a global estimate of the average number of basic deficiencies in

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10   An alternative method for calculating FCEs for 1985 is: 50,415 + (67,098 – 50,415)/4 + (59,312 – 50,415)/4 + (84,025 – 50,415)/4 = 65,212.

11   The reader is advised to keep in mind that the data for Uruguay is for the country as a whole, including both urban and rural dwellings.

all dwelling units with one or more deficiencies, it would be possible to use the proposed FCE calculations as a check on its slum population estimates.

Has the housing production system in Uruguay, for example, been keeping up with demographic growth? Between 1985 and 1996, the number of persons per dwelling unit in Uruguay decreased from 3.0 to 2.8, and the number of dwelling units per household increased from 1.13 to 1.16. Given these indicators, there is no question that there is no quantitative housing "deficit" in Uruguay.

To conclude, the FCE method proposed above, applied to available census data, provides a ready method for using the World Bank's *World Development Indicators (WDI)*—shortly to become available— for *estimating shelter deficiencies on a global scale*. It could be used by UN Habitat, if it was deemed necessary and useful, as a check on its slum estimates for the global monitoring Target 11 of the Millennium Development Goals. The proposed shelter deficiency indicators will be collected (together with 'persons per dwelling unit') by the WDI in the coming months. They could be used to measure improvement in housing conditions in the interim period between the last two censuses already undertaken in all countries. Interpolations can then be used to produce global assessments of improvements during a well–defined time period, say 1990–2000. These estimates should be able to answer a key question related to Target 11: *are global housing conditions getting better or getting worse?* In other words, are the present formal and informal housing production system and the public support for the housing sector keeping up with the growing housing needs of the world's urban population, or are housing conditions deteriorating, both in absolute and in percentage terms?

5.   Is Target 11 a sensible quantitative target?:

Target 11 seeks to improve the lives of 100 million slum dwellers by 2020. Is 100 million a sensible target, it is too ambitious, or too modest? There is no easy answer to this question. There is no question that UN Habitat's own calculations indicate that the numbers of slum dwellers—while remaining close to their proportion in the overall urban population between 1990 and 2001—have increased substantially in absolute terms in all regions, except in the European countries of the former Soviet Union and in Northern Africa (see table 3).

Since UN Habitat defines slum dwellers as those living in dwelling units with one or more basic shelter deficiencies, this means that shelter deficiencies are on the increase and are likely to remain on the increase in the foreseeable future. If this is the case, then Target 11 is very modest indeed: By 2020—if it is achieved in full—the number of slum dwellers will be 1.3 billion instead of 1.4 billion, a decrease of a meager 7%. This improvement will leave 93% of slum dwellers with basic shelter deficiencies, a far cry from attaining the vision of "cities without slums." Recent UN Habitat publications have already recognize this, and have proposed a revision of the target to at least ensure that conditions will not get worse over time.

Table 3: UN Habitat's Slum Population Estimates (in '000), 1990–2020

Region	1990	2001	2020	Change 1990-2001	Change 2001-2020

Developing Countries	660,929	860,081	1,355,543	199,152	495,462
Northern Africa	21,719	21,355	20,741	-364	-614
Sub-Saharan Africa	100,973	166,208	393,105	65,235	226,897
Latin America and the Caribbean	110,837	127,566	162,626	16,729	35,060
European countries in CIS	9,208	8,878	8,336	-330	-542
Asian countries in CIS	9,721	9,836	10,040	115	204
Eastern Asia	150,761	193,824	299,150	43,063	105,326
South Asia	198,663	253,122	384,644	54,459	131,522
South-eastern Asia	48,986	56,781	73,279	7,795	16,498
Western Asia	28,641	40,726	74,808	12,085	34,082
Oceania	350	499	924	149	425
Developed Countries	41,750	45,191	51,815	3,441	6,624
World	721,608	923,986	1,416,164	202,378	492,178

Source: UN Habitat, "Story–line submitted to the MDG–Interagency Group on Target 11, " n.d., tables 1 and 2.

There is important evidence to support the contention that improvements in living conditions in slums are already taking place right now at a more rapid pace than that envisioned in the original Target 11. The UNICEF–WHO Joint Monitoring Programme for Water Supply and Sanitation measures global progress in improved access to water supply and sanitation, two key measures of living conditions in slums. According to the Joint Monitoring Programme, the percentage of people worldwide who had access to an improved water supply has risen from 78% in 1990 to 82% in 2000 (see table 4). Some 902 million more people have gained access to improved water supply during the decade (537 million in urban areas and 365 million in rural areas). The percentage of people worldwide who had access to improved sanitation facilities has risen from 51% in 1990 to 61% in 2000. Progress in sanitation has been achieved both within urban areas—with some 573 million more people served— and in rural settings (436 million more people served).

