

INDICATORS PROGRAMME

Monitoring the City

Volume 2.
URBAN INDICATORS REVIEW
The Survey Instrument

Worksheet
February 1995.

Country:.....

City:.....

Date:.....

URBAN INDICATORS WORKSHEET

CONTENTS

LIST OF INDICATORS.....	5
INTRODUCTION.....	8
INSTRUCTIONS.....	10
GENERAL DEFINITIONS.....	12
BACKGROUND DATA MODULE.....	14
KEY INDICATORS.....	14
LAND USE.....	14
DEFINITIONS.....	14
POPULATION.....	15
HOUSEHOLDS.....	16
PRODUCTIVITY.....	18
DEFINITIONS.....	19
HOUSING.....	21
EXTENSIVE INDICATORS.....	22
POPULATION.....	22
HOUSEHOLDS.....	23
HOUSING.....	24
1. SOCIOECONOMIC DEVELOPMENT.....	26
GENERAL INFORMATION.....	26
LIST MAJOR ISSUES:.....	27
POVERTY.....	28
KEY INDICATORS.....	28
EXTENSIVE INDICATORS.....	29
EMPLOYMENT.....	32
KEY INDICATOR.....	32
EXTENSIVE INDICATORS.....	34
PRODUCTIVITY.....	36
EXTENSIVE INDICATORS.....	36
HEALTH AND EDUCATION.....	38
KEY INDICATORS.....	38
EXTENSIVE INDICATORS.....	40
SOCIAL INTEGRATION.....	43
KEY INDICATORS.....	43
EXTENSIVE INDICATORS.....	44
2. INFRASTRUCTURE MODULE.....	46
GENERAL INFORMATION.....	46
LIST MAJOR ISSUES:.....	47
ACCESS TO SERVICES.....	48
KEY INDICATOR.....	48
WATER SUPPLY.....	50
KEY INDICATORS.....	50
EXTENSIVE INDICATORS.....	52
SEWAGE.....	54
EXTENSIVE INDICATORS.....	54
ELECTRICITY.....	55
EXTENSIVE INDICATORS.....	55
TELEPHONE.....	57
EXTENSIVE INDICATORS.....	57
INFRASTRUCTURE OPERATIONS.....	58
EXTENSIVE INDICATORS.....	58
3. TRANSPORT MODULE.....	61
GENERAL INFORMATION.....	61
LIST MAJOR ISSUES:.....	62
MULTIMODAL.....	63

KEY INDICATORS.....	63
EXTENSIVE INDICATORS.....	65
ROAD INFRASTRUCTURE.....	67
KEY INDICATORS.....	67
EXTENSIVE INDICATORS.....	68
ROAD VEHICLES.....	69
KEY INDICATORS.....	69
EXTENSIVE INDICATORS.....	70
PUBLIC TRANSPORT.....	72
EXTENSIVE INDICATORS.....	72
4. ENVIRONMENTAL MANAGEMENT MODULE.....	74
GENERAL INFORMATION.....	74
LIST MAJOR ISSUES:.....	75
AIR QUALITY.....	76
EXTENSIVE INDICATORS.....	76
WATER.....	79
KEY INDICATORS.....	79
EXTENSIVE INDICATORS.....	80
SOLID WASTE.....	82
KEY INDICATORS.....	82
EXTENSIVE INDICATORS.....	84
RESOURCE USAGE.....	86
EXTENSIVE INDICATORS.....	86
DISASTER MITIGATION.....	88
KEY INDICATORS.....	88
EXTENSIVE INDICATORS.....	89
URBAN ENHANCEMENT.....	91
EXTENSIVE INDICATORS.....	91
KEY INDICATORS.....	92
5. LOCAL GOVERNMENT MODULE	93
GENERAL INFORMATION.....	93
DEFINITIONS :.....	94
LIST MAJOR ISSUES:.....	94
FINANCE.....	95
KEY INDICATORS.....	95
EXTENSIVE INDICATORS.....	97
PRODUCTIVITY AND PRIVATE SECTOR INVOLVEMENT.....	98
KEY INDICATORS.....	98
LOCAL INDEPENDENCE AND PARTICIPATION.....	100
ALTERNATE INDICATORS.....	100
REGULATORY AUDIT.....	102
KEY INDICATORS.....	102

URBAN INDICATORS WORKSHEET

LIST OF INDICATORS

Key indicators	Extensive indicators
<p><u>BACKGROUND DATA MODULE</u> Indicator D1: Land use Indicator D2: City population Indicator D3: Population growth rate Indicator D4: Woman headed households Indicator D5: Average household size Indicator D6: Household formation rate Indicator D7: Income distribution Indicator D8: City product per person Indicator D9: Tenure type</p>	<p>Indicator DA1: Birth and death rates Indicator DA2: Migration rates Indicator DA3: Household type Indicator DA4: Household expenditures Indicator DA5: Dwelling type</p>
<p><u>SOCIOECONOMIC DEVELOPMENT</u> Indicator 1: Households below poverty line Indicator 2: Informal employment Indicator 3: Hospital beds Indicator 4: Child mortality Indicator 5: School classrooms Indicator 6: Crime rates</p>	<p>Indicator A1: Illiteracy of poor Indicator A2: Daily kilojoule supply of poor Indicator A3: Malnourished children under five Indicator A4: Social safety net Indicator A5: Unemployment rates by sex Indicator A6: Employment growth Indicator A7: Child labour Indicator A8: Minimum wage coverage Indicator A9: City investment Indicator A10: Airport activity Indicator A11: Expenditure on social services Indicator A12: Life expectancy at birth Indicator A13: Infectious diseases mortality Indicator A14: School enrollment rates Indicator A15: Adult literacy rate Indicator A16: Tertiary graduates Indicator A17: Refugees Indicator A18: Deaths due to violence</p>
<p><u>INFRASTRUCTURE</u> Indicator 7: Household connection levels Indicator 8: Access to potable water Indicator 9: Consumption of water Indicator 10: Median price of water, scarce season</p>	<p>Indicator A19: Cost to household income ratios Indicator A20: Sources of water Indicator A21: Piped water supply reliability Indicator A22: Water leakage Indicator A23: Sewage disposal Indicator A24: Public latrines Indicator A25: Electricity price Indicator A26: Line losses Indicator A27: Capacity to load ratio Indicator A28: Call completion rate Indicator A29: Operating to staff ratios Indicator A30: New connections to staff ratios Indicator A31: Revenue to operating cost ratios.</p>
<p><u>TRANSPORT</u> Indicator 11: Modal split Indicator 12: Travel time Indicator 13: Expenditure on road infrastructure Indicator 14: Automobile ownership</p>	<p>Indicator A32: Transport fatalities Indicator A33: Fuel price Indicator A34: Transport household budget share Indicator A35: Transport fuel consumption Indicator A36: Length of road per vehicle Indicator A37: Road congestion Indicator A38: Vehicles failing emission standards Indicator A39: Automobile fuel consumption Indicator A40: Pedestrians killed Indicator A41: Public and mass transport seats Indicator A42: Cost recovery from fares</p>

LIST OF INDICATORS (continued)

Key indicators	Extensive indicators
<p><u>ENVIRONMENTAL MANAGEMENT</u> Indicator 15: Percentage of wastewater treated Indicator 16: Solid waste generated Indicator 17: Disposal methods for solid waste Indicator 18: Regular solid-waste collection Indicator 19: Housing destroyed</p>	<p>Indicator A43: Air pollution concentrations Indicator A44: Emissions per capita Indicator A45: Acute respiratory deaths Indicator A46: Percent of BOD removed Indicator A47: Cost of wastewater treatment Indicator A48: Lowering of groundwater table Indicator A49: Waste water recycled Indicator A50: Level of treatment Indicator A51: Biodegradable waste Indicator A52: Recycling rate Indicator A53: Average cost of waste disposal Indicator A54: Cost recovery Indicator A55: Industrial waste generation Indicator A56: Energy usage per person Indicator A57: Fuelwood usage Indicator A58: Renewable energy usage Indicator A59: Food consumption Indicator A60: Disaster mortality Indicator A61: Housing on fragile land Indicator A62: Fatal industrial accidents Indicator A63: Green space Indicator A64: Monument list</p>
<p><u>LOCAL GOVERNMENT</u> Indicator 20: Major sources of income Indicator 21: Per-capita capital expenditure Indicator 22: Debt service charge Indicator 23: Local government employees Indicator 24: Wages in the budget Indicator 25: Contracted recurrent expenditure ratio Indicator 26: Government level providing services Indicator 27: Control by higher levels of government</p>	<p>Indicator A65: Change in real per capita total revenue Indicator A66: Change in real per capita own-source revenues Indicator A67: Elected and nominated councillors Indicator A68: Voter participation rates, by sex Indicator A69: Number of associations Indicator A70: Citizen involvement in major planning decisions Indicator A71: Decentralised district units</p>

URBAN INDICATORS WORKSHEET

INTRODUCTION

This instrument, entitled *Urban Indicators Review*, is one of three documents forming part of a monitoring package for cities. Together with *Part I: Introduction* and *Part III: Housing Indicators Review*, this document provides a tool for monitoring and reviewing the condition of cities, providing benchmarks for the development of urban conditions and urban policy over space and over time.

The instruments in this document are also intended to act as a major input to the preparation of country strategy plans and reports for the Habitat II Conference (City Summit) to be held in Istanbul in June 1996. The indicators permit a comprehensive picture to be gained of cities, which with other indicators which may be chosen by countries, will provide a quantitative, comparative base for the condition of cities, and show progress towards achieving urban objectives.

Two different levels of indicators are included in the instrument:

key indicators, comprising indicators which are both important for policy and relatively easy to collect. As the minimum request for cooperation, countries are strongly urged to collect or estimate all the key indicators. Pages with key indicators are *yellow*.

extensive indicators, which give a fuller description of the urban condition. These indicators are either:

- important but more difficult to collect than key indicators;
- alternates which give a fuller picture; or
- relate to issues which are possibly controversial in some countries.

It is intended that all countries should collect the key indicators, plus a selection of extensive indicators which address the most important issues in the city or country, plus possibly other indicators which are country-specific. These indicators should provide the quantitative structure of the country assessment report for Habitat II.

All the indicators are either numbers, percentages and ratios. In a few 'audit' questions, there may be simply a checkbox for yes or no answers.

The Urban Indicators are at an earlier stage of development than the Housing Indicators, and cover a much wider range of concerns. At present, there are 27 key urban indicators and 71 extensive indicators which have been selected through an expert group process, through examining the literature, and by a preliminary testing process in a number of countries for data availability and policy relevance.

As well, there is a background data section which contains 9 key indicators and 5 alternate indicators. This background data section is also partly included in *Volume III, Housing Indicators Review*, where it is intended to be collected at the country level rather than the city level.

