

# URBAN INDICATORS FOR MANAGING CITIES



# URBAN INDICATORS FOR ASIA'S CITIES: FROM THEORY TO PRACTICE

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**T**he Cities Data Book (CDB) for the Asian and Pacific region is the latest step on a long road. Economists and others have wrestled for nearly half a century with the problem of measuring human development, sometimes loosely equated with quality of life, in nations and in cities. They have faced massive problems in doing so, both in developing a strong theoretical underpinning, and in measuring the key variables. This introductory chapter to the CDB first discusses the theoretical, conceptual, and measurement problems (Sections I and II). The CDB's achievement in addressing these problems is shown in Section III, including a summary and overview of the main conclusions that are treated in detail in Chapter 5. Finally, various problems of interpreting the data are discussed in Section IV.

## I. THE THEORETICAL PROBLEM

Traditional neoclassical economics never addressed such issues adequately. First, its scheme of utilities, or satisfactions, rarely distinguishes between the value of individual utilities and all are to be treated as of equal value, so that (in Bentham's immortal words) pushpin is truly as good as poetry. Second, it takes no account of income distribution, so that a gain in utility to a rich person must count the same as a gain to a poor person.<sup>1</sup>

Its ultimate expression, Pareto optimality, was notably criticized by Amartya Sen:

If preventing the burning of Rome would have made Emperor Nero feel worse off, then letting him burn Rome would have been Pareto-optimal. In short, a society or an economy can be Pareto-optimal and still be perfectly disgusting (Sen 1970, 22).

This relates to a much more contemporary debate raging among economists in leading development institutions: should policy try to encourage growth, making everyone richer but maybe more unequal, or should it worry about distribution?

Amartya Sen has wrestled with these paradoxes and has developed a fresh approach: there is a single universal definition, not of money, but of "capabilities" and "functionings." People all have the same 24 hours of the day. Subject to certain constraints, they can spend this time any way they like. And they could do many more things, but this would depend on their potential, which many of them fail to realize. As one commentator has written, for Sen, "The poor

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<sup>1</sup> Strictly, Bentham did allow that the marginal utility of income diminished. He wrote: "The effect of wealth in the production of happiness goes on diminishing, as the quantity by which the wealth of one man exceeds that of another goes on increasing; in other words, the quantity of happiness produced by a particle of wealth (each particle being of the same magnitude) will be less and less at every particle; the second will produce less than the first, the third than the second, and so on" (*Pannomial Fragments*, IV 5). But this was not the way he was understood.

Sen's focus throughout is on the possibilities for people, particularly poor people, to develop their own lives; as he puts it, "to favor the creation of conditions in which people have real opportunities of judging the kind of lives they would like to lead."

are poor because their set of capabilities is small—not because of what they don't have, but because of what they can't do. In other words, they can't do very much with their time" (Desai 2000, 49).

Central to Sen's theory, in the title of his 1999 book, is the concept of development as freedom. The conventional view of development, he argues, misses the fact that substantive freedoms (such as access to basic education or health care or a job) do not only contribute indirectly to growth of GDP (though of course they do); they are among the constituent components of development (Sen 1999, 5). This ability to do valuable things simultaneously makes you free, and also helps you achieve valuable outcomes; Sen says it has a "generic similarity" to the notion of "quality of life" (Sen 1999, 24).

This of course is particularly important for the development of poor countries. But Sen points out that richer countries, too, often have deeply disadvantaged people, who lack basic opportunities to get health care, or functional education, or gainful employment, or economic and social security. Sometimes such groups may have a life expectancy no higher than that in much poorer countries. And women in many countries are worse off than men (Sen 1999, 15).

Sen's focus throughout is on the possibilities for people, particularly poor people, to develop their own lives; as he puts it, "to favor the creation of conditions in which people have real opportunities of judging the kind of lives they would like to lead" (Sen 1999, 63). This is essentially a theory of empowerment, which he sums up in the word "functionings." These, basically, are things that people care about: they range from basics, like having enough to eat, to complex things like playing a valuable role in one's community (Sen 1999, 75). We need to ask how far people are able to do these things. This means that processes, such as participation, are not just a means to an end; they are part of the end of development (Sen 1999, 291).

Such freedoms may correlate only poorly with conventional measures of economic development, such as GDP per capita. As Sen

shows in his empirical examples, "income levels may often be inadequate guides to such important matters as the freedom to live long, the ability to escape avoidable morbidity, or the opportunity to have worthwhile employment, or to live in peaceful and crime-free communities. These non-income variables point to opportunities that a person has excellent reasons to value and that are not strictly linked with economic prosperity" (Sen 1999, 291).