If in one decade, water and sanitation conditions in urban areas—two of the five measures of basic shelter deficiencies used by UN Habitat to measure "slums"—have improved for more than 500 million people, how is it that during that same decade basic shelter deficiencies worsened for 200 million people? This could only happen if the other three measures—overcrowding, the number of non–durable structures, or insecure tenure—accounted for most shelter deficiencies. Unfortunately, it is not possible to tell from UN Habitat's data *which* of the five indicators used to measure shelter deficiencies accounted for what share of overall deficiencies.

Table 4: Improvements in Global Water Supply and Sanitation, 1990–2000

	1990 (population in millions)				2000 (population in millions)				Newly
	Total	Served	Unserved	% Served	Total	Served	Unserved	% Served	Served
Improved Water Supply									

Urban	2,286	2,174	112	95%	2,862	2,711	151	95%	537
Rural	2,969	1,912	1,057	64%	3,195	2,277	918	71%	365
Total	5,255	4,086	1,169	78%	6,057	4,988	1,069	82%	902
Improved Sanitation Facilities									
Urban	2,286	1,838	448	80%	2,862	2411	451	84%	573
Rural	2,969	848	2,121	29%	3,195	1284	1,911	40%	436
Total	5,255	2,686	2,569	51%	6,057	3,695	2,362	61%	1,009

Source: WHO–UNICEF Joint Monitoring Programme for Water Supply and Sanitation, online at www.wssinfo.org.

The author's own housing sector assessments in 10 countries in Latin America during the past five years suggest that much progress has been made in reducing basic shelter deficiencies—especially in water, sanitation, electricity, and the number of non-durable structures—and that, overall, basic shelter inadequacies are on the decline.

Progress on the fifth dimension of the definition of slums—secure tenure—has been less than satisfactory, but only if by secure tenure one means *de jure* secure tenure—the official recognition of the property rights of slum dwellers by the authorities, coupled with official issuance of proper titles. Using secure tenure as an indicator to measure Target 11 will be discussed in greater detail in the following section.

Given the limitations of the present data, and the contradictions with the WHO–UNICEF data water and sanitation improvements, it is not possible to determine whether the quantitative dimension of Target 11 is sensible or not. Unfortunately, census data on four shelter inadequacies for the two latest census periods for all countries *cannot* resolve the issue of whether UN Habitat's estimates are correct or not, because, as we noted earlier, censuses *do not* contain reliable data on secure tenure—neither on *de jure* tenure (proper title documentation) or on *de facto* tenure (freedom from the fear of eviction). To the extent that UN Habitat's estimates rely on estimates of 'insecure tenure,' it will not be possible to compare them with existing census data on shelter deficiencies. The second possible way to obtain some improvement on these estimates is with the second initiative proposed in this research note—monitoring "slums," or, more specifically "informal settlements" in a global sample of 120 cities.

6. Is 'secure tenure' a proper indicator for measuring progress on Target 11?:

The United Nations initially assigned two indicators for monitoring progress on Target 11:

1. Proportion of people with secure tenure; and

2. Proportion of people with access to improved sanitation.

UN Habitat, concerned that these two indicators are not sufficient to characterize slum dwellers, later expanded the number of indicators to five:

1. Insecure residential status;

2. Inadequate access to safe water;

   3.   Inadequate access to sanitation and other infrastructure;

   4.   Poor structural quality of housing; and

   5.   Overcrowding.

Secure tenure was defined as "the right of all individuals and groups to effective protection by the State against unlawful evictions."[12]   More specifically, the indicator proposed to measure secure tenure was defined as follows:

   Proportion of individuals that have secure tenure, i.e. that have

   1.   evidence of documentation that can be used as proof of secure tenure status;

   2.   either *de facto* or perceived protection from forced evictions.

UN Habitat then proposed that all governments monitor secure tenure with three component indicators:

   1.   Proportion of urban households with documents that can be used as evidence of tenure;

   2.   Proportion of men and women who were evicted from their residence in the past ten years; and

   3.   Proportion of household heads who believe that they will not be evicted from their present residence within the next five years.[13]

No method was proposed for aggregating these three component indicators into one 'secure tenure' indicator, and it is not at all clear what should be the relative weights assigned to each component.

As noted earlier, national censuses do not provide reliable data on any of these three component indicators and, in exceptional cases, they provide partial data on the first one. The second one needs to be determined from historical documents and structured interviews, and the third from custom–made household surveys.

There is no doubt that *de facto* secure tenure—if defined as the absence of a fear of eviction—is a very important cause of house consolidation and extension. It has often, though not always, been a necessary and sufficient condition for families to invest their savings and labor in the improvement of their homes and communities.   Early observations of this relationship in Latin America, cited by Merrill, go as far back as the 1950s.[14] A 1974 study in Karachi found that, for all income groups, households with higher hopes for secure tenure invested more in their houses than houses with little or

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12   UN Habitat, 2003, "Guide to Monitoring Target 11: Improving the Lives of 100 Slum Dwellers," Nairobi, May, 6.