It is proposed that all participating countries should collect data for at least one major city. In the case of large countries with big regional differences, it would be preferable if the indicators were collected for the largest cities and for a selection of smaller

URBAN INDICATORS WORKSHEET

cities, to give a true picture of regional diversity. In the largest countries an effort will be made to develop a national programme of this type.

The indicators are grouped in five modules plus a background data section. The modules are:

1. **The Socioeconomic Development Module**, which deals with poverty, city productivity, employment, health, education, social investment and social cohesion.
2. **The Infrastructure Module**, which deals with networked services including water, sanitation, electricity and telephones.
3. **The Transport Module**, which deals with transport and roads.
4. **The Environmental Management Module**, which deals with air and water quality, solid wastes, resources, and disasters.
5. **The Local Government Module**, which deals with governance, finance, and local participation.

The experience with the indicators programme to date has demonstrated that in order to obtain good data,

- i) highly qualified experts and officials in each country need to be recruited to collect and estimate the indicators
- ii) these experts should be in direct communication with the Indicators Programme office, and work should be reviewed and commented on at different stages
- iii) the experts should attend regional meetings to discuss definitions, methods of collection, and policy relevance of the indicators.

No single person is expected to be simultaneously conversant with each of the module areas, and experts or departments with knowledge of each area will need to be contacted by the persons responsible for overall compilation of the data, in order to obtain authoritative estimates for each module.

INSTRUCTIONS

The following steps should be undertaken to complete the worksheet.

1. A base year or reference period should be established. This should be the most recent year for which the majority of data are available, preferably 1993. It can be a calendar year, a financial year, or other period. Wherever possible, data should be specified for this year, or updated from older data by extrapolation.

Stock data (e.g. unemployment, housing stock) should preferably be estimated as the average value during the year, but can be taken as the value at the middle of the year.

2. A map of the city should be obtained.

This map should show:

- the city proper, or the single political jurisdiction which contains the historical city centre;
- the metropolitan area, or the set of formal local government areas which are normally taken to comprise the city as a whole and its primary commuter areas;
- the urban area, or the built-up or densely populated area containing the city proper; suburbs, and continuously settled commuter areas. This may be smaller or larger than the metropolitan area;
- the city centre, or point which is normally taken as the centre for the purpose of computing road distances to the city. This may be the general post office, a central railway station, or other point;
- any informal settlements. These should be broadly marked.

3. The preliminary data section should be completed.

These consist of some basic information about the city, its population, land use, household types, and workforce. This information should be available from the population census and the city plan.

4. The most important issues for policy in the city should be entered in each module. An area for these issues is provided after the introductory section in each module.

5. The data modules should be completed. These should be filled in or sent to appropriate experts or departments for checking.

Every effort should be made to complete the key indicators at least, and as many of the extensive indicators as possible. If data are not available, then estimates should be made. A high level of accuracy is not required, but simply enough to make a comparison possible with other cities in the country. "Accurate enough for policy purposes" is the rule to be followed. An approximate result is better than no result at all, since this will provide a benchmark for future, more accurate estimates.

URBAN INDICATORS WORKSHEET

For each result, mention the area level, the year, and the sources of data (using a numbered bibliography list if necessary). This information may be included at the end of each submodule.

If the information requested can not be given:

NAV : not available

NAP : not applicable

6. A copy of the completed worksheet should be returned to the Indicators Programme office, and comments sought. The printed modules should be used as the medium for data collection and reporting in order to standardise reporting and to reduce errors.

GENERAL DEFINITIONS

Adult population: for employment indicators, this should be taken as persons of 15 years of age or more. In other indicators relating to family type such as Indicators D1, 11, 13, 18, A20, the term should refer to persons having reached majority or voting age, or defined as adult for census purposes.

Economically active population comprises all persons over 15 years of age who furnish the supply of labour for the production of economic goods and services. The production of economic goods and services includes all production and processing of primary products, whether for the market, for barter or for own consumption, the production of all other goods and services for the market, the corresponding for own consumption. Economically active population includes all persons who are either employed or unemployed¹.

Gross City Product: the total product of the city as defined in national accounts procedures. This may either be taken as the total income or value-added (wages plus business surplus plus taxes plus imports), or the total final demand (consumption plus investment plus exports).

Household: a person or group of persons who make common provision for food or other essentials of living, and often share a common budget. A group of people who eat one meal together daily may be considered a household. This definition includes domestic servants.

Household income: the total income from all sources of all household members, including wages, pensions or benefits, business earnings, rents, and the value of any business or subsistence products consumed (e.g. foodstuffs). Payments such as allowances or board from one household member to another should not be counted twice.

Metropolitan area: the politically defined urban area for planning or administrative purposes which combines all local jurisdictions normally regarded as part of the greater urban area.

Unemployed refers to persons who are above 15 years of age and who, during the reference period were “without work”, “currently available for work” and “seeking work”¹.

Urban agglomeration: defined as the city proper along with the suburban fringe and any built-up, thickly settled areas lying outside of, but adjacent to, the city boundaries.

¹International Labour Office, *Yearbook of Labour Statistics*, Geneva 1992, p.3.

URBAN INDICATORS WORKSHEET

0. BACKGROUND DATA MODULE
<u>A. LAND USE</u> Indicator D1: Land use
<u>B. POPULATION</u> Indicator D2: City population by sex Indicator D3: Population growth rate Indicator DA1: Birth and death rates Indicator DA2: Net migration
<u>B. HOUSEHOLDS</u> Indicator D4: Woman headed households Indicator D5: Average household size Indicator D6: Household formation rate Indicator D7: Household income distribution Indicator DA3: Household type Indicator DA4: Household expenditures
<u>D. ECONOMIC</u> Indicator D8: City product per person
<u>E. HOUSING</u> Indicator D9: Tenure type Indicator DA5: Dwelling type

BACKGROUND DATA MODULE

This module asks for some basic data concerning the city, which are extremely helpful in establishing a picture of the city and characteristics of its population.. The data are indicators only in the broadest sense, in that they are basic structural information affected by the whole range of policy in a particular area. Some of these numbers (for example, population and city product) are used in calculating other indicators,

Key indicators

LAND USE

The different types of land use are important for determining the spatial location of activity. The residential area (formal and informal) is important for determining net residential densities.

Indicator D1: Land use in sq km.							
	a. Total area	b. Residential (formal)	c. Residential (informal)	d. Business	e. Agricultural	f. Transport	g. Other
MA							
UA							

Metropolitan area (MA); Urban agglomeration (UA) see definitions p.11.

These data should be available from the city plan or from the mapping department.

Definitions

Residential (formal) includes land zoned residential or occupied by formal housing..

Residential (informal) includes land occupied by any informal settlements

Business refers to all commercial or industrial land, including land used largely for informal business activity.

Agricultural refers to land used mainly for agricultural purposes or zoned agricultural.

Transport refers to land for roads, railways, shipping terminals, airports etc.

Other includes all recreational or vacant land or water areas normally counted as part of the city.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

POPULATION

The level of population and its rate of growth are the major determinants of increase in demand for urban resources, and of changes in urban congestion. Population pressure may be a major contributor to continuing cycles of poverty.

Most of the information in the following sections should be available from the most recent population census or from supplementary surveys.

Last population census (year):

last census : previous census :

Indicator D2: City population by sex

	a. Male	b. Female
C.1.1. City proper		
C.1.2. Metropolitan area		
C.1.3. Urban agglomeration		

Indicator D3: Population growth rate

Annual growth in population of city

%

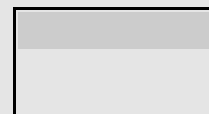
Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

HOUSEHOLDS

Indicator D4: Woman headed households

Defined as number of households headed by women

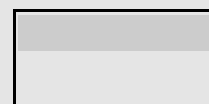


This indicator is important for a number of gender related issues. In particular, it has been found that in most countries, there is a much higher level of poverty and disadvantage in female-headed households.

If household headship is not established in the census, then number of households consisting entirely of women or women and children is a suitable substitute (please note).

Indicator D5: Average household size

Defined as total households divided by total population.



Average household size is a commonly used measure incorporating both family size and the existence of shared households or extended families. Household size is decreasing in most countries, and along with population growth, the change in household size determines household formation and demand for housing.

Indicator D6: Household formation rate

Defined as annual rate of growth of numbers of households in the city.



This is the prime indicator of housing demand, representing the required growth in the number of occupied dwellings per annum. It can change quite rapidly according to economic conditions (since households form when they have the financial resources to do so) or in response to supply restrictions.

If estimates of numbers of households are not available for two different periods, then it may be possible to estimate the indicator as the sum of the population growth rate and the estimated percentage decline in household size. The latter component is likely to be as large as the population component, since household size is declining rapidly in many countries.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

Indicator D7: Household income distribution

Household income by quintile, income range and average income.

<i>Quintile</i>	<i>Interval (US\$)</i>	<i>Average income (US\$)</i>
1		
2		
3		
4		
5		

Quintiles are obtained by dividing households into 5 equal groups ordered by income.

This information is generally available from a household expenditure or income survey. Incomes should include all forms of earnings: wages, supplements, business earnings, If households are typically underreporting income because of informal earnings, then household expenditure should be used. Intervals and average incomes should be inflated to 1993 values, if the survey is in an earlier year.

If household income is not available in quintiles but in some different format (eg numbers of households within some other set of intervals) then it is possible to estimate quintiles from these data. Please contact the Indicators Programme.

Note that the median household income can be taken as the average income in the third quintile.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

PRODUCTIVITY

Indicator D8: City product per person

Defined as total city product per year divided by population

\$

This indicator is the most important single indicator of urban productivity, being essentially the GNP of the city. It is seldom available from direct data sources. However it can be estimated readily from National Accounts figures and employment data.

METHOD A.

This method estimates the urban product by presuming that the product of the city in each sector is proportional to the employment in the city, possibly adjusted by differential wage rates. It should be used when employment by industry sector is known.

The following table should be filled out for each industry sector.

<i>Sector</i>	<i>National product (US\$m)</i> (1)	<i>National employment</i> (2)	<i>City employment</i> (3)	<i>Wage ratio</i> (4)	<i>City Product (\$m)</i> (5)
a. 1,2. Agriculture and mining					
b. 3,4,5. Manufacturing, utilities, construction					
c. 6,7. Wholesale and retail trade, transport and communication					
d. 8. Finance, insurance, real estate and business services					
e. 9. Community, personal and other services, domestic,					
f. Government					
g. Other					
Total					

URBAN INDICATORS WORKSHEET

Definitions

National Product (GNP) by industry sector is contained in National Accounts. These figures should be updated to 1993 values using the US\$ price index in Attachment A.

The classification used here is an abbreviated form of the SITC standard industry classification, which is used for standard national accounting¹.

