

# Epilogue

## The City Development Index (CDI)

### What does the CDI measure?

There are a number of concepts relating to cities and urban development that, although complex and multifaceted, are meaningful and desirable to measure. These include: development level, liveability, sustainability, relative disadvantage or poverty, congestion and inclusiveness. These multidimensional ideas cannot be encompassed by a single indicator but require a combination of different indicators - corresponding to different aspects of development or city performance - to form an index. The two most useful urban indices discovered to date have been the City Product per person, which is analogous to the GDP at the city level, to give the economic output of the city, and the City Development Index (CDI).

The CDI is defined at the city level and could also be taken as a measure of average well-being and access to urban facilities by individuals. The high statistical significance and usefulness of the index indicates that it is actually measuring something real. It appears that the CDI is actually a measure of depreciated total expenditure over time on human and physical urban services and infrastructure, and it is a proxy for the human and physical capital assets of the city. There is some support for this idea, in that more expensive services such as water treatment tend to be more heavily weighted. This cannot be confirmed with the present data, but it seems likely that a monetary cost can be associated with lifting the CDI by a percentage point.

The City Development Index was developed as a prototype for Habitat II to rank cities according to their level of development. It is used in this report as a benchmark for comparative display of several of the key indicators from the UNCHS (Habitat) Global Urban Indicators Database. The CDI is, to date, the best single measure of the level of development in cities.

### CDI components by Region:

Region	CDI	sub-indices				
		City Product	Infra-structure	Waste	Health	Education
Africa	42.85	49.69	36.17	26.04	50.39	51.96
Arab States	64.55	66.52	69.79	45.87	77.18	63.39
Asia-Pacific	65.35	62.90	67.75	44.40	78.27	73.43
HIC	96.23	90.60	99.21	100.00	94.26	97.10
LAC	66.25	62.93	70.42	39.50	82.71	75.68
Transition countries	78.59	71.62	90.64	55.93	85.80	88.94

1998 data

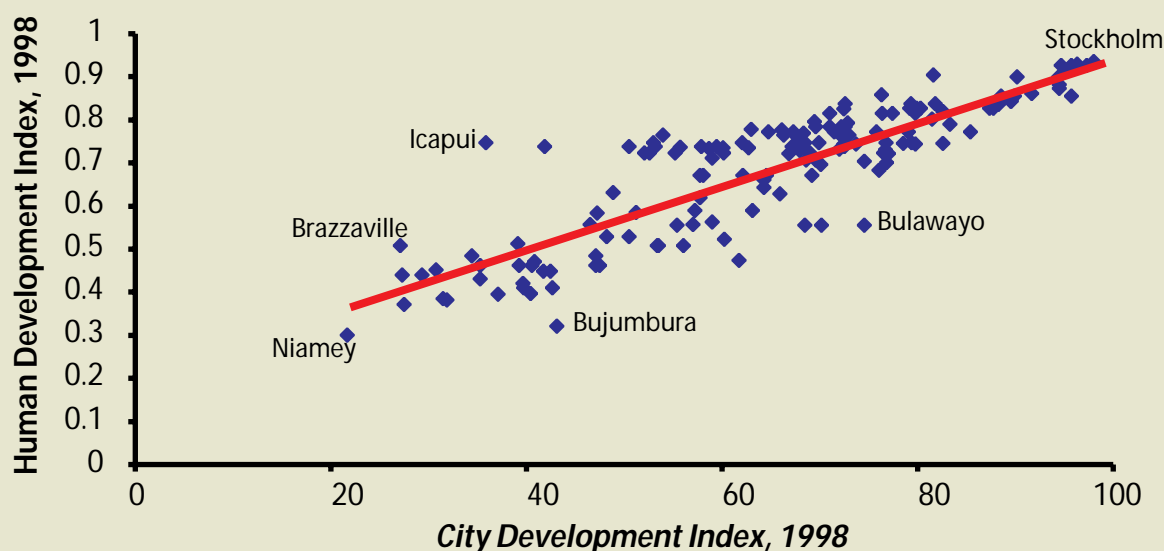
### CDI components for selected cities:

Region	CDI	sub-indices				
		City Product	Infra-structure	Waste	Health	Education
Stockholm	97.4	93.5	99.5	100.0	94.0	99.8
Melbourne	95.5	90.0	99.8	100.0	93.7	94.1
Singapore	94.5	91.6	99.5	100.0	92.7	88.6
Hong Kong	92.0	89.4	99.3	99.0	90.9	81.3
Moscow	89.9	81.0	98.7	86.8	83.8	99.3
Seoul	86.0	65.3	98.4	100.0	88.7	77.7
Rio de Janeiro	79.4	82.3	86.2	62.6	81.9	84.3
Sofia	79.1	70.9	93.7	58.5	86.2	86.3
Hanoi	74.2	59.6	72.0	90.0	80.6	69.0
Havana	71.0	65.0	74.8	50.0	80.7	84.7
Jakarta	69.2	66.2	57.3	46.7	80.2	95.7
Ulaanbaatar	68.4	53.7	59.0	90.0	72.5	66.7
Lahore	61.1	71.1	78.5	50.0	64.9	40.8
Colombo	58.4	46.9	68.6	45.0	86.2	45.3
Bangalore	58.0	51.1	82.7	31.3	76.5	48.5
Dhaka	48.4	55.6	45.3	27.5	64.6	48.7
Vientiane	47.1	44.0	58.0	0.0	62.3	71.3
Accra	46.6	49.4	50.0	0.0	71.4	62.0
Phnom Penh	43.5	40.2	33.0	27.0	47.2	69.9
Port Moresby	39.3	69.0	18.1	10.0	59.1	40.2
Lagos	29.3	42.1	29.5	2.0	44.0	29.1
Niamey	21.7	40.0	22.0	0.0	78.3	14.9

1998 data

# On Evidence

## City Development versus Human Development



### How is the CDI Constructed?

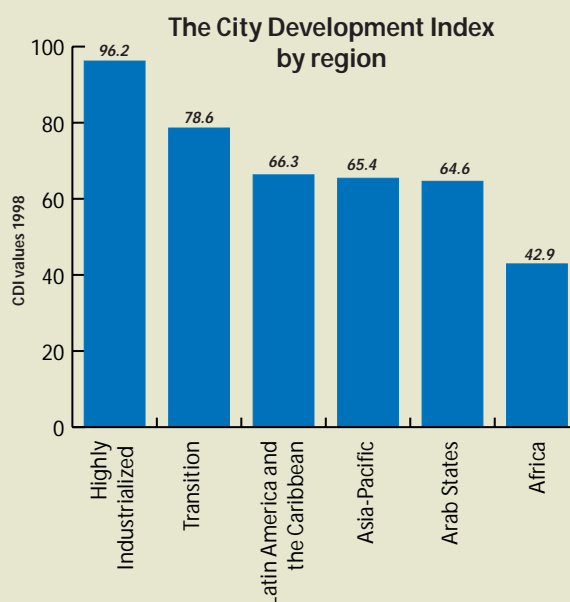
The technique used to construct the City Development Index is similar to that used by UNDP for their Human Development Index. Separate sub-indices are constructed and combined to create a composite index. Thus, the CDI is based on five sub-indices - City Product, Infrastructure, Waste, Health and Education - the values of which range from 0 to 100:

### City Development *versus* Human Development

The CDI correlates well with the national Human Development Index (HDI), but because there is considerable variation between cities in any particular country, it provides a better measure of real city conditions than the national-level HDI.

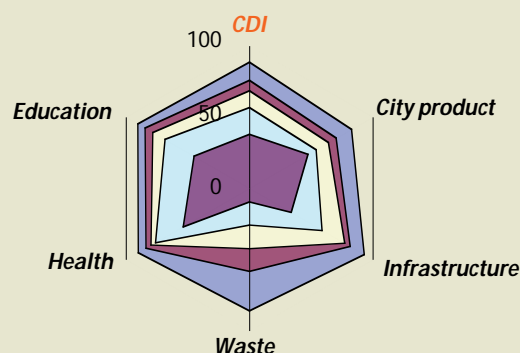
The City Development Index is used in several sections of this report to show how the values of indicators vary by city development quintile. Each quintile contains 20 percent of all cities in the database, arrayed from lowest to highest CDI values according to a scale ranging from 0 to 1. The City Development Index is a fine predictor of its constituent variables. It is, moreover, usually a better measure than either city product or the national HDI as predictor of a range of other variables at the city level.

The CDI has been cited as a good index of **urban poverty** and **urban governance**. Health, education and infrastructure components are particularly good variables for measuring poverty outcomes in cities. Similarly, infrastructure, waste and city product components are key variables for measuring the effectiveness of governance in cities. The CDI correlates strongly with the city product; other things being similar, a high-income city will have a higher CDI.



# Epilogue

## The City Development Index (CDI)



- High (Q5)
- Medium-high (Q4)
- Medium (Q3)
- Medium-low (Q2)
- Low (Q1)

The five sub-indices of the CDI increase at different rates as the CDI increases. As this graph shows, the two best performing areas are the HDI components, health and education. Satisfactory levels of performance are reached on the health index for all but the bottom 20 percent of cities, and for the education index above the bottom 40 percent. This demonstrates the very strong development emphasis placed on these social areas, and their relative ease of improvement. Conversely, urban waste management is the weakest area, starting from low levels and not gaining a good score until the top 20 percent of cities. A number of otherwise developed cities score poorly on this component. City product, representing the private sector or economic component of city investment, is also slow to improve.