13   UN Habitat, 2003, Op. Cit., 10–11.

14   See Merrill, R., 1971, "Towards a Structural Housing Policy: An Analysis of Chile's Low–Income Housing Program," unpublished PhD dissertation, Cornell University, Ithaca, 7.

no hope.[15] A 1977 Karachi study found hope for secure tenure to be strongly related to government actions—public announcements, surveys, or the initiation of public works.[16]

More recently, Hernando de Soto has focused the world's attention on the potential importance of formal—*de jure*—tenure rights in housing,[17] although it is not clear yet how valuable these formal rights are, or whether they are indeed in sufficient demand by households with *de facto* secure tenure. Galal and Razzaz, in their survey of the available literature, found that in some cases—e.g. Davao in the Philippines—proper title documents increased property values by more than 50% while in others—e.g. Amman in Jordan—they made little or no difference.[18] De Soto believes that proper title documents will transform the houses of the poor from "dead assets" to real wealth that can be used as collateral, but it is difficult to imagine that—with the highly-restricted supply of affordable mortgage loans—titles of "slum" houses will be accepted by commercial banks as collateral for mortgage loans. At present, there is little evidence to support de Soto's contention.

If, from a housing policy perspective, the improvement of *de facto* secure tenure is a high priority—as well it should be—then the question of how to measure it does indeed arise. *De facto* tenure security, whether backed by documents, by promises, or by hopes, is fundamentally subjective. The feeling of security is an expectation, a speculation, that one's house will not be demolished by the authorities.[19] This subjective perception can be measured directly, by asking slum dwellers, as UN Habitat proposes, how threatened they feel given the kind of documentation (or lack thereof) that they possess. It can be measured more objectively too, as a *probability of being subject to a forced eviction*.

The Centre for Housing Rights and Evictions (COHRE) estimated the global number of persons reported to be forcefully evicted between 1998 and 2000 to be 4.3 million.[20] Assuming that two-thirds were evicted from urban areas, this implies that approximately one million urban residents were forcefully evicted every year,

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[15]   Van der Harst, J., 1974, *Low Income Housing*, Joint Research Project IV for Urban Development and Slum Improvement, Karachi, 10.

[16]   Van der Linden, J., 1977, *The Bastis of Karachi—Types and Dynamics*, Amsterdam: Free University.

[17]   De Soto, Hernando, 2000, *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else*, New York: Basic Books.

[18]   Galal, Ahmed and Omar Razzaz, 2001, "Reforming Land and Real Estate Markets," Policy Research Working Paper 2616, The world Bank, June, 6, quoting information from Jimenez, Emmanuel, 1984, "Tenure Security and Urban Squatting," *The Review of Economics and Statistics*, 66(4), 556–67; Jimenez, Emmanuel, 1988, "The Demand for Tenure Security in Developing Countries," *Journal of Development Economics*, 29; and Razzaz, Omar, 1993, "Examining Property Rights and Investment in Informal Settlements: The Case of Jordan," *Land Economics*, 69(4), 341–55.

[19]   Angel, Shlomo, 1983, "Land Tenure for the Urban Poor," in Angel, Shlomo, Raymon Archer, Sidhijai Tanphiphat, and Emiel Wegelin, editors, *Land for Housing the Poor*, Singapore: Select Books, 112.

[20]   Centre on Housing Rights and Evictions (COHRE), 2002, *Forced Evictions:Violations of Human Rights*, Global Survey on Forced Evictions No. 8, Geneva, June, 9.

undoubtedly a large number that needs to be significantly reduced. Assuming that all of those evicted were "slum" dwellers, and that, as the U.N. has estimated (see table 1 above), there were 924 million people living in slums in 2001, then the annual probability of *not* being subject to a forced eviction is 0.999 and the probability of not being forcefully evicted during the next 20 years is 0.98. In other words, the great majority of slum dwellers already have *de facto* secure tenure, and the battle for secure tenure has largely—though not completely—been won. If that is the case, using a secure tenure indicator to measure the improvement in living conditions in slums makes little, if any, sense at all.

If, on the other hand, one takes de Soto's position on secure tenure, then the importance of issuing *de jure* property titles becomes paramount. Global progress on obtaining such titles have been exceedingly slow, and if 100 million property titles are issued to slum dwellers by 2020 then this will indeed constitute an important achievement. The question is: how important is *de jure* secure tenure to slum dwellers as a dimension of shelter inadequacy? This is not a question that can be answered satisfactorily without further research, exactly the kind of research contemplated in the proposed second initiative described below.