There is a basic question about such indexes: do we ask people to measure their own conditions subjectively, or do we use objective measures? Economists always argue that the only true measure of someone's welfare is what that person feels: a "subjective" approach. But this gives problems. People may not be fully aware of their state: poor people may not know how sick they are, for instance. They would certainly find it difficult to measure their own state against that of much richer people (Bliss 1993, 418-9). Even among people at about the same income level in a rich country, it would be hard for a member of the career-obsessed, consumer-oriented mainstream to judge the state of a dropout in pursuit of an alternative lifestyle—or vice-versa (Bliss 1993, 428). So an objective measure may be preferable.

But there is a specific problem with Sen's concept of "capabilities": it refers both to what a person does get, and to what that person could get (Cohen 1993, 10). Sen writes a lot about basic freedoms: to have enough to eat, to have good health. But, as one critic writes, "being free from malaria is not something that one does" (Cohen 1993, 21). It is not a freedom; it just happens to you. Sen's real concern, it appears, is not lack of capability as such: it is lack of food or shelter or good health, which are much more basic. It is true that by being well-fed, one can do more things. But they are two different things, and very often Sen is concerned with the first (Cohen 1993, 23).

This problem might seem, literally, academic. But it becomes quite serious in societies above the level of satisfying their most basic needs. Here, as Sen recognizes, individual tastes enter (Cohen 1993, 26).

Is there a resolution to these basic dilemmas? One, perhaps, is that there must be a set of basic capabilities common to all human beings: to move about freely, to mate with the partner of your choice, and to live a healthy and productive life (Desai 2000, 49). Beyond that, it may depend on the standards of the society you live in: different in the Lao People’s Republic (Lao PDR) and Singapore. In fact, Amartya Sen’s theory is a very dynamic notion of freedom, based on positive choice.

If we apply this to cities above the poorest level, we find many people who have little choice, whether or not they fully realize it. They are well nourished and adequately housed and in reasonable health. But beyond this, their options are quite limited, even non-existent. Consider poor children who drop out of school. Their education (or the lack of it) will deny them the “capability” of a wide choice of jobs, or maybe of getting any job at all. They will perhaps have the “capability” to get into taking drugs or even dealing in drugs, and perhaps getting into jail. Bad health may reduce their choice even further. If we consider their sisters, finding themselves with a small child, without adequate income, will certainly reduce their capabilities quite massively. Living in an area which is dangerous, or dirty, or noisy may be physically uncomfortable and psychologically damaging. Further, many of these happenings are cumulative, piling constraints one on the other. People may find themselves in a kind of snakes and ladders game where the ladders seem short and the snakes endless. And choices, made without much forethought (or any thought at all), early in life, may prove to have fatal consequences later on.

So these points are far from academic. People’s “capabilities” and “functionings,” in an advanced welfare state at the beginning of the 21st century, can mean that things have been done for them, without much conscious effort on their part. But in another sense, they have very little of either: their “life chances” are hugely circumscribed.

All this suggests that it may be much easier to develop objective indexes at a fairly basic level on the development scale, where

these deal with things that may be provided for people, but are valued by virtually all people: life, health, lack of avoidable suffering, the ability to read and write, and basic shelter. It may become much harder later on in the development process, where larger differences in incomes often emerge, and where the effects of different tastes loom larger. Here, value judgments may prove unavoidable: we may determine that more education is good, even though some people may be disinclined to take the opportunity, or that drug or alcohol abuse are bad, though some people think they are enjoying either or both. And indeed, most indexes of human development do make such basic value judgments, whether implicitly or explicitly.

## II. APPLYING THE THEORY: MEASURING HUMAN DEVELOPMENT

Sen’s theory has been very influential in framing the concept of human development, now the subject of an annual report from the United Nations Development Programme (UNDP).<sup>2</sup> The United Nations (UN) Human Development Index (HDI), first published in 1990, is designed to produce “real” indexes of development by using a variety of internationally comparable, and therefore “objective,” indexes. Slightly different sets are used for developing and developed countries; for developed countries they include

- longevity: life expectancy at birth (female/male); percent not expected to survive to 60;
- knowledge: adult literacy rate; enrollment ratio; female and male rates; adult functional literacy rate; female and male combined enrollment ratio; and
- decent standard of living: adjusted per capita income in purchasing power parity in US\$, male and female shares; percentage of people living below the income poverty line (50 percent of median personal disposal income) (UNDP 1999, 127).