National and city employment. Economically active persons by industry, preferably including the informal sector. If activity is not customarily defined in these categories, either estimate or group the categories - for example, at the minimum, agriculture, manufacturing, and total service employment are generally known.

Income ratio. If city income and national income are known to be significantly different, then this ratio should be an estimate of average city wage in the industry divided by average national wage (eg if city wages are 20% higher, the ratio is 1.2). Otherwise the ratio should be taken as 1.

The city industry product (Column 5) is then estimated as

$$\text{Column (5)} = \text{Column (1)} \times \text{Column (3)} \times \text{Column (4)} / \text{Column (2)},$$

which is the national industry product times the fraction of national employment in the city times the wage ratio.

The final category, row (g), *Other*, cannot be estimated by this method, since it includes items such as ownership of dwellings which do not involve employment. It can be estimated by presuming it is the same fraction of city product as for the national product, using the table as follows:

Sum Column (1), row (a) to row (f)	(i)	
Sum Column (5), row (a) to row (f)	(ii)	
Column (1) row (g) <i>Other</i>	(iii)	
Column (5) row (g)	= (iii)x(ii) / (i)	

The total city product is then obtained by summing Column (5), and the product per person is obtained by dividing by city population.

This is the preferred method of calculation, as it provides important intermediate data about the industry and employment structure of the city, which are key indicators in their own right. For this reason, please include the intermediate steps above in the worksheet.

¹ILO, *International Standard Industrial Classification of All Economic Activities*, Geneva 1968.

METHOD B.

If industry employment figures are not known, then the city product can be estimated approximately from average household income figures as follows.

GNP	(i)	
Total household income (from national accounts)	(ii)	
Population (city)	(iii)	
Average household income (city)	(iv)	
City product	$= (i) \times (iii) \times (iv) / ii$	

This method presumes that the ratio of GNP to household income is the same at the national and city levels. It is very approximate, taking account of household income but not of the activities of large firms and companies who retain or expatriate earnings.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

HOUSING

Urban housing conditions, affordability and tenure are a major part of the Indicators Programme. In Volume III, housing indicators are collected at the national level. In this Volume, a key indicator on housing tenure is to be collected at the city level.

Indicator D9: Tenure type

Number of households in tenure categories

<i>a. Owned</i>	<i>b. purchasing</i>	<i>c. private rental</i>	<i>d. social housing</i>	<i>e. sub-tenancy</i>	<i>f. rent free</i>	<i>g. illegal</i>	<i>h. other</i>

Owned refers to housing with a clear title (formal housing) which is owned outright by the occupant.

Purchasing is formal housing with a mortgage

Private rental is formal or informal housing for which rents are paid to a landlord

Social housing includes all public, parastatal or NGO-operated housing, and co-operatives.

Sub-tenancy refers to households who are renting from a principal household on the same block, who may in turn be owners, private renters or social renters.

Illegal Squatter or informal housing for which rents are not paid should be included in this category.

If data are not available at this level of detail, then groups should be aggregated (this should be indicated).

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

Extensive indicators

POPULATION

These indicators decompose annual increase of urban population into births, deaths and immigration.

Indicator DA1: Birth and death rates			
DA1.1. Births	<input type="text"/>	DA1.2. Birth rate	<input type="text"/>
DA1.3. Deaths	<input type="text"/>	DA1.4. Death rate	<input type="text"/>

Crude birth and death rates are defined as births and deaths per 1000 population

The birth rate and death rate are the major components of natural increase in population.

Indicator DA2: Net migration			
	<i>a. Within country</i>	<i>b. Overseas</i>	<i>c. Total</i>
Net migration	<input type="text"/>	<input type="text"/>	<input type="text"/>

Although natural increase is the major component of city size increase in most large cities, the increasing drift to the city is a major component of urban growth in most developing countries.

Total net migration can be estimated as the residual,

(population increase -births plus deaths),

if migration cannot be directly estimated.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

HOUSEHOLDS

Indicator DA3: Household type

Numbers of households with:

a. More than one adult and children	
b. Single parent households	
c. More than one adult, no children	
d. One person only	

Household type is a measure of the kinds of demands expected on urban services by different family and household structures.

Indicator DA4: Household expenditures

Proportion of average household income spent on

a. Food	%
b. Housing	%
c. Travel	%
d. Other	%

Household expenditure on a range of commodities is a major determinant of demand. For lower income households, the necessary costs of major items in the budget may place the household below the poverty line.

Household expenditures on various services are also included in infrastructure indicators.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

HOUSING

Indicator DA5: Dwelling type (numbers)

<i>a. Detached</i>	<i>b. Medium density</i>	<i>c. Apartment</i>	<i>d. Total</i>

Medium density refers to semi-detached, terrace or town housing with a ground entrance. Apartment housing is housing in buildings in which most dwelling units do not have a ground entrance.

Type of dwelling is almost always collected as part of the census, although these particular categories are not always used. The indicator measures the predominant style of housing, which gives the impression of the residential built form of the city.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

1. SOCIOECONOMIC DEVELOPMENT MODULE

POVERTY

Key Indicators

Indicator 1: Households below poverty line

Extensive Indicators

Indicator A1: Illiteracy of poor

Indicator A2: Daily kilojoule supply of poor

Indicator A3: Malnourished children under five

Indicator A4: Social safety net

EMPLOYMENT

Key Indicators

Indicator 2: Informal/undeclared employment

Extensive Indicators

Indicator A5: Unemployment rates by sex

Indicator A6: Employment growth by sex

Indicator A7: Child labour

Indicator A8: Minimum wage coverage

PRODUCTIVITY

Extensive Indicators

Indicator A9: City investment

Indicator A10: Airport activity

HEALTH AND EDUCATION

Key Indicators

Indicator 3: Hospital beds

Indicator 4: Child mortality

Indicator 5: School classrooms

Extensive Indicators

Indicator A11: Expenditure on social services

Indicator A12: Life expectancy at birth

Indicator A13: Infectious diseases mortality

Indicator A14: School enrollment rates

Indicator A15: Adult literacy rate

Indicator A16: Tertiary graduates

SOCIAL INTEGRATION

Key Indicators

Indicator 6: Crime rates

Extensive Indicators

Indicator A17: Refugees

Indicator A18: Deaths due to violence

1. SOCIOECONOMIC DEVELOPMENT

General Information

The performance of the urban economy and the macro-economic conditions in which the city operates determine the overall envelope within which cities can grow. While the potential exists for new economic growth in all cities, in many countries unfortunately a vicious circle exists. Economic crisis in cities imparts a heavy toll, with rapidly rising poverty, increasing unemployment and under-employment, which places a further load on urban resources. The indicators in this module relating to socioeconomic development are designed to respond to the major policy challenges of the city: alleviating urban poverty, improving urban productivity and employment opportunities, providing health care and education, and reducing urban crime and violence.

Urban poverty is often manifested most severely in cities where the poor are compelled to live together in squatter areas or informal settlements, and where the option to fall back on own production of food is limited or impossible.

The key indicator of urban poverty measures the numbers of households in poverty, based on the locally-defined poverty line, as well as woman-headed households in poverty, the proportion of which is usually significantly greater.

Extensive indicators give additional information on the poor. The literacy rate measures the extent of marginalisation of the poor through lack of education. Daily calorie supply, and malnutrition rates for children, show how the poor are deprived of food. The Social safety net indicator provides checkboxes on the existence of support programmes for the poor.

Employment conditions are a major component of economic performance. The key indicator of employment status is taken to be informal employment. The increasing role of the informal sector in a number of economies is a consequence of growth in the labour force without a matching response in the level of formal employment opportunities. The informal sector may generate substantial activity and may constitute a basis for the development of urban economies if adequate policies are in place to enable the sector to perform and expand productively. Extensive indicators describe labour market conditions through unemployment, minimum wage coverage, and child labour.

Data on urban productivity is not always readily available. Extensive indicators of urban productivity selected here include urban investment and airport activity.

A number of other indicators are important in understanding city dynamics. These include: dispersion of employment and population, trade, industry specialisation, telephone calls, the growth of registered businesses, business loans, remittances from abroad and to the rural hinterland, spatial inequality and spatial concentration of industry. Unfortunately, data for these indicators is generally not available at the city or sub-city level, so these are not collected.

Health and education. The work of UNDP in compiling a Human Development Index for countries and for population subgroups has been a major landmark in indicators of human development. Some of the more important measures of social investment are collected here at the city level: hospital beds, child mortality, and school classrooms.

URBAN INDICATORS WORKSHEET

Extensive indicators include expenditure per person on social services, life expectancy at birth, deaths from infectious diseases, school enrollment rates, literacy levels, and numbers of tertiary graduates.

Social integration is the extent to which the social and political norms of society are functioning to produce social cohesiveness and order. The existence of social pathologies such as crime and deaths from all forms of urban violence are significant indications that the social structure is not functioning well, while the presence of large numbers of refugees, who are often severely disadvantaged both economically and socially, may contribute to social dislocation.

List Major Issues:

1.....
.....
.....
2.....
.....
.....
3.....
.....
.....
4.....
.....
.....

POVERTY

Key Indicators

Indicator 1: Households below poverty line	<input type="text"/> %
Indicator 1.1: Women-headed households below the poverty-line	<input type="text"/> %
Defined as the percentage of households situated below the poverty-line.	

The poverty line should be an 'absolute' poverty line, taken as the income necessary to afford a minimum nutritionally adequate diet plus essential non-food requirements, for a household of a given size. The common method for setting the poverty line proceeds by fixing a food intake in Calories, and then finding the consumption expenditure or income level at which a person typically attains that food intake, then applying a multiplier to account for non-food items¹.

Another common convention is to calculate the poverty line for a single adult, then multiply by the number of persons in the household, allowing for each child as half an adult.

Poverty lines will differ between countries, not only because of different costs, but also because of different food requirements and different social definitions of essential non-food requirements, reflecting the cost of participating in everyday life of society. Some countries also have poverty lines that differ in different parts of the country and which depend on local prices for food, housing and other necessities.

Poverty-line in US dollars per month for different households

One person \$ Two persons \$ Average household \$

Children may be counted as half an adult. The poverty line for the average size household should be quoted (in some countries, this is the only poverty line)

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

¹World Bank, *Poverty Reduction Handbook*, Washington 1993.

URBAN INDICATORS WORKSHEET

Extensive Indicators

Indicator A1: Illiteracy of poor

%

Defined as the percentage of poor aged 15 and over who are illiterate.

The poor are often set apart by cultural and educational barriers. Illiteracy among the poor is a good indicator of the extent of their marginalisation in the social system, i.e. access to employment and governmental programmes.

Definition (UNDP):

The literacy rate is the percentage of persons aged 15 and over who can, with understanding, both read and write a short, simple statement on their every day life.