Homes have a large number of attributes that have value, over and above the four basic attributes of basic shelter mentioned earlier (namely access to safe water, access to improved sanitation facilities, durable structures, and adequate living space or the absence of overcrowding). Indeed, there are at least *eighteen* other important attributes that matter to dwellers and add value to their homes: electricity and gas supply; adequate storm drainage; *de facto* or *de jure* security of tenure (no fear of eviction); tenure choice (owner–occupancy or rental); adequate heating and ventilation in the home; access to open space and playgrounds; a safe neighborhood (with no fear of burglary or assault); an organized community (with political clout); adequate social capital (reliable contacts) in the community; regular garbage collection; a paved road in front of the dwelling unit; adequate street lighting; affordable monthly housing and utility expenditures; the accumulation of wealth in the home; possibility of using the house as collateral for available loans; residential mobility (ease of selling and moving out); reliable public transit within walking distance; and distance from the city center.

Each one of these attributes adds value to the dwelling unit, and in a well–functioning housing market it is typically reflected in its price. Given data on each one of these attributes—and data on the value of homes (self–assessed, using sales or rental data, or valued by professional assessors)—it is usually possible to determine the relative weight of each one of these attributes in the total value of the dwelling unit.[21] If such data were made available (and a proposal for collecting it systematically is included in the following section), it would be possible to assess the relative contribution of a particular intervention—say the provision of title documents or the paving of local roads—to the value of homes in the neighborhood. This would, in turn, focus attention on those interventions that add the greatest value to homes per public dollar spent.

As it stands, monitoring 'secure tenure' does not appear to be an optimal way of measuring progress on Target 11. It cannot be obtained from the census as a singular

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[21] See for example, Rosen, Sherwin, 1974, "Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition," *Journal of Political Economy* 6 (April), 247–266.

measure, which poses a great limitation on its availability. Several of its component measures can be obtained from specialized household surveys and structured interviews with authorities, but it is not at all clear how to aggregate them, as their relative importance cannot be established *a priori*. It may be more sensible to limit the measurement of improvement in Target 11 to the four basic shelter inadequacies. This will make data collection and aggregation considerably easier. Data on various aspects of secure tenure *can and should be collected* in a global sample of cities in two future time periods, 5–10 years apart, however, to obtain global estimates of progress toward this important goal. The proposed method of collecting these data is described in greater detail below.

7. Measuring slum expansion, consolidation, and secure tenure in a global sample of 120 cities:

As noted earlier, the second definition of "slum" used in this research note refers to informal residential communities typically built and inhabited by the poor in developing countries. At present, global data on these settlements is grossly deficient. More specifically, it would be very useful—both for monitoring Target 11 and for advancing the global policy initiatives focused on slums as "informal settlements"—if statistically reliable answers were available for the following preliminary set of twelve questions for two time periods 5–10 years apart:

1. What is the share of the built–up area of cities, of the total area of cities in residential use, of the total number of dwellings, and of the total urban population in informal settlements?

2. What share of the urban poor reside in informal settlements and what share reside in public housing, in low–cost housing built by the private sector, or in inner–city tenements?

3. What is the share of total basic shelter deficiencies in urban areas in informal settlements, and what share of dwellings in informal settlements have basic shelter deficiencies?

4. What are the shares of dwellers in informal settlements in different categories of tenure security?

5. What are the relative shares of dwellers in informal settlements who are (a) squatters or (b) occupiers of commercial (yet informal) land subdivisions?

6. What are the shares of informal settlements that are properly laid out?

7. What factors (specifically differences in national or metropolitan governance, economic conditions, legal frameworks, and urban upgrading programs) can explain variations in the quantity and quality of informal settlements?

8. What are the relative values of different shelter attributes in informal settlements that can be determined from questions on self–assessment of the value of dwelling and a set of dwelling characteristics?

9. What are the cost–to–value relationships in different types of government interventions in informal communities, and what types of interventions have the highest cost–to–value ratios?

10. What is the total amount of wealth accumulated by the poor in land and shelter in informal settlements, how is this wealth used, and what are the constraints (e.g. absence of proper title documents) to its more effective use?

11. What policy instruments are presently in use by municipalities and central governments that have a bearing on *de facto* and *de jure* tenure in informal settlements?

12. What are the present conditions in the land and housing markets of cities that have a bearing on *de facto* and *de jure* tenure in informal settlements?

It is proposed to study these twelve questions in detail by formulating a set of testable hypotheses and testing these hypotheses using data to be collected in a global stratified sample of 120 cities (see Annex). This sample of cities was drawn from the universe of 2,719 world cities that had populations in excess of 100,000 in the year 2000, selecting cities in nine different geographic regions, four city size groups, and four national per capita income groups. This sample was drawn from the UN Global Urban Observatory sample of 350 cities, and contains 32 of the 35 cities in the Urban Observatory's reduced sample.