<sup>2</sup> UNDP *Human Development Report*. Sen confesses that he was originally skeptical about the idea of a single human development index, but now accepts it (UNDP 1999, 23).

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In developing the indicators for the CDB, ADB considered a number of objectives. The book must appeal to urban managers and urban development practitioners, so the indicators should measure policy outcomes.

As Sen suggested, the UNDP indexes show no clear relationship to the conventional index of income per capita. Spain, Singapore, Georgia, Turkey, Morocco, and Lesotho all fall within the HDI range between 0.894 and 0.582, yet real GDP per capita in Spain is 8.5 times that of Lesotho (UNDP 1999, 129). Countries with similar GNP per capita, such as Sri Lanka and Côte d'Ivoire (\$700-800/head), can show huge variations in HDI: life expectancies that range from 46.7 to 73.1, adult literacy rates ranging from 42.6 to 90.7, and overall HDI ranging from 0.422 to 0.721 (UNDP 1999, 129, 135-7). It seems that such general worldwide indexes may be better at exposing differences at the lower end of the development scale, than at the top.

But the UNDP indexes are not the only kind. As Chapter 2 shows, the three separate approaches to indicator construction being applied by different agencies are

- *a policy-related approach originating in the social indicators movement of the late 1960s*, and now used in the World Bank/United Nations Centre for Human Settlements (UNCHS) Indicators Program and the Global Urban Observatory. Such indicators typically stem from government or community concern in a particular area, and so are closely related to the process of establishing urban strategies and policies. They work by developing a comprehensive inventory of major social goals or norms, and then devising indicators to measure progress towards these goals. They are holistic, looking at the health of cities or sectors as a whole; inclusive, covering areas beyond the realm of a single management structure; and pluralist, intended to foster or inform a dialogue between the different parties involved in urban development;
- *a thematic/index approach used by UNDP and in State of the Environment reporting*. This works by establishing broad themes or concepts rather than specific policy goals, and is not necessarily directly associated with a strategy. Such broad themes, livability, sustainability, or good governance, are not directly observable, but are either multidimen-

sional, involving different aspects which have different indicators, or may be expressed as indexes or linear combinations of indicators; and

- *the systems approach of the Organisation for Economic Co-operation and Development (OECD)*, now used to support Agenda 21 and other environmental sustainability agendas. This differs from the policy-driven approach because it begins with a simple, but explicitly physical, model or systems diagram of the city or the environmental system, within which the various actors operate, and in which linkages and causality between various sectors are delineated.

In developing the indicators for the CDB, ADB considered a number of objectives. The book must appeal to urban managers and urban development practitioners, so the indicators should measure policy outcomes. Specifically, they should address ADB's major strategic objectives, as expressed in its current Urban Sector Strategy, and there should be consultation in establishing them. Because of these considerations, it was felt that the policy-based approach of the UNCHS Urban Indicators Program and World Bank/UNCHS Housing Indicators Program would be most appropriate. It could provide a comprehensive set of indicators, directly related to policy concerns and developed in full consultation. In addition, it has been shown capable of producing a large collection of indicators at affordable cost. Its main disadvantage is that, because it is produced through participation, the issues and the indicators both depend on the expert group that chooses them. There is no systematic scheme that underlies the selection; nor will new indicators be generated. But these were not felt to be particularly decisive in the present exercise.

### III. REALITIES OF THE CONTEMPORARY ASIAN CITY

#### Asia's Urban Challenge

Nowhere is the urban challenge more starkly evident than in Asia. Today, 38 percent of the population is urban; by 2020, the per-

**Table 1.1. Urban Population**

	Urban Population (%)			Urban Population Growth Rate (%)		
	1980	2000	2020	1980-85	2000-05	2020-25
World	39	47	57	2.6	2.2	1.7
Africa	27	38	49	4.4	4.0	3.0
Europe	69	75	80	0.8	0.3	0.1
North America	74	77	82	1.2	1.0	0.9
Central America	60	67	73	3.1	2.0	1.5
South America	68	80	85	3.1	1.8	1.1
Asia	27	38	50	3.6	2.8	2.0
Oceania	71	70	72	1.4	1.3	1.3
Developing Countries	29	41	52	3.8	2.9	2.1
Developed Countries	71	76	81	0.9	0.5	0.3

Source: World Resources 1998-99.

centage will be 50 (Table 1.1). There will be a doubling of the urban population between 2000 and 2025 with an urbanization rate of around 3 percent per year. Already, there are an estimated 200 million surplus workers in the rural areas of the People’s Republic of China (PRC); during the 1980s and 1990s, this surplus labor joined in one of the most massive migrations in world history; perhaps 100 million have moved from farm to city (Anon 1994).