Indicator A2: Daily kilojoule supply of poor

Defined as the ratio of average food Calories consumed by poor to the average number of Calories needed to sustain a person at normal levels of activity and health.

A. Daily Calorie supply per capita for poor

Kj

B. Average Calorie requirement per capita

Kj

This indicator measures the level of satisfaction of basic food needs and shows the deprivation of the poor in the most basic requirement for life.

The daily Calorie supply of the poor can be obtained directly from survey or can be calculated by estimating the total amount of food of different kinds consumed by poor households, then dividing by the number of persons.

The daily Calorie requirement per capita is the average number of Calories needed to sustain a person at normal levels of activity and health, taking into account the distribution of the population by age, sex, body weight and environmental temperature. These are generally available at country level.

Note: Kilojoules are now the unit commonly in use for nutritional purposes. There are 4.18 kilojoules in a Calorie.

Indicator A3: Malnourished children under five

Defined as the percentage of children, from one to five years of age who are more than two standard deviations from the median weight for age of the reference population. (or WHO standards).

This indicator is collected at the national level by the WHO and UNDP.

Malnutrition among children is a major outcome of food deprivation among the poor. Inadequate weight-for-age is evidence of wasting, a symptom of under nutrition. These data on weight norms offer evidence on whether observed malnutrition is the result of chronic deprivation or simply a short-term food shortage.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

Indicator A4: Social safety net

Check boxes if the city has (provided locally or nationally):

A7.1 Support for low income people

Money Food Health care

A7.2 Support for people with disabilities

Money Food Health care

Defined as support for people with disabilities who are unable to work

A7.3. Unemployment benefits for:

All unemployed Previously employed None
only

Defined as regular cash payments for people who are out of work

A7.4 Age pension Yes No

Defined as income support for persons who have reached retirement age

~~Social safety nets in the form of income support are the major delivery apparatus of the welfare state, and are key instruments of income redistribution in developed market economies. Some countries supply pensions and unemployment benefits only after a period of contributory social security payments, while in others these are unconditional. Many developing countries have no income support systems at all, and limited food relief provided by NGOs only.~~

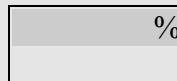
Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

EMPLOYMENT

Key indicator

Indicator 2: Informal employment



Defined as the percentage of the employed population whose activity is part of the informal sector.

Definition:

"The informal sector consists of persons engaged in the production of goods or services with the primary objective of generating employment and incomes to the persons concerned. These units typically operate at a low level of organisation, with little or no division between labour and capital as factors of production and on a small scale. Labour relations - where they exist - are based mostly on casual employment, kinship or personal and social relations rather than contractual arrangements with formal guarantees".²

The informal sector includes (a) all unregistered commercial enterprises, and (b) all non-commercial enterprises that have no formal structure in terms of organisation and operation³.

The informal sector has played an increasing role in the expansion of production in rapidly growing cities in developing countries. The informal sector has great freedom of action, being by definition free of government interference, and will tend to deliver labour resources to productive areas of the economy. Nevertheless it is typically undercapitalised, with no access to business finance, little access to the formal parts of the economy, and lacking resources for export development or for expansion. Workers in the informal economy have no legally defined rights, no access to government welfare in the event of illness or old age, may work under unsafe conditions, and are usually dependent on their wits for survival.

In developing countries, where a major part of labour market activities are undeclared or informal, data on the size of the informal sector should be included in the National Accounts to give a full picture of economic activity. Other detailed data should be available to the national or city economic planning agencies, and to academic institutions engaged in economic and social research.

The increasing importance of the informal sector would suggest institutional changes for more flexible fiscal policies, better financial credit arrangements for small units of production, and legislation providing limited rights for employees in the sector.

²ILO, *International Conference of Labour Statisticians*, 1987

³Sethuraman, The urban informal sector: concept, measurement and policy, *International Labour Review*, July-August 1976.

URBAN INDICATORS WORKSHEET

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

Extensive indicators

Indicator A5: Unemployment rates by sex

Defined as the average proportion of unemployed during the year, as a fraction of the (formal) workforce.

a) unemployed male:

	%
--	---

b) unemployed female:

	%
--	---

From the definitions in the Introduction, the unemployed are the average number of persons above 15 years who, during the reference period were "without work", "currently available for work" and "seeking work".

In industrialised countries, unemployment rates are probably the most familiar indicators of all to express the health of the economy and the success of government economic policy. Unemployment is however a formal labour market concept which is often not applicable in developing countries with their large informal sector.

Indicator A6: Employment growth by sex

Defined as the average annual growth rate of the number of (formally) employed men and women, aged 15 and above, during the last 5 years.

		year 1 (A)	year 2 (B)	employment growth (G)
Number of employed persons	male			%
	female			%

The average annual rate of growth may be calculated from the formula

$$G = (B/A)^{1/t} - 1$$

where t is the time between the two observations A and B.

The indicator measures the increase or decrease of the formal sector employment opportunities in the city during recent years, showing the pace of growth of urban employment for both men and women.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

Indicator A7: Child labour

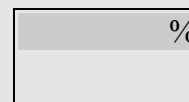


Defined as the number of employed or economically active persons under 15 years of age.

Children should be considered as employed if they are working largely in producing goods or services for sale, even where they are nominally in a 'school' or similar. Figures may be difficult to obtain because most such labour is in the informal sector.

Child labour is used because it is cheap, in occupations where children may be effective in producing goods and services. However this particularly vulnerable group are liable to exploitation, and may not receive a proper education.

Indicator A8: Minimum wage coverage



Defined as the proportion of the economically active population whose wage or salary income is covered by minimum wage legislation

Note that this proportion is intended to include both the formal and informal workforce.

While minimum wages may be set very low in many instances, they nevertheless provide for a regularisation of the labour market and a recognition of employment rights of workers. The percentage of the workforce covered by this legislation is an indicator of the informality of the labour market.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

PRODUCTIVITY

Extensive indicators

Indicator A9: City investment

Defined as gross capital formation in the city, divided by city product.

Investment levels are the major macroeconomic determinant of economic growth of the city. Investment figures are rarely available at the city level, but they may be estimated from national accounts figures by a process similar to that of the city product (presuming that investment per employee by industry is constant across the country).

<i>Sector</i>	<i>Gross capital formation (US\$m)</i> (1)	<i>National employment</i> (2)	<i>City employment</i> (3)	<i>City investment (\$m)</i> (4)
a. 1,2. Agriculture and mining				
b. 3,4,5. Manufacturing, utilities, construction				
c. 6,7. Wholesale and retail trade, transport and communication				
d. 8. Finance, insurance, real estate and business services				
e. 9. Community, personal and other services, domestic,				
f. Government				
g. Other				
Total				

Column (4) is then estimated as Column (1) x Column (3) /Column (2).

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

Indicator A10: Airport activity



Defined as the average monthly number of passengers having used the airport (both for departure and arrivals) during the year.

Airport activity shows how the city's economy is linked with international activities: business, tourism, etc.

Put zero if there is no airport.

Data sources:

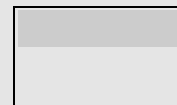
Notes: (Background, geographical area, method of calculation, time period, other).

HEALTH AND EDUCATION

Key indicators

Indicator 3: Hospital beds

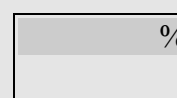
Defined as number of persons per hospital bed.



Includes beds in both public and private hospitals. Total population should be divided by number of beds.

Indicator 4: Child mortality

Defined as the proportion of children who die before reaching their fifth birthday.



This is a major indicator of health care and sanitation conditions, which can vary very widely over time and space. Small children are the most likely to be affected by poor sanitary conditions and lack of medical care, and in some countries this mortality rate is very high.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

Indicator 5: School classrooms

Number of school children per classroom in

a. Primary
school

b. Secondary
school

Indicates the crowding of educational facilities. Total number of schoolchildren should be divided by numbers of classrooms.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

Extensive indicators

Indicator A11: Expenditure on social services

\$

Defined as the total expenditure, both capital and recurrent, public and private, on social services in US dollars per person.

Social services include health, education, libraries, nursery schools, community centres, social work, emergency services, and most public or NGO services provided direct to the community. Expenditure on the police forces, refuse collection, licensing or taxation, infrastructure provision and maintenance, or on religious worship would not normally be included.

Indicator A12: Life expectancy at birth

yrs

Defined as expected number of years till death for a new-born child

The method for calculation of life expectancy rates is well established, and involves finding that age for which the survival rate is 50 per cent. In other words, it is the median age which new-born children can expect to reach. It can be found by compounding mortality rates for each age group until 50% is reached.

This standard method of estimation does not allow for improvements in medical technology, and in fact, a new born child can expect to live longer than the life-expectancy indicator.

The differences in the life expectancy rate between countries are in fact largely due to infant mortality levels.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

Indicator A13: Infectious diseases mortality

%

Defined as the proportion of deaths due to infectious diseases

While major scourges of humanity such as smallpox, bubonic plague, diphtheria, polio and tuberculosis have been effectively eliminated, others such as malaria, cholera and typhoid continue to take many lives, while some new diseases such as AIDS are untreatable. The death rate from infectious diseases is a measure of the vulnerability of populations and the effectiveness of medical care.

Indicator A14: School enrollment rates

The percentage of children of eligible age, by sex, who are enrolled in

<u>Primary school</u>	Male	<input type="text"/>	%	Female	<input type="text"/>	%
<u>Secondary school</u>	Male	<input type="text"/>	%	Female	<input type="text"/>	%

The ages at which enrollment for primary and secondary education are possible differ between countries, but are generally 6-12 years and 12-17 years of age respectively. The success in retaining children in school is a major measure of social development and the ability of society to sustain human resource investment.

Many countries have different enrollment rates for boys and girls, particularly in secondary school, which reflects cultural attitudes and differential access to educational opportunities.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

Indicator A15: Adult literacy rate

Defined as proportion of adults who can read and write a simple paragraph about their everyday life

The literacy rate is the major measure of the success or otherwise of educational policy at the elementary level.

Indicator A16: Tertiary graduates

Proportion of tertiary graduates in the adult population

Male 

Female 

Defined as the proportion of male graduates in all adult males, and female graduates in all adult females. Tertiary graduates include graduates and diplomates from universities and all other accredited tertiary level institutions. Does not normally include graduates from vocational private colleges unless these are fully accredited.