An important revelation has been that many cities do perform better or worse on the City Development scale relative to their city product, clearly hinting at the fact that 'policy matters.' That is, if cities have invested in physical and social infrastructure, dividends will be received in those and other areas of city development.

### Calculating the City Development Index

The City Development Index is calculated according to the formulae in the table below. It has separate sub-indices for Infrastructure, Waste Management, Health, Education, and City Product, which are averaged to form the CDI. Each sub-index is a combination of several indicators that have been normalized to give a value between 0 and 1.

Because the variables used to make up the CDI are strongly related to each other, there are a number of ways to calculate the CDI that give almost identical results. For this report, the weightings given to each indicator have been initially calculated by a statistical process called Principal Components Analysis and then simplified. This formulation of the index by and large uses the same formulae as in UNDP Human Development Report (1999), for the Health, Education and City Product sub-indices.

For meaningful ranking of cities, the index requires data that are essentially complete, robust and precise - so not many variables are suitable. All the underlying data had to be checked for accuracy and completeness. Where there were missing data or based on very inaccurate estimates, they were either replaced by data from another national city of similar size, by country-wide figures (or national urban data, if available) or by figures for a nearby city or place at a similar level of development (but only if absolutely necessary). Also, *Formal waste disposal* or *Wastewater treated* is taken as zero if not provided. Where City Product was not provided, it was calculated so that  $City\ Product \times Household\ size = 0.45 \times Mean\ Household\ Income$  (which is similar to the main estimation formula). For most transition countries 0.35 x Household Income is used since, in transition economies, much GDP goes into indirect services and subsidies. The resultant city products must be somewhere in the vicinity of the National GDP per person, otherwise household incomes are presumed incorrect and adjusted.

### Calculating the CDI

Index	Formula
Infrastructure	$25 \times \text{Water connections} + 25 \times \text{Sewerage} + 25 \times \text{Electricity} + 25 \times \text{Telephone}$
Waste	$\text{Wastewater treated} \times 50 + \text{Formal solid waste disposal} \times 50$
Health	$(\text{Life expectancy} - 25) \times 50/60 + (32 - \text{Child mortality}) \times 50/31.92$
Education	$\text{Literacy} \times 25 + \text{Combined enrolment} \times 25$
Product	$(\log \text{City Product} - 4.61) \times 100/5.99$
City Development	$(\text{Infrastructure index} + \text{Waste index} + \text{Education index} + \text{Health index} + \text{City Product index})/5$

# On Evidence

## Examples of cities with higher or lower CDI than expected from city product (\*)

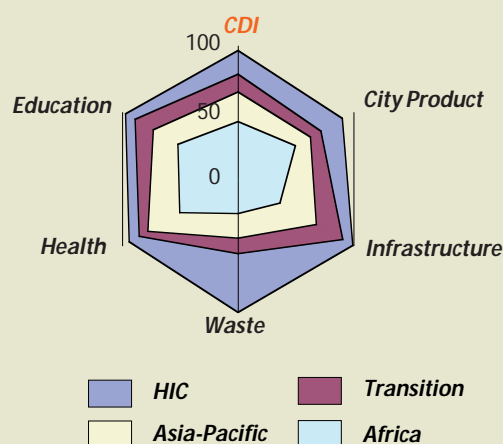
### High performers

Cuenca	Ecuador
Santo Andre	Brazil
Bourgas	Bulgaria
Chisinau	Moldova
Seoul	Korea
Medan	Indonesia
Tena	Ecuador
Novomoscowsk	Russian Federation
Ulaanbaatar	Mongolia
Hanoi	Vietnam
Kumasi	Ghana
Cajamarca	Peru
Tbilisi	Georgia
Amal	Sweden

### Low performers

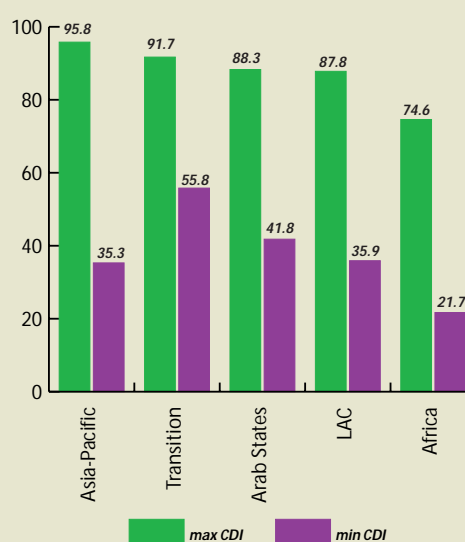
Lagos	Nigeria
Tangail	Bangladesh
Conakry	Guinea
Kigali	Rwanda
Bangui	Central African Republic
Lome	Togo
Abidjan	Cote d'Ivoire
Baghdad	Iraq
Niamey	Niger
Monrovia	Liberia
Nouakchott	Mauritania
Asuncion	Paraguay
Kinshasa	Congo, Dem. Rep.
Port Moresby	New Guinea

Note: (\*) as expressed by large differences in rank when ranking is undertaken using each variable.