By 2015, the UN predicts there will be 358 ‘million-person’ cities, cities with a population of one million or more, in the world: no less than 153 will be in Asia. And of the 27 ‘megacities,’ with ten million people or more, predicted for the year 2015, 18 will be in Asia (Table 1.2). Urban experts now identify a new phenomenon among these megacities: an agglomeration of perhaps a score of cities of different sizes, formerly separate, still retaining a physical identity, but constituting a population mass of 20, even 30 million people, and highly networked. Dejan Sudjic describes the Pearl River Delta between Hong Kong and Guangzhou as “... the world’s newest metropolis—a sprawling monster city still in the throes of a violent birth” (Sudjic 1995, 27). By 2005, he suggests, on present trends it may have 40 million people, the largest urban agglomeration in the world (Sudjic 1995, 30). Other such agglomerations include the Jakarta-Surabaya

corridor, and Japan’s Tokaido corridor. In several of these, the problems that arise from sheer size, like supplying basic services, traveling from home to work and disposing of waste, already prove daunting; they are certain to multiply in the coming decades.

These realities are compounded by there being no simple or easy relationship between size, complexity, and level of wealth. Emerging megacities, like Asia itself, cover the whole gamut of development, from very advanced city-states (Hong Kong, Singapore) to very low-income cities that are just beginning on the development path (Dhaka, Phnom Penh). Further, many, though not all of them, exhibit great internal differences in income and living standards: the classic general rule, enunciated long ago by Williamson (1965) (that income differentials increase during the early stages of development, before narrowing again) certainly appears to apply to many of these cities.

Applying the earlier theoretical arguments to this situation, it can be concluded that for many inhabitants of these cities, basic measures will prove robust. Having enough food to eat, living reasonably long, enjoying a decent level of health, learning to read and write, all are measurable and all provide measures of basic quality of life. But beyond basic levels, for some people in many cities and for almost all people in some cities, it increasingly becomes a matter of lifestyle

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**Table 1.2. Megacities, 1995 and 2015**

Urban Agglomeration	Population (thousands)		Annual Growth Rate (%)	
	1995	2015	1985-1995	2005-2015
<b>Africa</b>				
Lagos	10,287	24,437	5.68	3.61
Cairo	9,656	14,494	2.28	1.97
<b>Asia</b>				
Tokyo	26,836	28,701	1.40	0.10
Bombay	15,093	27,373	4.22	2.55
Shanghai	15,082	23,382	1.96	1.85
Jakarta	11,500	21,170	4.35	2.34
Karachi	9,863	20,616	4.43	3.42
Beijing	12,362	19,423	2.33	1.89
Dacca	7,832	18,964	5.74	3.81
Calcutta	11,673	17,621	1.67	2.33
Delhi	9,882	17,553	3.80	2.58
Tianjin	10,687	16,998	2.73	1.91
Metro Manila	9,280	14,711	2.98	1.75
Seoul	11,641	13,139	1.98	0.32
Istanbul	9,316	12,345	3.68	1.45
Lahore	5,085	10,767	3.84	3.55
Hyderabad	5,343	10,663	5.17	2.83
Osaka	10,601	10,601	0.24	-
Bangkok	6,566	10,557	2.19	2.51
Teheran	6,830	10,211	1.62	2.30
<b>South America</b>				
Sao Paulo	16,417	20,783	2.01	0.88
Mexico City	15,643	18,786	0.8	0.83
Buenos Aires	10,990	12,376	0.68	0.50
Rio de Janeiro	9,888	11,554	0.77	0.84
Lima	7,452	10,526	3.30	1.32
<b>North America</b>				
New York	16,329	17,636	0.31	0.39
Los Angeles	12,410	14,274	1.72	0.46

Source: United Nations 1996, 451-456.

and of taste. As argued earlier, this is where the problems arise.

Take poverty, for example. After more than three decades of economic growth in Asia, the region remains home to 70 percent of the world's poor, numbered at 900 million (ADB 1999). Poverty, once measured simply by income, is now seen as embracing multiple dimensions of

- *human capital development*, measured by access to basic education, primary health care and other essential services;
- *gender equality*, by ensuring universal education for girls, providing accessible reproductive health services and increas-

- ing economic opportunities for females;
- *social protection*, assisting individuals, households, and communities to manage risks and ensure economic security through old age pensions, unemployment and disability insurance, social safety nets against disasters, economic crises, or civil strife; plus policies to improve labor mobility and enforce labor standards;
- *good governance*, ensuring that essential assets are equitably distributed, public policies and programs are appropriate to human needs, and that there are full opportunities for participation;

- *lack of discrimination*, whether ethnic, cultural, or gender-based; and
- *geographic location* (rural vs. urban) in relation to access to jobs, services, etc.