The indicator measures higher-level education achievement and human capital development.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

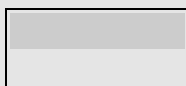
SOCIAL INTEGRATION

Key indicators

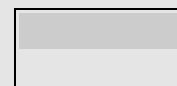
Indicator 6: Crime rates

Number of reported crimes annually per 1000 population

a. Murder



b. Theft



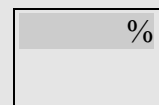
Reported figures on crime may be misleading, depending on the confidence by victims in law enforcement and the type of crime (for example, sexual crimes and family violence are notoriously unreported in many societies). However, the reported rates for murder and theft are likely to reflect the true incidence of these crimes.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

Extensive indicators

Indicator A17: Refugees



Defined as percentage of the population who are refugees

In some countries which are adjacent to areas of military conflict or to oppressive governments, the proportion of refugees in the population may be high. This particularly vulnerable group is usually without resources, lacks homes or social support, and may be subject to social pathologies or have difficulties integrating into local society.

Indicator A18: Deaths due to violence



Defined as the proportion of deaths in the city in the past three years that have occurred as a result of violence.

A major indicator of the lack of security in urban life is the number of deaths that occur as a result of violence of all forms, including armed conflict, murder, suicide, ethnic violence, or police action. These disturbances tend to reflect on all aspects of urban life and are seriously disruptive to the normal business of the city, in extreme cases making both government and production impossible.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

2. INFRASTRUCTURE

ACCESS AND AFFORDABILITY

Key indicator

Indicator 7: Household connection levels

Extensive indicator

Indicator A19: Cost to income ratios

WATER SUPPLY

Key indicators

Indicator 8: Access to potable water

Indicator 9: Consumption of water

Indicator 10: Median price of water, scarce season

Extensive indicators

Indicator A20: Sources of water

Indicator A21: Piped water supply reliability

Indicator A22: Water leakage

SEWAGE

Extensive indicators

Indicator A23: Sewage disposal

Indicator A24: Public latrines

ELECTRICITY

Extensive indicators

Indicator A25: Electricity price

Indicator A26: Line losses

Indicator A27: Capacity to load ratio

TELEPHONE

Extensive indicator

Indicator A28: Call completion rate

INFRASTRUCTURE OPERATIONS

Extensive indicators

Indicator A29: Operating to staff ratios

Indicator A30: New connections to staff ratios

Indicator A31: Revenue to operating cost ratios.

2. INFRASTRUCTURE MODULE

GENERAL INFORMATION

Physical infrastructure has in the past been the predominant concern of local government. The provision and operation of roads, water, sewerage and solid waste disposal generally remain major functions of local government. Electricity and telephones are also a major infrastructure concern for both households and businesses, which are often provided by separate authorities, local or national.

The quality and reliability of local infrastructure services are taken for granted in highly industrialised countries, but limited access to or poor quality of infrastructure services in developing countries can be major impediments to business productivity, and major sources of frustration to the population. The poorest households in developing countries cannot generally afford household connections of telephone and electricity, and often only have access to primitive or communal water supply and sewage and solid waste disposal systems. As well as reducing the quality of life in settlements, the absence of adequate water and sanitation systems makes communities living in informal settlements particularly vulnerable to disease and epidemics.

The key measure of access to the formal infrastructure system is the proportion of households with internal connections to the network. Urban dwellings without services (particularly water) are often informal-sector dwellings with low-income inhabitants, so these indicators are also a measure of legality of occupation. The extensive indicator common to all services is the Cost to Income ratio which measures the median cost of each service as a fraction of the median household budget.

A reliable and potable water supply is a major indicator of the level of local development and of community health, since so many epidemic diseases are water-borne. Key indicators for water are proportion of households with access to potable water, average daily consumption of water, and median price of water in the dry season. Extensive indicators include primary sources of water for households, median time to obtain water for households without formal connection, average water consumption for households with formal metered connection (generally considerably higher than for those without), reliability of piped supply, being average hours per year that households in the city are without water, and leakage from the water network, which depends on the age and condition of the reticulation system.

The disposal of human waste is of major concern for health and cleanliness, since many pathological organisms can be transferred through faecal matter. The preferred method of collection of sewage for health and disposal efficiency reasons is reticulated sewerage, but even in developed countries many households at the outskirts may not have sewered connections. Extensive indicators are the proportions of households having different facilities, and the number of public latrines.

The provision of electricity or gas to households adds considerably to the quality of life, as it provides (locally) clean energy for cooking, lighting, water heating etc. and may help to conserve the local environment by preserving timber resources and reducing particulate matter from wood fires. The extensive indicators for electricity are costs per kwh of electricity, line losses, which measure the proportion of electricity

URBAN INDICATORS WORKSHEET

lost, and the peak demand to capacity ratio, which measures the adequacy of the system.

Telephones are the most important means of remote communication in cities for business or private purposes. Telephone connections improve business productivity, and improve safety and the quality of life for households while reducing energy consumption for travel and relieving isolation. The extensive indicator for the telephone system is the Call Completion Rate, which measures the percent of times a local dialed call will get through and be completed without interruption.

Finally, the efficiency and sustainability of the provision of urban services is a major concern in governance. Operating costs to staff ratios and connections per staff member measure efficiency, while percentage of costs recovered will affect the sustainability of operations.

List Major Issues:

1.....
.....
.....
2.....
.....
.....
3.....
.....
.....
4.....
.....
.....

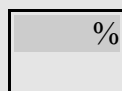
ACCESS TO SERVICES

Key indicator

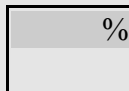
Indicator 7: Household connection levels

Percentage of households connected to

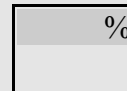
a. Water



b. Sewerage



c. Electricity



d. Telephone



~~These are the primary indicators of access by households to the principal networked services.~~

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

Indicator A19: Cost to income ratios

Percentage of median income spent on

a. Water % b. Sewerage % c. Electricity %

Defined as median expenditure on each service divided by median household income

These ratios are the major measure of affordability of services to households in the middle of the income range.

For water, costs should be median annual costs of water as measured in an expenditure survey, or by estimating average annual household consumption and multiplying by average cost during the year.

For sewerage and electricity, costs refer to households with private sewerage or electrical connection only and should represent the median annual sewerage or electrical bill.

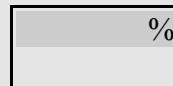
Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

WATER SUPPLY

Key indicators

Indicator 8: Access to potable water

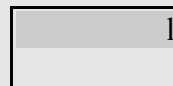


Defined as percentage of households with access to potable water

Access is defined as having drinkable water located within 200 metres of the dwelling.

Potable water is water free from contamination and which is safe to drink without further treatment. Piped water which is normally regarded as safe to drink is potable; river water containing microorganisms or in which people wash or excrete is not.

Indicator 9: Consumption of water



Defined as average consumption of water in litres per day per person, for all uses.

Consumption of water per person depends on the availability and price of water, the climate, and the uses to which water is customarily put by individuals (drinking, bathing, washing, gardening).

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

Indicator 10: Median price of water, scarce season

\$

Defined as median price paid per hundred litres of water in US dollars, at the time of year when water is most expensive.

This measures the cost of water at times when it is most scarce. The price of water may rise to very high levels in some areas at some times, and can take a significant proportion of the household budget.

If more than 50% of households have piped water, then this will be the user-pays marginal cost of water. If there is no user-pays charge, this should be indicated.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

Extensive indicators

Indicator A20: Sources of water

Percentage of households obtaining water as a primary source from

a. Piped connection	<input type="text"/> %	b. Communal tap	<input type="text"/> %	c. Vendor or truck	<input type="text"/> %
d. Well, Stream, lake or dam	<input type="text"/> %	e. Other	<input type="text"/> %		

This indicator provides more detail than Indicator 7, measuring the proportion of household taking the majority of their water from each of these sources.

Indicator A21: Piped water supply reliability

hrs

Defined as average number of hours per year that households in the city are without piped water.

In drier countries in particular, water restrictions are in force for part of the year and water is not delivered for part of the day or for several days per week. This indicator measures the extent of such restrictions.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

Indicator A22: Water leakage

%

Defined as percentage of piped water unaccounted for and lost through leakage, seepage or unauthorised use

In cities with old and deteriorating water reticulation systems, a substantial proportion of piped water may be lost through cracks and flaws in pipes - for example up to 30% of water is lost in this way in some countries of Eastern Europe.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

SEWAGE

Extensive indicators

Indicator A23: Sewage disposal

Proportion of households with following types of latrine facilities:

a. Sewerage pipe	<input type="text"/> %	b. Under-ground -individual	<input type="text"/> %	c. Under-ground - communal	<input type="text"/> %
d. Pan collection	<input type="text"/> %	e. Open ground or trench	<input type="text"/> %	f. Other	<input type="text"/> %

The type of latrine facilities which households have reflects strongly on hygiene, health, the quality of life, and the environment. These categories represent the major types of latrine facilities.

Indicator A24: Public latrines

Defined as the number of public latrines per 10000 population.

Public latrines provide general toilet access for the population, particularly in public open spaces, and help to maintain sanitary conditions while protecting the environment from human waste.

The indicator measures number of separate public latrine buildings or facilities, and not separate cubicles. Communal toilets which are not available to the general public should not be included.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

ELECTRICITY

Extensive indicators

Indicator A25: Electricity price



Defined as the price of electricity in US dollars per kwh

Electricity is almost always provided as a private metered connection, and the price of electricity is the best measure of the resource cost of electricity to the community.

The price should be the average across all providers and residential consumers.

Indicator A26: Line losses



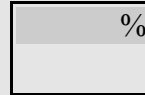
Defined as percentage of power supplied to the city that is unaccounted for or lost before reaching final destination.

There is always a loss of power through cables, but this will be worse where electrical equipment and cabling are not adequate for the purpose. Unauthorised tapping of lines will also be measured by this indicator.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

Indicator A27: Capacity to load ratio



Defined as peak load to certified capacity ratio.

This is the most widely used technical measure of network adequacy. When peak load to capacity is high, blackouts, surges and voltage variations are frequent.

Data sources:

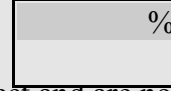
Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

TELEPHONE

Extensive indicators

Indicator A28: Call completion rate



Defined as proportion of calls made which connect and are not interrupted.

In many countries and places with poor telephone service, it is necessary to make multiple dial attempts in order to connect, and interruptions to calls in progress are all too frequent.

If this figure is not available, it can be determined with a simple sampling procedure, by counting the proportion of completed calls, preferably spread over time and in different parts of the city.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

INFRASTRUCTURE OPERATIONS

This group of indicators measures the efficiency and cost recovery of operations for formal supply of services.

Extensive indicators

Indicator A29: Operating to staff ratios

a. Water % b. Sewerage % c. Electricity %

Defined as proportion of operating costs spent on staff, for all authorities providing these services in the metropolitan area.

Some cities are served by more than one authority, so aggregation is necessary, while in others services is provided by state provincial governments or national authorities, so that allocation of part costs to the city will be necessary.

Indicator A30: New connections to staff ratios

a. Water b. Electricity c. Telephone

Defined as number of new connections per annum divided by number of staff in supplying authorities.