At present, this sample of cities is being studied in a research project of the Urban Growth Management Initiative. This research project uses funds from the Research Committee of the World Bank for Phase I of a two–stage global study of urban land expansion. The Stage I research program, now under way, includes (a) the calculation of several measures of urban land consumption; and (b) a preliminary statistical estimation of urban land consumption for all world cities. Phase II, for which additional funds are being sought from the National Science Foundation (NSF), will (a) study in greater detail the causes and effects of urban land consumption on urban poverty, (b) study the effects of different planning regimes on urban land consumption, and (c) broadly disseminate the results of the study. In conjunction with this study, additional funds will be requested from the Lincoln Institute of Land policy for convening a forum of the mayors of the outlier cities in the sample, as a means of focusing attention on urban growth management in the developing countries.

Spatially–disaggregated demographic data in the census for each city in the sample are being obtained for two recent time periods. 30–meter resolution *Landsat* satellite data were obtained for two recent time periods, approximately a decade apart, corresponding, as far as permissible, to the two latest census periods. The *Landsat* data will mainly be used to distinguish between built–up areas and other land uses.

The spatial measures that will be calculated for each city in the sample will include: average built–up area per person (and its reciprocal, the average population density in the built–up area) at the present time; annual consumption of new urban land per person at the present time; the compactness (or constrained compactness) of the built–up area at the present time; increase (or decrease) in average population density during the last decade; increase (or decrease) in the compactness of the built–up area during the last decade; an estimate of the *additional* and area that would be required to accommodate a doubling of the current population; and an estimate of the increase in total urban land

area required if current rates of population growth continue for the next 30 years. Preliminary estimates for several (but possibly not all) of the spatial measures listed above for *all* the cities in the world that had a population in excess of 100,000 in 2000 will be calculated from a statistical model that explains these measures as a function of a number of variables for which data are available for all world cities at the present time.

What is proposed in this research note is to focus the study of informal settlements on the sample of 120 cities that are already being studied by the Urban Growth Management Initiative. The method envisioned for collecting the data can be broken down into two discrete, yet complementary steps. The first step—remote–sensing data analysis—focuses on estimating the total number of persons and dwellings in "slums" defined as informal settlements, mostly using air photographs for two periods. The second step involves (a) administering a custom–designed household questionnaire in all the 120 cities in the sample, and (b) collecting city–level data on questions of metropolitan governance, conditions in the land and housing markets, legal frameworks, and urban upgrading programs with the use of structured intereviews.

Step 1, remote–sensing data analysis, will involve the following stages:

1. Obtaining census data and a census map for each city at the lowest–available level of data collection (preferably at the census district level) for the latest census period, and geo–coding the data;

2. Selecting a random sample of an average of 10% of the districts in the overall sample of 120 cities, and obtaining air photographs for this sample of districts;[22]

3. Identifying formal and informal residential areas in the sample of districts,[23] calculating their total areas; and then counting the number of houses in the informal settlements;

4. Using district–level census data (especially data on persons per dwelling unit) to estimate the share of population in informal settlements, and corroborating it with ground checks to determine the average number of persons per dwelling unit;

5. Calculating the share of regional and global urban populations residing in informal settlements;

Step 2, administering custom–designed household questionnaires and structured interviews, will involve the following stages:

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[22]   It is estimated that there are 375 million urban dwellers in the sample. At an average density of 8,000 per km², the total built–up area of the cities in the sample will amount to some 30,000 km². 10% of this area will amount to some 3,000 km².

[23]   Using the findings of the Urban Growth Management Initiative it should be possible to distinguish districts that were created between the last two census periods, to estimate the share of informal settlements in old and new districts, and to determine whether it is growing or shrinking.

1. Designing a household questionnaire that focuses on the household and dwelling characteristics needed to answer the questions listed above and adequate for calculating hedonic prices for dwelling attributes;

2. Testing the questionnaire in a small number of districts in several cities in the global sample of cities;

3. Devising a careful sampling strategy that will allow the drawing of valid conclusions from the global and regional statistical testing of the set of hypotheses underlying the questions listed above;

4. Calculating the overall sample size of households that need to be interviewed, presently estimated at 36,000;[24]

5. Contracting private sector market survey firms and academic institutions at the regional and national levels to conduct the household surveys and local professionals to conduct governance surveys and residential property valuations;

6. Conducting the surveys and assembling the data;

7. Compiling the results of the surveys, analyzing the data, and publishing the results in academic journals, in book form, and on a designated website.

The proposed two–stage process will yield statistically–reliable answers to the twelve questions posed above in 2–3 years time. This process will then be repeated again in 5–10 years time, preferably returning to the same households originally surveyed, to detect changes in all the dimensions studied during the intervening period. If, for example, the first survey is undertaken in 2005–2006 and the second survey in 2010–2011, we would be able to obtain good results for monitoring Target 11 at the midpoint, and to determine whether attainments are, or are not, satisfactory.