In practice, some formidable problems have to be overcome. International statistical comparison is notoriously difficult even at the national level; but at the city level, further problems emerge. One is a simple lack of data: the Cities Data Book exercise has been able to collect data for 18 cities. The majority of these achieved collection rates of over 75 percent but in a few cities the collection rates were poor. Definitions of cities vary from country to country; cities in transitional economies, between a socialist planned economy and a market one, exhibit all kinds of unusual distortions in their economic and social structures (McGee 2000, 17).

However, some indicators remain fairly robust and directly comparable: demographic data (total population, birth, and death rates), some measures of economic development, and basic health and educational achievements. Among the 140 indicators in the CDB exercise, many concentrate on such measures, some of them basic inputs (like population), some primary economic outputs. But many other indicators measure processes in the market or the public sector and their outcomes: these include indicators on connectivity, on housing and urban land, on municipal services, on urban environment and transport, and urban governance and management. Quality-of-life measures are distributed throughout the tables: they include homelessness, household utility connections, water consumption, air pollution concentrations, noise complaints, disasters, transport fatalities, and crime rates.

### The CDB Database

The 140 indicators are grouped into 13 main divisions, each of which includes a variety of indicators measured in different ways.

#### **Population, Migration, and Urbanization**

This first group contains a series of indicators which describe basic demographic and socio-demographic characteristics of the city

population (population, both resident and working; net migration; age structure; household size; household formation rate; and household type). They also include some measures of housing condition (population and households in informal settlements). The 18 cities range enormously in size, from Melbourne with a resident population of only 44,500, to Hong Kong with 6.69 million, and this immediately introduces a major problem of comparison. Like most Australian cities, Melbourne covers only a minute part of the total metropolitan area, whereas Hong Kong includes the entire city-state. Generally, with exceptions, the less-developed cities have higher rates of overall growth and net in-migration from other parts of the country (though the use of absolute numbers can mislead). Also densities appear to vary according to local circumstances, in particular the way boundaries are drawn, so that Hong Kong anomalously appears almost at the bottom of the range. The age distribution, again expressed in absolute numbers, is difficult to interpret. Household size clearly relates to level of development, as does household formation rate, with high levels in less developed cities. Particularly notable are the large variations in women-headed households, where Hanoi at the top of the range demonstrates the continuing effect of Viet Nam War deaths; Phnom Penh, in second rank, also reflects drastic levels of male deaths a generation ago. Household structures again relate to development patterns, with Melbourne showing high levels of one-person households characterizing the modern western inner city, and Bangalore or Hanoi demonstrating largely family-based structures. Particularly notable, finally, are the huge numbers in informal settlements in some of the poorer cities such as Dhaka and Lahore.

#### **Income Disparity, Unemployment, and Poverty**

A second group of indicators include measures of economic deprivation including income distribution, poverty, child labor, informal employment, and unemployment. It also includes a policy measure of expendi-

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ture on poverty reduction. Here, the most notable features are the differences in income spread between relatively egalitarian cities like Kathmandu and Seoul, where the top 20 percent averages only three times the bottom 20 percent, and Lahore, where the ratio is 31 to one, and the very low income levels of the bottom 20 percent in Hanoi and Phnom Penh (reflecting the many women-headed households). As a result, the percentage below the poverty line varies from a low of 1.2 in Seoul to a high of 47.7 in Dhaka. Particularly notable is the very high proportion of women-headed poor households in Kathmandu (97 percent) and Naga (53 percent), the large numbers of child workers in Dhaka and Lahore, and the high percentages of informal employment in Bangalore (54 percent), Lahore (60 percent), Dhaka and Suva (63 percent). Predictably, most of these cities have low rates of formal unemployment; the exception is Dhaka, where a 23 percent rate produces the extraordinary total (assuming no overlap) of 86 percent lacking formal employment. Finally, it is notable that many of the cities with the highest proportions in poverty are least able to spend money on reducing it; Dhaka, for example, spends just under \$3.2 per poor person annually.