This indicator measures efficiency in providing new services. It will tend to vary according to the expansion of the service. As in Indicator A29, this should be aggregated or partitioned according to operating scope of authorities.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

Indicator A31: Revenue to operating cost ratios.

a. Water

b. Sewerage

Defined as percentage of all operating costs met from own-source revenues.

Service providers with an adequate revenue base involving user pays charges are better equipped to respond to demand. As well, in a user-pays system consumers have a stake in the development of the local system and are likely to demand service in accordance with resources and needs. As in Indicator A29, this should be aggregated or partitioned according to operating scope of authorities.

Revenues refer to all direct and indirect recurrent charges to users which do not come from the general tax base. These include user-pays charges, excess water, connection charges but not levies on developers or on residents for headworks.

Costs refer to all operating outlays including depreciation and interest but not capital outlays for the water reticulation system.

These data are widely available. However, as with all financial data, comparability and stability problems regarding capital and recurrent expenditures are likely to arise. Financial practices for treatment of depreciation and provision for repairs etc. are likely to vary between cities and countries. The payment of interest for capital loans will be borne by consumers in some cities but not in others.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

3. TRANSPORT MODULE

GENERAL

Key indicators

Indicator 11: Modal split

Indicator 12: Travel time

Extensive indicators

Indicator A32: Transport fatalities

Indicator A33: Fuel price

Indicator A34: Transport household budget share

Indicator A35: Transport fuel consumption

ROAD INFRASTRUCTURE

Key indicators

Indicator 13: Expenditure on road infrastructure

Extensive indicators

Indicator A36: Length of road per vehicle

Indicator A37: Road congestion

ROAD VEHICLES

Key indicators

Indicator 14: Automobile ownership

Extensive indicators

Indicator A38: Vehicles failing emission standards

Indicator A39: Automobile fuel consumption

Indicator A40: Pedestrians killed

PUBLIC TRANSPORT

Extensive indicators

Indicator A41: Public and mass transport seats

Indicator A42: Cost recovery from fares

URBAN INDICATORS WORKSHEET

3. TRANSPORT MODULE

General Information

Too-rapid growth without a corresponding increase in infrastructure provision often shows itself most directly in road congestion. Despite huge investments in transport infrastructure in many countries, transport and traffic congestion remains a major problem in most of the world's largest cities. Traffic congestion is associated with air pollution, accidents, reduced productivity, and general frustration for the population. Lung diseases are prevalent in areas with heavy traffic pollution, and in some places protective measures against smog inhalation in the open are necessary.

As well as being responsible for most emissions of nitrogen oxides, ozone and carbon monoxide, the major constituents of photochemical smog, transport is the major user of depleting hydrocarbon fossil fuels, and is responsible for more than 20% of anthropomorphic carbon dioxide emissions, which contribute to global warming. The environmental problems raised by the increasing usage of the automobile and other forms of motorised transport require both global and local solutions.

General: The type of transport used by commuters for trips to work is a key indicator for transport policy at all levels. Whether people use car, bus, train, or non-motorised transport is a major concern for traffic and public transport planning and for energy use. The average time taken for work trips is another key indicator both of urban congestion and of location of the workforce relative to jobs.

Traffic accidents are a major cause of fatalities in younger age groups, and the mortality rate for transport accidents of all kinds is an extensive indicator for the success of traffic control and of the safety of vehicles. Fuel price is an indicator of the relative cost of travel by motor vehicle. Countries with cheap petrol enjoy a comparative advantage for industry; however, they are likely to be using relatively more scarce petroleum resources for travel than other countries in which petroleum is more expensive or more heavily taxed. Another indicator of resource usage which depends on the price of petrol, on average incomes, and on the availability of alternative modes is therefore petrol consumption per capita.

The final intermodal extensive indicators is the share of household budget spent on transport, an important measure of affordability.

The standard of road infrastructure is a major determinant of the free flow of traffic and to the efficient movement of people and goods within the city. The key indicators are percentage of roads in poor repair, and the level of investment and maintenance expenditure on roads. The alternative indicators are length of road per vehicle, and the proportion of roads which are congested.

Road transport has become the commonest means of transport in most countries. The key indicator is automobile ownership, while extensive indicators include the proportion of vehicles failing emission standards, fuel efficiency for the fleet and for new vehicles, and pedestrians killed.

Despite the problem of congested roads, personal transport and the automobile have become more and more popular with people in almost all cities. Public transport has been decreasingly patronised so that particularly in industrial nations, transit modes have required heavy subsidies to remain in operation. The extensive indicators for public or mass transport are number of seats available per person, and cost recovery or proportion of costs recouped from passengers, to give a measure of subsidy.

List Major Issues:

1.....
.....
.....
2.....
.....
.....
3.....
.....
.....
4.....
.....
.....

URBAN INDICATORS WORKSHEET

MULTIMODAL

Key indicators

Indicator 11: Modal split.

Proportion of work trips undertaken by

a. Private car	<input type="text"/> %	e. Bicycle	<input type="text"/> %
b. Train or tram	<input type="text"/> %	f. Walking	<input type="text"/> %
c. Bus or Minibus	<input type="text"/> %	g. Other	<input type="text"/> %
d. Motorcycle	<input type="text"/> %		

Where several modes of transport are used for a given trip, the hierarchy: train, tram, bus, car, not motorised; is employed to determine the principal mode.

Private car includes any motorised vehicle being used for private purposes.

Bus or minibus includes road vehicles other than cars taking passengers on a fare paying basis

Other includes ferry, taxi, animal or rickshaw.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

Indicator 12: Travel time

Min

Defined as the average time in minutes for a work trip.

This is an average over all modes. It may be necessary to estimate average times for each mode and then make use of Indicator 11 to obtain an overall weighted average. Train and bus times should include average walking and waiting times.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

Extensive indicators

Indicator A32: Transport fatalities

Defined as the proportion of deaths per thousand in the last year from transport related causes.

Deaths from car, train, aeroplane, boat, pedestrian etc. should be included.

Indicator A33: Fuel price

a) Petrol
(gasoline)

b) Diesel

c) LPG
or CNG

Defined as the price in US cents per litre, including tax.

The price for the most commonly used grade of petrol should be used.

The relative usage of these fuels depends on the price level as well as income, transport costs and other factors. Depending on tax levels, the prices of these fuels can be quite different.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

Indicator A34: Transport household budget share

Proportion of total household income spent on all forms of travel by

a) All households

%

b) Poor households

%

In some cities, particularly where the poor are located on the outskirts and have to travel long distances to work, the total transport budget of the poor can take a high proportion of income, even exceeding the housing budget.

Poor households in the present context may refer either to households below the poverty line or to the bottom 20% of incomes (please indicate which).

Indicator A35: Transport fuel consumption

L

Defined as the annual number of litres per person of transport fuel (excluding aviation fuel) consumed.

Fuel consumption is always available at the national level, but it is more difficult to calculate for the city. The question is to what extent should fuel used for intercity hauling be included. Fuel purchased within the city forms part of the city product, so one approach is to count all fuel purchased within the city. On the other hand, if the emphasis is on resource usage within the city, then only domestic trips should be counted, and it may be preferable to multiply the size of the vehicle fleet of personal and commercial vehicles by estimated average fuel consumption.

Data sources:

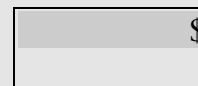
Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

ROAD INFRASTRUCTURE

Key indicators

Indicator 13: Expenditure on road infrastructure



Defined as the per-capita expenditure in US dollars on roads (three year average).

Expenditure should include capital and maintenance expenditure on all roads in the urban area, averaged in constant value terms over three years.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

Extensive indicators

Indicator A36: Length of road per vehicle

a) Surfaced

	km

b) Unsurfaced

	km

Defined as total length of roads in km divided by total number of road vehicles.

Surfaced refers to asphalt, concrete or similar, while unsurfaced includes gravel or earth.

Road congestion is often the result of too few roads to meet urban demand, which is dependent on the number of cars. The indicator should ideally be adjusted for number of lanes or for road widths, but these figures are not often available.

Indicator A37: Road congestion

	%

Defined as the proportion of roads with $\text{Volume/Capacity} > 0.8$ during peak hour.

Roads typically have a registered carrying capacity, and a commonly used measure of excessive congestion is when the volume of traffic carried exceeds 0.8 times this capacity. This indicator measures the proportion of congested roads (preferably using a length measure).

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

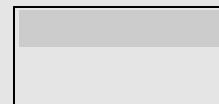
URBAN INDICATORS WORKSHEET

ROAD VEHICLES

Key indicators

Indicator 14: Automobile ownership

Defined as the ratio of automobiles to 1000 population.



Automobiles in this case are taken to include all vehicles used for personal transport (including sedans used for business).

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

Extensive indicators

Indicator A38: Vehicles failing emission standards

%

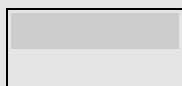
Defined as proportion of road vehicles which do not meet local emission standards

In many countries, although emission standards for motor vehicles exist they are not rigidly policed. This indicator measures cars, trucks and buses that do not meet emission standards and contribute excessively to air pollution. An estimate may have to be made, if the figure for cars failing tests is not available. If there are no emission standards, then this should be noted

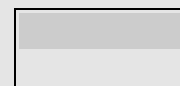
Indicator A39: Automobile fuel consumption

Average fuel consumption in litres per 100 km for automobiles

a) Whole fleet



b) New cars



These indicators measure fuel consumption for new cars and existing cars, to give an idea of fleet fuel efficiency. National sustainability plans have sought to achieve a reduction from an average of about 12 litres per 100 km to at least 8 litres per 100 km or even lower, in order to conserve fuel resources and lower greenhouse emissions..

Indicator A39a can be calculated by dividing total vehicle petrol usage, if known, by total number of cars.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

Defined as proportion of road fatalities who are pedestrians.

%

Pedestrians are a particularly vulnerable group. A high proportion of pedestrian deaths may indicate either a dangerous situation for pedestrians or a high rate of non-pedestrian deaths.

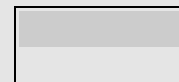
Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

PUBLIC TRANSPORT

Extensive indicators

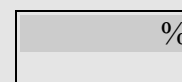
Indicator A41: Public and mass transport seats



Defined as number of public transport seats per 1000 population

Public transport in this instance is defined to be all conveyances, publicly or privately owned, on which fares are charged (including trains, buses, taxis), or any other mass transit conveyance.

Indicator A42: Cost recovery from fares



Defined as the ratio of fares collected by public transport authorities to operating costs.

Public transport authorities are often supported by a subsidy, which hampers efficiency and may limit the expansion of the service in response to need. This subsidy often benefits peak-hour commuters at the expense of off-peak commuters who may have lower incomes.