It is proposed that the study of informal settlements in the global sample of cities will follow in the footsteps of the present study of urban expansion, and will be one in a wave of studies focusing on the sample. Discussions are under way at the World Bank to initiate global comparative research on (a) urban transport; (b) urban governance; (c) municipal finance; (d) municipal solid waste, all focused in this global sample of cities.

It is envisioned that this series of global comparative studies will be conducted by a small, yet global, consortium of academic institutions, a consortium that will constitute an expansion of the present consortium conducting the research on the Urban Growth Management Initiative. It is also envisioned that the consortium will be supervised and funded by a small management board—possibly formed as a Joint Urban Monitoring Program (JUMP)—which may include representatives of UN Habitat, the World Bank, the donors of funds, project management staff, and selected academics.

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[24] The sampled area of 3,000 km² will have some 7.5 million households. It is proposed to sample at least 100 households and at most 500 households per city, depending on its size. At an average of 300 households per city in the sample, the total sample size will amount to 36,000, or roughly 1 households in 200 in the sampled areas.

It is not possible to estimate the budget necessary for conducting this 2–stage study of informal settlements in its entirety. Data is presently being sought on cost estimates for various components of the proposed study, and more detailed cost estimates can be forthcoming, most probably during the fall of 2004.

8. Concluding remarks:

This research note proposed two complementary procedures that could supplement UN Habitat's present efforts in monitoring Target 11 of the Millennium Development Goals: "Improving the lives of 100 slum dwellers by 2020." The first procedure relies on published census data for the latest two census periods at the national level for all countries, and could use data now being collected by the World Bank's World Development Indicators (WDI), with reliable results becoming available by the end of 2004. The budget required to conduct data collection and analysis is minimal, and has already been largely secured. The second proposed procedure requires remote–sensing data collection and interpretation (mostly from air photographs) in some 3,000 km^2 of built–up area in a global sample of 120 cities, followed by household surveys in each city of an estimated total of 36,000 households, and by structured interviews. It is considerably more ambitious and costly, and its costs are still to be estimated. Both procedures together are likely to yield reliable statistical answers to a number of important questions on the conditions in the world's slums and the change in these conditions over the coming years.

There is no doubt that reliable research findings on developing–country cities can no longer rely on the importation of research findings from developed countries—where good data are available—to developing countries where good data is not available. Neither can reliable findings on a host of shelter and poverty issues in the urban areas of developing countries be derived from study of published census data, nor from disparate studies in selected cities. It is becoming increasingly clear that the study of cities on a global scale must focus on a carefully–chosen global sample of cities. UN Habitat has already recognized this, and has championed the creation of a global sample of 350 cities. Research work on a more restricted global sub–sample of 120 cities has already been initiated by the Urban Growth Management Initiative. Other research on this sample has been—and is presently being—designed, and it is hoped that this sample will provide a focus for research on a host of important issues. The proposed focus on informal settlements in this research note, in the context of monitoring Target 11, will generate a valuable body of data on a global sample of cities, and will encourage other academics and donors to direct more attention and resources to the study and analysis of critical urban issues in developing countries in the years to come.