### **Health and Education**

A third group of indicators specifically measures the society's achievements in health and education covering persons per hospital bed, child mortality, life expectancy, mortality from infectious diseases, family planning, the adult literacy rate, school enrollment rates, graduates from tertiary education, median years of education, and school children per classroom. This group marks a mixture of indexes, some reflecting the level of economic development and social evolution, some more directly addressing the effectiveness of urban (and national) policies in these fields. Consequently, there are some interesting and unexpected results: key health indexes show quite small variations from rich cities to poorer ones (though Phnom Penh falls well behind the others); in places this may relate to a lack of hospital bed provision, but otherwise there is a conspicuous

lack of relationship between these sets of indicators. Family planning appears more closely related to the level of economic development, as is adult literacy, but the latter shows encouragingly high levels generally, as does primary school enrollment (with an anomalous 117 percent in Naga, presumably caused by re-enrollment of older groups). School children per classroom show predictable variations according to development levels, though with many anomalies and there seems to be little relationship with outcome measures.

### **Urban Productivity and Competitiveness**

A fourth group of indicators directly addresses measures of economic development including city product per capita, the structure of employment, household expenditure on main items, investment by sector (basically the public sectors of infrastructure, housing, and services), tourism, a list of major investment projects, the cost of a day's stay, and the number of corporate headquarters. Clearly, the indicators measure different things like the general level of economic development, the efficiency of the private sector, the effect of national macro- and micro-economic policies, and special characteristics such as might attract tourists and corporate headquarters. The city product per capita is the basic index here, and shows large variations, from a low of \$246 in Phnom Penh to a high of \$26,369 in Hong Kong; but most cities appear in a narrower range from \$500 to \$2,000 per head. Figures on employment are difficult to interpret and compare because they appear as absolute numbers, not percentages; household expenditure, easier to interpret, shows characteristic variations according to income; investments show many missing data. The data for tourism show some interesting variations, with some very poor cities (Hanoi, Kathmandu, Phnom Penh) attracting significant numbers.

### **Technology and Connectivity**

The fifth group of measurements also deals with economic development, especially in information and communications technol-

ogy. They include research and development expenditure, telephone traffic (distinguishing local, international, and mobile), and Internet hosts per 1,000 population. The measurements reflect a mixture of state and private investment as well as the general level of economic development; they provide an important set of measures of a city's linkages to an increasingly networked urban world. While somewhat difficult to interpret, being expressed in absolute numbers, this group demonstrates some of the starkest contrasts to be found anywhere in the series, from minimal (Mandaluyong) to highly developed (Hong Kong).

### **Housing**

Housing represents one of the most basic of human needs, but this group of measurements is concerned less with measures of housing size or quality (which are partly addressed in the next series); it is concerned more with land use and land costs, including the ease of obtaining land for development.

Included in this group are basic housing measures, including dwelling type, tenure type, house prices and rents, available area, financing of house purchase, the production of new housing, treatment of squatter settlements, government expenditure, and homelessness. These partly measure government policies and commercial activity, and partly outcomes in housing quantity and quality. Notably single-family homes dominate in a few cities (Cebu, Hanoi, Medan, Naga), but apartments dominate in Bishkek, Hohhot, and Hong Kong. Particularly notable is the high proportion of owner-occupied housing in many cities, both rich and poor. Generally, house prices and rents are within an acceptable range of income (understandably, given the poverty of many cities), but there are some anomalously high values in a few cities, notably Phnom Penh. More sophisticated housing indexes are often lacking; homeless people are not generally significant in number, with the stark exception of the 70,000 in Dhaka.

### **Urban Land**

The land use data are again very difficult to compare because they are expressed in ab-

solute areas, not percentages; some cities (Lahore, Phnom Penh) show large amounts of land awaiting development, presumably reflecting lack of demand, and some of these also have large areas of vacant government land. Most cities process planning applications within one to two months, but Bangalore and Medan are conspicuous exceptions. Prime rentals vary hugely, but this is by no means clearly related to the level of economic development; the Melbourne figure is dominated by the CBD.

### **Municipal Services**

Here are several sub-series of indicators for water, electricity, sewerage/wastewater, telephone, and solid waste collection that measure the delivery of basic services, whether by the public or private sector. They are presented as far as possible uniformly: statistics are given, where available, for connections, investment per capita, operations and maintenance expenditures, cost recovery, productivity of staff, providers, unaccounted delivery and service interruptions, consumption, and median prices. These measures are quite heterogeneous including very basic indicators (like connections and per capita consumption) as well as a much wider variety which measures the efficiency and effectiveness of the providers. Water consumption varies significantly, from a low of 32 liters per day in Phnom Penh to a high of 302 liters in Melbourne; there appears to be no clear relationship to levels of development, to the percentage of households connected (which, with the exceptions of Dhaka, Medan, and Ulaanbaatar, is generally high), or to price (which is extremely low in some transitional cities, and high in Cebu, Dhaka, Lahore, and Naga). Electricity, like water, reaches the great majority except in Phnom Penh. However, the performance of electricity utility organizations varies startlingly, with cost recovery figures ranging from 0.02 percent (Bishkek) to 213 percent (Hong Kong), while productivity shows equally startling (and inexplicable) variations. Finally, though supply is generally reliable, three cities (Bishkek, Cebu, and Lahore) report outages of more than 100 hours a month. Sewage