If there is more than one public transport authority then these financial figures should be aggregated; alternatively if the authority covers a greater area than local urban transport then fares and costs for the urban area should be estimated. Private authorities should not normally be included unless these are receiving a government subsidy.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

4. ENVIRONMENTAL MANAGEMENT

AIR QUALITY

Extensive indicators

Indicator A43: Air Pollution concentrations
Indicator A44: Emissions per capita
Indicator A45: Acute respiratory deaths

WATER

Key Indicators

Indicator 15: Percentage of wastewater treated

Extensive indicators

Indicator A46: Percent of BOD removed
Indicator A47: Cost of wastewater treatment
Indicator A48: Lowering of groundwater table
Indicator A49: Waste water recycled
Indicator A50: Level of treatment

SOLID WASTES

Key Indicators

Indicator 16: Solid waste generated
Indicator 17: Disposal methods for solid waste
Indicator 18: Regular solid-waste collection

Extensive indicators

Indicator A51: Biodegradable waste
Indicator A52: Recycling rate
Indicator A53: Average cost
Indicator A54: Cost recovery
Indicator A55: Industrial waste generation

RESOURCES DEPLETION

Extensive indicators

Indicator A56: Energy usage per person
Indicator A57: Fuelwood usage
Indicator A58: Renewable energy usage
Indicator A59: Food consumption

DISASTER MITIGATION

Key indicators

Indicator 19: Housing destroyed

Extensive indicators

Indicator A60: Disaster mortality
Indicator A61: Housing on fragile land
Indicator A62: Fatal industrial accidents

URBAN ENHANCEMENT

Extensive indicators

Indicator A63: Green space
Indicator A64: Monument list

4. ENVIRONMENTAL MANAGEMENT MODULE

General Information

Concern with global degradation of the environment has accelerated in recent years, as the effects of increasing human activity and concentration of population have become more evident. Awareness has increased as to the global importance of environmental issues following the Rio Earth Summit, and Agenda 21 has stressed the necessity for the environmentally sustainable management of human settlements. Monitoring and improving the urban environment in both developed and developing countries has become a major priority, particularly with the explosive growth of cities in developing countries.

The major areas of environmental concern for human settlements are air and water quality, solid waste disposal, resource depletion, disaster mitigation, and cultural and environmental enhancement of the city. Indicators for each of these major concerns are included.

The production and consumption of energy influences most aspects of urban life. Growing urban populations and levels of industrialisation inevitably lead to greater energy demand which is usually reflected in increasing pollutant emissions. Air pollution is directly linked to energy consumption, environmental policy, city density, transport by motor vehicles, concentration of industries, etc. For analysis, indicators on air pollution should be considered together with indicators relating to transport and energy consumption.

The combustion of wood and of fossil fuels for domestic heating, for power generation, in motor vehicles, and in industrial processes, and the disposal of solid wastes by incineration, are generally the principal sources of air pollutant emissions to the atmosphere in urban areas. The most common air pollutants in urban environments include sulphur dioxide (SO₂), the nitrogen oxides (NO and NO₂, collectively termed NO_x), carbon monoxide (CO), ozone (O₃), suspended particulate matter (SPM) and lead (Pb), with the two last being usually considered as the most harmful to health.

The monitoring of air quality, while extremely important, requires expensive equipment which has often not been available in developing countries. Where this equipment is installed, the number of days per year may be determined on which standards for major pollutant concentrations are exceeded. These indicators are the key indicators of urban air pollution. Other important indicators are mortality rates from respiratory illness, emissions per capita of sulphur and nitrogen oxides, and anthropomorphic carbon dioxide emissions which contribute to the Greenhouse effect.

The most widespread contamination of water is from disease-bearing human wastes, usually detected by measuring BOD or faecal coliform levels. Water pollution from human wastes is less of a problem in countries that can afford to treat sewerage and waste water, and water pollution can be minimised with adequate investment in treatment systems. Key indicators for water quality management are percentage of waste water treated, and effectiveness and cost of treatment. Extensive indicators include level of treatment and recycling of waste water, contamination of water supply between reservoir and tap, and lowering of the groundwater table.

URBAN INDICATORS WORKSHEET

Many cities generate more solid waste than they can collect or dispose of. Even when municipal budgets are adequate for collection, safe disposal of collected wastes often remains a problem. Open dumping and uncollected landfill remain the main disposal methods in many developing countries; sanitary landfills are the norm in only a handful of cities. Inadequate collection and unmanaged disposal present a number of problems for human health and productivity. Uncollected refuse dumped in public areas or in waterways contributes to the spread of disease.

Solid waste key indicators are the amount of waste generated per person, waste disposal methods, and households enjoying regular waste collections. Extensive indicators include the proportion of bio-degradable waste, the recycling rate for different materials, the average cost of collection per tonne, the rate of cost recovery for refuse collection, and industrial waste generation.

The per-capita usage of energy is the key indicator of resource usage, while fuelwood usage, renewable energy usage, and average Calorie consumption per person are the extensive indicators.

The encroachment of housing into areas considered unsafe and disaster-prone, is a major concern , particularly for squatter housing in developing countries. The key indicator is the proportion of housing on 'fragile' or disaster-prone land. Other extensive indicators of the extent of disaster damage are mortality and housing destroyed through disasters. The rate of industrial accidents is a measure of man-made disaster impact.

Finally, the proportion of green space is a major measure of local amenity and urban enhancement, while buildings on the monument or heritage list is an indicator of the awareness of cultural heritage in the city.

List Major Issues:

1.....
.....
.....
.....
2.....
.....
.....
.....
3.....
.....
.....
.....

AIR QUALITY

Extensive indicators

Indicator A43: Air Pollution concentrations

In the following table, enter for each pollutant, number of days per annum that WHO standards are exceeded, and average annual measured concentrations.

Pollutant	Number of days exceeding WHO standards	Average annual concentrations
SO₂		
NO_x		
CO		
O₃		
SPM		
Pb		

Pollution is generally measured as the number of days exceeding WHO standards annually (the preferred indicator), or as average annual concentrations. If measuring equipment is in place, then daily measurements should be available. However if no permanent stations are installed but only occasional readings are taken with portable equipment, then only average annual concentrations will be available.

Where several measuring stations are in place, readings should be the average of all stations.

WHO standards are given in the following table

Pollutant	Time-weighted average	Averaging time
SO₂	100-150 µg/m ³	24 hours
NO_x	150 µg/m ³	24 hours
CO	10 µg/m ³	8 hours
O₃	100-120 µg/m ³	8 hours
SPM	150-230 µg/m ³	24 hours
Pb	0.5-1 µg/m ³	1 year

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

Indicator A44: Emissions per capita

Total emissions in tonnes per capita per annum of

a. SO₂

 t

b. NO_x

 t

c. CO₂

 t

Sulphur and nitrogen emissions are a result of industrial, power generation and automobile emissions. Urban carbon dioxide emissions are largely a result of burning fossil fuels and of wood and cement usage.

These figures may be calculated by amalgamating the emissions from different sources and adding. They may be available from environmental authorities.

For carbon dioxide, emissions can be calculated from typical usages as follows.

Substance	Annual consumption per person	Conversion factor	Tonnes of CO ₂ per annum
Black coal (tonnes)		2.59	
Brown coal (tonnes)		0.925	
Wood (fuel or paper) (tonnes) ^a		3.12	
Wood (structural) (tonnes) ^a		6.24	
Petrol (kl)		2.35	
Natural gas (cu.m.)		2.02	
Cement (tonnes)		1.064	
Electricity (kwh) (from black coal) ^b		0.00096	
Total			

Note a) About 50% of the tree is used when paper or fuelwood are collected, but only about 20% is used when sawn for structural timber.

b) Other conversion factors: Brown coal .0029. Hydro and nuclear electricity do not produce any CO₂ in operation.

References :

UNEP, WHO, *Urban Air Pollution in Megacities of the World*, 1992 (study of air pollution in 20 megacities)

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

Indicator A45: Acute respiratory deaths



Defined as percentage of deaths due to acute respiratory disease

Acute respiratory deaths are correlated with air quality and are the most serious consequences of a polluted atmosphere.

Data sources:

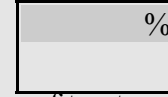
Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

WATER.

Key indicators

Indicator 15: Percentage of wastewater treated



Defined as per cent of all wastewater undergoing some form of treatment.

The treatment of wastewater is a vitally necessary part of maintaining hygienic urban conditions. Clean water is vitally necessary to human life, and many major diseases are waterborn, so the pollution of water supplies through indiscriminate disposal of wastewater is a major source of environmental degradation.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

Extensive Indicators

Indicator A46: Percent of BOD removed

%

Defined as average fraction of BOD removed in major wastewater receiving bodies

BOD (Biological Oxygen Demand) is the amount of dissolved oxygen required to oxidise or neutralise biodegradable matter in water. High BOD levels represent high amounts of contaminant matter, and the reduction of BOD is a common measure for determining the efficacy of water treatment. If BOD measurement is not available, percent of faecal coliforms removed is an alternative indicator. The indicator refers only to that water which is treated.

Indicator A47: Cost of wastewater treatment

\$

Defined as average cost in US dollars per cubic metre of water treated

This cost will vary both with the level of treatment and the economic efficiency of operations.

Indicator A48: Lowering of groundwater table

cm

Defined as the lowering of the groundwater table in cm in the past year.

Excessive use of water from bores and wells will deplete underground water and lower the water table. This may result in salination of supply, and land subsidence. A rising groundwater table indicates that the stock is being replenished (but can also be a result of deforestation).

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

Extensive indicators

Indicator A49: Waste water recycled

%

Defined as percentage of waste water re-used as 'grey water' for industrial processes or similar

Technologies involving re-cycling of water are becoming increasingly common. 'Grey water' is widely available in some localities for low-grade purposes, while highly treated water may be recycled for direct potable re-use. This recycling helps to preserve water resources and may delay the necessity to construct new reservoirs.

Indicator A50: Level of treatment

Per cent of water subject to

a) Primary
treatment

%

b) Secondary
treatment

%

c) Tertiary
treatment

%

Water may be treated to different levels to permit its release into water resources of different levels of environmental sensitivity¹.

Primary treatment screens and sediments sewage to remove grosser debris.

Secondary treatment reduces BOD to acceptable levels by microbial oxidation using activated sludge or a trickle filter.

Tertiary treatment reduces BOD still further through microstraining or filtering, the microbial removal of phosphates and nitrates, and disinfection using chlorine or ozone.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

¹P. Singleton and D. Sainsbury, *Dictionary of Microbiology and Molecular Biology*, 1993, p.802.

SOLID WASTE

Key indicators

Indicator 16: Solid waste generated

Defined as solid waste generated per person, in cubic metres and tonnes per annum.