Annex: the Global Sample of 120 of the Urban Growth Management Initiative

No.	City Name	Population In 2000	Size Class	Rank	Country Name	GNI per in 2001 ($)	Income Class	First Year	Second Year
Eastern Asia									
1	Shanghai	12,886,808	4	1	China	890	3	1990	2000
2	Beijing	10,839,251	4	2	China	890	3	1990	2000
3	Seoul	9,887,779	4	1	Republic of Korea	9,400	1	1990	2000
4	Hong Kong	6,859,815	4	1	China		3	1991	2001
5	Guangzhou	3,893,160	3	7	China	890	3	1990	2000
6	Pusan	3,829,513	3	2	Republic of Korea	9,400	1	1991	2000
7	Zhengzhou	2,070,005	3	22	China	890	3	1990	2000
8	Yulin	1,558,400	3	44	China	890	3	1990	2000
9	Yiyang	1,342,885	2	62	China	890	3	1990	2000
10	Leshan	1,136,983	2	82	China	890	3	1990	2000
11	Ansan	984,167	2	14	Republic of Korea	9,400	1	1992	2000
12	Ulan Bator	763,804	2	1	Mongolia	400	4	1989	2000
13	Changzhi	586,618	2		China	890	3	1990	2000
14	Dezhou	620,978	2	169	China	890	3	1990	2000
15	Ch'onan	500,832	1	24	Republic of Korea	9,400	1	1993	2000
16	Chinju	418,400	1	19	Republic of Korea	9,400	1	1994	2000
Europe									
1	Paris	9,630,219	4	1	France	22,690	1	1990	1999
2	London	7,639,786	4	1	United Kingdom	24,230	1	1991	2001
3	Milan	4,251,220	4	1	Italy	19,470	1	1991	2001
4	Madrid	3,975,669	3	1	Spain	14,640	1	1991	2001
5	Moscow	9,321,000	4	1	Russia	1,750	3	1991	2001
6	Warsaw	2,269,000	3	2	Poland			1988	2002
7	Vienna	2,064,948	3	1	Austria	27,080	1	1991	2001
8	Budapest	1,818,625	3	1	Hungary	12,570	1	1990	2001
9	Thessaloniki	789,437	2	2	Greece	11,780	1	1991	2001
10	Palermo	743,934	2	7	Italy	19,470	1	1991	2001
11	Sheffield	630,437	2	8	United Kingdom	24,230	1	1991	2001
12	Leipzig	546,168	2	15	Germany	23,700	1	1991	2002
13	Astrakhan	466,142	1	35	Russia	1,750	3	1989	2002
14	Le Mans	196,162	1	28	France	22,690	1	1990	1999
15	Castellon de la Plana	142,599	1	32	Spain	14,640	1	1991	2001
16	Oktyabrsky	114,020	1	145	Russia	1,750	3	1989	2002
Latin America and the Caribbean									
1	Mexico City	18,066,397	4	1	Mexico	5,540	2	1990	2000
2	Sao Paolo	17,962,440	4	1	Brazil	3,060	2	1991	2000
3	Buenos Aires	12,024,130	4	1	Argentina	6,960	2	1991	2001
4	Santiago	5,467,409	4	1	Chile	4,350	2	1992	2002

	City				Country			Census Years	
No.	Name	Population In 2000	Size Class	Rank	Name	GNI per cap. in 2001 ($)	Income Class	First Year	Second Year
Latin America and the Caribbean (cont.)									
5	Guadalajara	3,697,166	3	2	Mexico	5,540	2	1990	2000
6	Caracas	3,153,075	3	1	Venezuela	4,760	2	1990	2001
7	Guatemala City	3,242,241	3	1	Guatemala		3	1994	2002
8	San Salvador	1,408,000	2	1	El Salvador			1992	2002
9	Tijuana	1,297,446	2	8	Mexico	5,540	2	1990	2000
10	Montevideo	1,323,779	2	1	Uruguay		3	1991	2000
11	Kingston	663,287	2	1	Jamaica	2,720	3	1991	2001
12	Ribeirão Preto	553,543	2	23	Brazil	3,060	2	1991	2000
13	Ilhéus	334,243	1	85	Brazil	3,060	2	1991	2000
14	Valledupar	275,725	1	16	Colombia	1,910	3	1985	1993
15	Guarujá	269,104	1		Brazil	3,060	2	1991	2000
16	Jequié	169,889	1	102	Brazil	3,060	2	1991	2000
Northern Africa									
1	Cairo	9,462,213	4	1	Egypt	1,530	3	1986	1996
2	Alexandria	3,506,045	3	2	Egypt	1,530	3	1986	1996
3	Casablanca	3,357,453	3	1	Morocco	1,180	3	1982	1994
4	Algiers	2,760,740	3	1	Algeria	1,630	3	1987	1998
5	Shubra el Kheima	937,056	2	3	Egypt	1,530	3	1986	1996
6	Marrakech	821,676	2	4	Morocco	1,180	3	1982	1994
7	Aswan	230,671	1	15	Egypt	1,530	3	1986	1996
8	Tébessa	163,279	1		Algeria	1,630	3	1987	1998
Other Developed									
1	Tokyo	26,443,952	4	1	Japan	35,990	1	1990	2000
2	Los Angeles, CA	13,213,433	4	2	United States	34,870	1	1990	2000
3	Chicago, IL	6,989,231	4	3	United States	34,870	1	1990	2000
4	Philadelphia, PA	4,426,629	4	4	United States	34,870	1	1990	2000
5	Sydney	3,907,423	4	1	Australia	19,770	1	1991	2001
6	Houston, TX	3,386,218	3	9	United States	34,870	1	1990	2000
7	Minneapolis-St. Paul	2,377,918	3	15	United States	34,870	1	1990	2000
8	Pittsburgh, PA	1,734,671	3	24	United States	34,870	1	1990	2000
9	Cincinnati, OH	1,323,020	2	34	United States	34,870	1	1990	2000
10	Fukuoka	1,327,400	2	9	Japan	35,990	1	1990	2000
11	Tacoma, WA	596,415	2	70	United States	34,870	1	1990	2000
12	Springfield, MA	574,252	3	82	United States	34,870	1	1990	2000
13	St. Catharines-	390,007	1	12	Canada	21,340	1	1991	2001
14	Victoria	317,506	1		Canada	21,340	1	1991	2001
15	Modesto, CA	308,035	1	110	United States	34,870	1	1990	2000
16	Akashi	289,180	1	51	Japan	35,990	1	1990	2000