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Car use for the work trip varies from zero in Hanoi and Kathmandu, to nearly 55 percent of trips in Melbourne, and is clearly related to car ownership which ranges from one per thousand in Hohhot to 341 per thousand in Melbourne.

and wastewater connections show much greater variations, from a low of zero in Naga and Cebu, to a high of 98 percent and over in Hong Kong, Melbourne, and Seoul. Investments are also highly uneven, and cost recovery and productivity measures again show large variations from city to city.

Telephone services, also reported earlier, vary greatly in percentages connected, from a low of 9 percent in Hohhot and Dhaka, to 99 percent in Hong Kong and Melbourne. However, some of the variations are difficult to explain by development level. Solid waste collection is more widely available, save in Bangalore, with a number of cities reporting 100 percent collection; cost recovery again varies, as does productivity.

### Urban Environment

This group of indicators relates closely to the last, since it includes measurements of solid waste generated, solid waste disposal, household sewage disposal, and wastewater treated. It also includes measurements of air pollution, energy use, noise complaints, and damage from natural disasters. It is again a heterogeneous group, partly measuring the scale of the problem, and partly the effectiveness of public services in handling it. Solid waste generation does not show major variations; most households in most cities are connected (as already noted), and the few exceptions appear to use septic tanks. Most cities use landfills as the main means of disposing of their solid waste; incineration records zero values, but the three cities (Dhaka, Melbourne, and Seoul) succeed in recycling 30 percent and more. Unfortunately, most environmental indicators are lacking for most cities, so comparison is difficult.

### Urban Transport

This group of indicators basically measures traffic, both of people and goods: it includes data on mode of travel to work, median travel time, car ownership, port and air activity, and goods carried by different modes. It also includes some indicators that effectively measure the impact of public policies: expendi-

ture on roads, road congestion, cost recovery from fees, and transport fatalities. As might be expected, there are some large variations related to level of development. Car use for the work trip varies from zero in Hanoi and Kathmandu, to nearly 55 percent of trips in Melbourne, and is clearly related to car ownership which ranges from one per thousand in Hohhot to 341 per thousand in Melbourne. Public transport conveys 87 percent in Hong Kong, 86 percent in Medan, 80 percent in Bishkek, and 75 percent in Colombo. Bicycles carry 91 percent in Hohhot and 29 percent in Hanoi but zero in some cities (Colombo), where significant use might have been expected. The great majority of median travel times fall in the 25–45 minute range. Finally, accident rates are generally low except for Ulaanbaatar. Figures for freight traffic are largely lacking.

### Cultural

This is the most unusual group of measures. As distinct from seeking to provide comparable statistical indexes (though participation in sports is included for some cities), it simply lists attendances at each city's leading attractions during the year. Some of these are ongoing, others (such as national independence days) are time-limited. Because of its nature, this group is difficult to compare.

### Local Government Finance

This group of indicators measures a variety of input and output measures, including sources of city revenue, capital and recurrent expenditure, collection efficiency for property taxes, debt service charge, employment, wages, and measures of computerization of city government functions. These relate to other indicators that analyze the performance of local government, and they reveal sharp differences. Taxes range from over 85 percent of total revenues to zero in Kathmandu, with most cities falling into the 40–65 percent range; a few (Kathmandu, Naga, Phnom Penh) depend for a majority of their revenue on transfers. Capital spending per person shows extraordinary variations, from negligible levels to over \$1,000

annually. However, most cities fall in a narrower range of between \$3 and \$20 a year; likewise, recurrent expenditure is mainly in the \$25–\$150 range per head, with Melbourne and Hong Kong spending \$680 and \$3,171, respectively. Reported collection efficiency ranges from lows of between zero percent and 10 percent (Kathmandu, Lahore, and Mandaluyong), to highs (for most cities) of 70 percent and more. Employment and percentage of wages in budget show considerable variations, with some cities (Colombo, Lahore, Phnom Penh, Suva) spending more than 50 percent of their budget on wages. Finally, most cities, rich and poor alike, have computerized most of their functions; the intriguing anomaly is Bangalore, India's high-tech capital.