The above graph shows the comparative size of the various components of the City Development Index for four regions. Although the regions are generally ordered from least-developed to highly developed, there are also particular areas in which regions are relatively weak. Overall, the transition countries' cities are good in most social and physical infrastructure categories, but weak in incomes and economic product. African cities have a particular weakness in physical infrastructure. Waste disposal is a problem throughout the developing world.

Minimum and Maximum CDI for cities by region, 1998

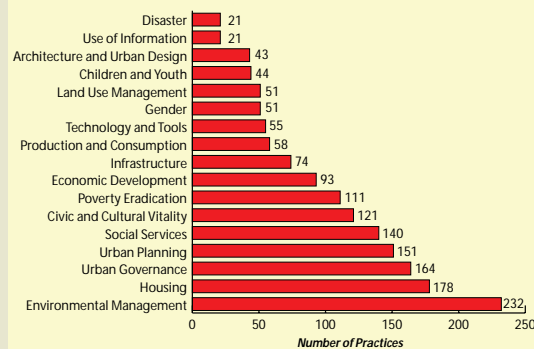


# Epilogue Best Practices

## The Best Practices Database

Good and best practices are initiatives undertaken by two or more partners at the national, city or community level that effectively address chronic social, economic and environmental problems. The UNCHS (Habitat) Best Practices Database, the source of many of the examples in this report, includes over 1,150 initiatives from 125 countries documented between 1996 and 2000. The mining of this rich database reveals trends and issues, emerging priorities and promising policy responses throughout the world. A breakdown by category shows that environmental problems are receiving the most attention by communities and local authorities worldwide. Housing, urban governance, urban planning and social services closely follow. These innovative approaches and solutions show that partnerships between local authorities and civil society organizations constitute a potent capacity of response to critical issues and problems. They also reveal a policy vacuum, as many of these initiatives are taking place with little or no central government support.

### 1000+ Best Practices: Environment, housing and governance top the list



Source: [www.bestpractices.org](http://www.bestpractices.org)

## Innovative Responses to Globalization

Globalization in the form of liberalized trade and finance has led to several types of response in cities around the world. Cities - particularly city-regions - in developing countries have realized that strategies that will allow them to effectively compete for foreign and domestic investment and tourism are best activated through social, economic and environmental policies that benefit, first and foremost, their own citizens. In countries where levels of infrastructure and

services are already high, cities and their regions are now turning their attention to their social and cultural assets. This trend is exemplified by investments in museums, festivals and special events, including those rooted in ethnic diversity. Other practices focus on preserving and rehabilitating the cultural heritage and natural endowments, including watersheds, wildlife and eco-systems.

In the transition economies of Eastern and Central Europe, policies for improving the living environment are largely led by compliance with European Union norms and standards aiming for a better quality of life and an improved investment climate. In North America, where mobility is higher than in Europe, a competitive edge is being sought through a combination of economic development strategies for incubating local business opportunities, human resources development, environmental policies and citizen security programmes.

In the developing countries of Africa and Asia, globalization has generated a spectrum of changes that include the emergence of new social actors; the greater importance of cognitive factors in all aspects of social life; the crisis of government and public administration; and the spread of democracy and adoption of new technology. Most of the cities in Africa, Asia, Latin America and the Caribbean are experiencing a distressing spread of social exclusion, economic growth without a corresponding growth in employment, increase in poverty, crisis of food imbalance and environmental degradation.

## Africa

Most city-scale initiatives in Africa involve the expansion of the informal economy. Many initiatives focus on providing affordable housing to disadvantaged groups, targeting proliferating informal settlements. In African cities, provision of secure land tenure in informal settlements is a prerequisite to increasing permanent housing. There is a shift in shelter policies by concerned governments, with more attention being given to infrastructure provision, secure land tenure and support to housing agencies, public and private. Community based organizations (CBOs) are in the forefront in shelter provision, mobilizing community members to participate in improving/constructing their own houses. Most central governments have adopted enabling building codes to make housing standards more affordable. In addition, they are involved in infrastructure provision that has served as an engine behind self-help housing construction. Much new housing stock has been generated through self-help construction efforts.