	City				Country			Census Years	
		Population	Size			GNI per cap.	Income	First	Second
No.	Name	in 2000	Class	Rank	Name	in 2001 ($)	Class	Year	Year
South and Central Asia									
1	Mumbai (Bombay)	16,085,750	4	1	India	460	4	1991	2001
2	Kolkota (Calcutta)	13,058,085	4	2	India	460	4	1991	2001
3	Dhaka	12,518,695	4	1	Bangladesh	370	4	1991	2001
4	Teheran	6,979,429	4	1	Iran	1,750	3	1986	1996
5	Hyderabad	5,445,414	4	4	India	460	4	1991	2001
6	Pune (Poona)	3,654,782	3	8	India	460	4	1991	2001
7	Kanpur	2,640,601	3	10	India	460	4	1991	2001
8	Jaipur	2,259,486	3	12	India	460	4	1991	2001
9	Coimbatore	1,420,063	2	22	India	460	4	1991	2001
10	Rajshahi	1,035,175	2	4	Bangladesh	370	4	1991	2001
11	Vijayawada	999,226	2	27	India	460	4	1991	2001
12	Ahvaz	871,013	2	7	Iran	1,750	3	1986	1996
13	Shimkent	453,191	1		Kazakhstan	1,360	3	1989	1999
14	Jalna	244,523	1		India	460	4	1991	2001
15	Gorgan	211,136	1	28	Iran	1,750	3	1986	1996
16	Saidpur	116,076	1	26	Bangladesh	370	4	1991	2001
Southeast Asia									
1	Bangkok	7,373,101	4	1	Thailand		3	1990	2000
2	Metro Manila	9,950,320	4	1	Philippines	1,050	3	1990	2000
3	Ho Chi Minh City	4,619,035	4	1	Vietnam	410	4	1989	1999
4	Singapore	4,018,110	3	1	Singapore	24,740	1	1990	2000
5	Medan	1,878,708	3	4	Indonesia	680	4	1990	2000
6	Bandung	3,408,997	3	2	Indonesia	680	4	1990	2000
7	Kuala Lumpur	1,379,168	2	1	Malaysia	3,640	2	1991	2000
8	Cebu	720,954	2	5	Philippines	1,050	3	1990	2000
9	Palembang	1,422,457	2	5	Indonesia	680	4	1990	2000
10	Ipoh	476,642	1	2	Malaysia	3,640	2	1991	2000
11	Bacolod	430,076	1	15	Philippines	1,050	3	1990	2000
12	Songkhla	342,475	1		Thailand		3	1990	2000
Sub-Saharan Africa									
1	Abidjan	3,790,238	3	1	Cote d'Ivoire	630	4	1988	1998
2	Johannesburg	2,949,742	3	2	South Africa	2,900	3	1991	2001
3	Addis Ababa	2,644,942	3	1	Ethiopia	100	4	1984	1994
4	Accra	1,867,637	3	1	Ghana	290	4	1984	2000
5	Harare	1,790,590	3	1	Zimbabwe	480	4	1992	2002
6	Pretoria	1,589,952	3	3	South Africa	2,900	3	1991	2001
7	Kampala	1,213,391	2	1	Uganda	280	4	1991	2002
8	Bamako	1,113,579	2	1	Mali	210	4	1987	1998
9	Ouagadougou	830,574	2	1	Burkina Faso	210	4	1985	1996
10	Ndola	480,221	1	3	Zambia	320	4	1990	2000

	City				Country			Census Years	
No.	Name	Population in 2000	Size Class	Rank	Name	GNI per cap. in 2001 ($)	Income Class	First Year	Second Year
Sub-Saharan Africa (continued)									
11	West Rand	441,969	1		South Africa	2,900	3	1991	2001
12	Kigali	392,408	1	1	Rwanda	220	4	1991	2002
Western Asia									
1	Istanbul	8,952,884	4	1	Turkey	2,540	3	1990	2000
2	Tel Aviv-Jaffa	2,001,055	3	1	Israel	16,710	1	1983	1995
3	Baku	1,948,271	3	1	Azerbaijan	650	4	1989	1999
4	Yerevan	1,406,765	2	1	Armenia	560	4	1989	1999
5	Sana'a	1,327,339	2	1	Yemen			1986	1994
6	Kuwait City	879,149	2	1	Kuwait	18,030	1	1985	1995
7	Malatya	436,000	1		Turkey	2,540	3	1990	2000
8	Zugdidi	104,947	1		Georgia	620	4	1991	2001