### Urban Governance and Management

The final group of measures is again large and highly heterogeneous; it includes data about local government functions, voter participation, independence from higher levels of government, council members, representation, planning applications, a variety of indexes directly related to quality of life (business and consumer satisfaction, perception of the city as a place to live, reported crime), indexes on access to city information and contact between city administration and the public, and the existence of decentralized district units.

Local government functions vary greatly. Bishkek, Hohhot, Hong Kong, Mandaluyong, and Medan are responsible for all listed services. At the other extreme, Melbourne has minimal responsibilities. Most cities appear to offer the majority of services. Voter participation varies greatly, from 100 percent in Hanoi, Hohhot, and Melbourne (where it is compulsory) down to 14 percent (12 percent for women) in Lahore. Data from higher government is sketchy; in general, few cities have much independence, though Colombo and Hohhot are exceptions.

In most cities councilors are elected, though in Bishkek, Hong Kong, and Kathmandu they are exceeded by nominated council members, and Phnom Penh has no

representatives at all. Particularly notable is the low proportion of women members in most cities. Colombo and Lahore make specific provision for representing minorities.

Unfortunately, most quality-of-life data (business satisfaction, consumer satisfaction, and perception of the city as a place to live) are mostly unavailable. It was not possible with the resources available to carry out a perception survey to improve on the quality-of-life data. Reported crimes show great variations, for reasons that sometimes may be statistical artifacts (thus, Melbourne's anomalously high figure of 449 per thousand must reflect its domination by the CBD). Otherwise, with a few exceptions (mainly involving drug-related offenses), crime levels in most cities show little variation, with the exception of Suva.

Contact with the public varies from zero to extraordinarily high levels (and the attendance levels in Mandaluyong, 840,000 in a single year, are highly unusual). Generally the levels are modest.

## IV. INTERPRETING THE CITIES DATA BOOK

The CDB interprets the statistics in two main ways. First, it seeks to correlate the different indicators and the results are fully reported in Chapter 5. There are some significant correlations. The City Development Index (CDI) seeks to aggregate all the different measures into five groups (Infrastructure, Waste, Education, Health, and Product), then dividing the result by five. Predictably, the results show a close correlation with average household income ( $R=0.846$ ) and with the UN's HDI ( $-0.895$ ),<sup>3</sup> as well as with a number of other indicators which are related to income, including household structure, housing floor area, and Internet access.

Second, the CDB has sought to produce a statistical cluster analysis of the 18 cities. Rather predictably, perhaps, this produces four groups of cities: three highly-developed

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<sup>3</sup> The CDI gives high values to places at the top of the scale, the HDI the reverse; therefore, the negative value of the correlation.

Assembling and then synthesizing a database of this kind is a massive enterprise, involving huge practical problems: of basic definition and comparability, of data availability, and of aggregation and synthesis.

(Melbourne, Hong Kong, and Seoul); four medium-development cities (Mandaluyong, Naga, Suva, and Cebu); four transitional-economy cities (Bishkek, Hohhot, Hanoi, and Ulaanbaatar); and seven low-development cities (Kathmandu, Lahore, Bangalore, Colombo, Medan, Dhaka, and Phnom Penh). Particularly evident, in this grouping, is the close relationship between the CDI and the UN's HDI. Further, many of the individual measurements cluster neatly within the categories, though with some anomalies as reported in the commentary above. For instance, the percentage of households below the poverty line is higher in medium-development Mandaluyong and Naga than in low-development Colombo and Phnom Penh; and the percentage in informal employment is higher in medium-development Suva than in low-development Kathmandu or Colombo. As already observed, many other indexes (health, education) are now reasonably uniform between cities at different levels, and therefore do not provide a solid basis for statistical clustering. Better correlations, of course, exist with obvious measures of development like car ownership and use, and telephone or Internet hosts per 1,000 population, and these clearly have figured largely in the clustering process.

Assembling and then synthesizing a database of this kind is a massive enterprise, involving huge practical problems: of basic definition and comparability, of data availability, and of aggregation and synthesis. Difficult enough in the most advanced cities possessing the largest and most sophisticated data, the task becomes next to impossible in trying to introduce cities that have less-developed statistical systems. The authors of this volume deserve the plaudits of the worldwide community of urban observers, first for having the temerity to try to achieve this near-impossible task, and then for succeeding—not marginally, but rather brilliantly.

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