This indicator may be difficult to collect, because of the problem of accounting for waste which is informally disposed of, incinerated or composted; however it is the major measure of the total pressure on the environment due to solid waste, and estimates should be made.

The indicator needs to be measured both in capacity and weight units, because the density of solid waste in developing countries tends to be very much higher than in developed countries which have much bulky packaging.

Indicator 17: Disposal methods for solid waste

Proportion of solid wastes disposed to

a. Sanitary landfill

b. Incinerated

c. Open dump

d. Recycled

e. Other

The form of disposal of solid wastes is the major policy indicator for this submodule.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

Indicator 18: Regular solid-waste collection



Defined as proportion of households enjoying regular waste collections

Regular waste collections can include household collections, regular 'dumpmaster' group collections, but not local dumps to which the household must carry garbage.

Median number of times per month waste is collected:

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

Extensive indicators

Indicator A51: Biodegradable waste

%

Defined as percentage of all solid waste which is bio-degradable (composed of organic matter)

Non-bio degradable wastes, particularly plastics, have become a major environmental problem in both developed and developing countries. In developing countries, these items do not compost, are not eaten by animals, and last almost indefinitely in the open. Litter from plastics requires special attention, collection and disposal.

Indicator A52: Recycling rate

Percentage of materials disposed which are recycled:

Paper %

Glass %

Aluminium %

Many cities now have formal recycling procedures and have special collections for these materials, which can be economically recycled in the formal economy.

Indicator A53: Average cost of garbage disposal

\$

Defined as cost in US dollars per tonne of solid waste disposal, for those wastes which are formally disposed through refuse collection.

The cost of formal waste disposal is the major indicator for cities of the social cost of refuse generation. A high cost of disposal may indicate low efficiency, high standards of disposal, technology used, or decline in opportunities to dispose of waste cheaply.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

Indicator A54: Cost recovery

□
%

Defined as percentage of costs of formal waste disposal which is recovered as charges from producers of the waste.

A high level of cost recovery encourages consumers to minimise their waste disposal and to recycle waste. It also provides disposal authorities with sufficient resources to conduct adequate collections (if the costs of capital investment are also met).

Indicator A55: Industrial waste generation

Generation per capita per annum of

Industrial
waste

□
tonnes

Toxic
waste

□
tonnes

Radio-
active
waste

□
kg

Generation and disposal of industrial and toxic wastes is a major problem in industrial cities. This often requires special sites and disposal methods which may be controversial.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

RESOURCE USAGE

Extensive indicators

Indicator A56: Energy usage per person

tonnes

Defined as the total energy usage per annum per person in metric tonnes of coal equivalent

Total energy usage can be calculated by conversion from different forms of energy usage (compare with Indicator A44 for carbon dioxide), as in the following table.

Energy use

Type of energy	Annual consumption per person	Conversion factor	Tonnes per annum
Petrol (kilolitres)		1.179	
Kerosene, aviation fuel		1.23	
Natural gas (cu.m)		1.328	
Coal (tonne)		1	
Wood (tonne)		0.333	
Electricity (kwh) (hydro or wind)		0.000123	
Total			

Total city usage (including industrial) for each form of energy should be averaged across the population. Conversion to energy equivalents may be found in reference works, particularly UNSTAT (1994) *Energy Statistics Yearbook 1992*. (New York: UN), which gives very detailed conversion factors for fossil fuels in every country, or UNCTAD (1993) *Handbook of International Trade and Development Statistics*. ((New York: UN). Other conversion factors are: lignite (0.26 to 0.66), coke (0.9), peat (.325) crude petroleum (1.454 per tonne) bagasse (0.264) charcoal (0.986). Electricity will vary by type of production: raw fossil fuels used for electricity generation should be calculated directly, nuclear energy has a factor of .000372 per kwh, and geothermal electricity .001228.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

Indicator A57: Fuelwood usage

tonnes

Defined as fuelwood usage in tonnes per person per annum

The use of timber as fuel, coupled with increases in population, is causing deforestation and desertification on a large scale in some parts of the developing world. Smoke from wood fires is also a major source of air pollution in developing countries.

Charcoal should be included with a conversion factor of 3 tonnes wood = 1 tonne charcoal. Bagasse, being generally renewable, is not included.

Indicator A58: Renewable energy usage

%

Defined as proportion of energy derived from renewable sources (hydro, wind, geothermal and solar electricity, combustion of animal wastes, fuelwood where this is being replaced through reforestation).

In the long run, only renewable energy is sustainable, and the steady depletion of fossil fuels cannot continue indefinitely. Moves to convert to more sustainable forms of energy are already under way in many places.

Indicator A59: Food consumption

Cal

Defined as daily Calorie consumption per person

Food consumption varies from a very high level in developed countries to a fraction of minimum daily requirements in the least developed countries. This indicator measures relative consumption of the world's food energy resources, as well as being an indicator of malnourishment or overnourishment.

Data sources:

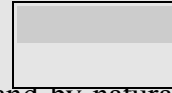
Notes: (Background, geographical area, method of calculation, time period, other).

DISASTER MITIGATION

Key indicators

Indicator 19: Housing destroyed

Defined as proportion of housing stock destroyed per thousand by natural or manmade disasters over past ten years.



Total housing destroyed should be divided by the present stock.

Natural disasters include typhoons and storms, floods, fire, earthquakes, avalanches and coastal erosion. Manmade disasters include war, riots, insurrection and other events where housing may be destroyed.

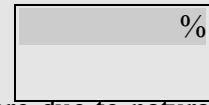
Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

Extensive indicators

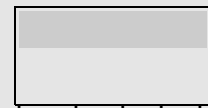
Indicator A60: Disaster mortality



Defined as proportion of deaths during last ten years which are due to natural disasters.

Natural disasters include typhoons and storms, floods, fire, earthquakes, avalanches and other natural events where mass deaths might be possible. Disease epidemics are not included.

Indicator A61: Housing on fragile land



Defined as the number of dwellings in the city which are located on land which is subject to natural disasters.

Fragile land includes land subject to disaster at more than the once in a hundred years level. Disasters may include flooding, earthquakes, volcano, storm surge, landslip or avalanche. If houses are not adequately protected against cyclones or bushfires which occur at this frequency, they may also be regarded as being on fragile land.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

Indicator A62: Fatal industrial accidents

%

Defined as number of deaths from industrial accidents during last year.

This indicator measures the safety of working conditions. Deaths due to chronic work-related complaints (e.g. pulmonary illness, chemical exposure) should also be included.

Data sources:

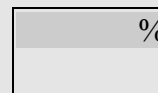
Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

URBAN ENHANCEMENT

Extensive indicators

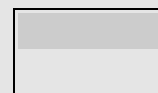
Indicator A63: Green space



Defined as percentage of green space in built up area.

Green space includes recreational land and vacant land enclosed within the built-up area. The proportion of green space may be identified from satellite photos or other sources. The indicator identifies public access to parks, playing grounds etc.

Indicator A64: Monument list



Defined as number of buildings in city on heritage or monument lists.

This indicator measures the recognition of cultural heritage in the built environment. Any type of building - civic, residential etc. - may be included.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

5. LOCAL GOVERNMENT

LOCAL FINANCE

Key Indicators

Indicator 20: Major sources of income

Indicator 21: Per-capita capital expenditure

Indicator 22: Debt service charge ratio

Extensive indicators

Indicator A65: Change in real per capita total revenue

Indicator A66: Change in real per capita own-source revenues

PRODUCTIVITY AND PRIVATE SECTOR INVOLVEMENT

Key Indicators

Indicator 23: Local government employees

Indicator 24: Wages in the budget

Indicator 25: Contracted recurrent expenditure ratio

LOCAL PARTICIPATION

Extensive indicators

Indicator A67: Number of elected and nominated councillors, by sex

Indicator A68: Voter participation rates, by sex

Indicator A69: Number of associations

Indicator A70: Citizen involvement in major planning decisions

Indicator A71: Decentralised district units

LOCAL GOVERNMENT REGULATORY AUDIT

Key indicators

Indicator 26: Government level providing services

Indicator 27: Control by higher levels of government

URBAN INDICATORS WORKSHEET

5. LOCAL GOVERNMENT MODULE

General Information

Local governments may take many different forms and may fulfill many different functions, but in most cases they are the major organisations for governance of the city and provision of local services, and the first point of contact with government for most citizens. The functioning of the city depends to a large extent on the effectiveness of local government and the quality and cost of services and infrastructure that it provides.

The financial resources available to local government are measured by total income per person. This income may be derived from property taxes, user charges, transfers from higher levels of government, loans, and other sources. The viability, independence and control over resources of the local government may depend on the balance between these sources of income. Total investment in new services and infrastructure is measured by the Capital expenditure ratio, while the burden of loan repayments is measured by the Debt service ratio. The extensive indicators calculate the percentage changes in total revenue and own source revenues.

Productivity in local government is measured by number of employees and Personnel expenditure ratio, while the involvement of the private sector is measured by the Contracted recurrent expenditure ratio.

Citizen participation in local government is an important part of democracy and self-determination; as well a strong local support base for government is better able to monitor citizen needs, maintain a watchful eye over operations, and represent the wishes of the citizenry. The extensive indicators of citizen participation in local government include the number of elected representatives in the metropolitan area, voter participation rates, number of voluntary associations, the conduct of consultative processes for planning decisions, and the number of smaller administrative areas within the city.

There are many different arrangements for the provision of local services, through national, provincial or local governments, through NGOs or the private sector, and these may have very different implications for service levels, costs and for local finance. The regulatory audit module provides checkboxes for who provides the majority of such services.

The relative independence of the local government is measured through a checklist of items involving freedom to set taxes, ability to borrow, prior knowledge of central budget allocations, and whether the local government may be closed down.

Definitions :

Local government comprises “all local-level governments, whether they be:

- a) legally, fiscally and politically autonomous jurisdiction,
- b) centrally influenced but legally distinct local governments (municipality with centrally appointed mayors)
- c) some forms of quasi-government organisation which exists to deliver service locally.”

List Major Issues:

1.....

.....

.....

.....

2.....

.....

.....

.....

3.....

.....

.....

.....

4.....

.....

.....

.....

.....

.....

URBAN INDICATORS WORKSHEET

FINANCE

Key indicators

Indicator 20: Major sources of income

Indicator 20.1: Local government per-capita income

\$

Defined as total local government sources of funds in US dollars annually, both capital and recurrent, for the metropolitan area, divided by population (three year average).

Indicator 20.2: Sources of income (per cent)

a. Taxes

	%

b. User charges

	%

c. Other own-source income

	%

d. Transfers from higher levels of government

	%

e. Borrowings

	%

f. Other income

	%

Income in each category should be recorded as:

Taxes include municipal rates and levies, any local taxes on the transfer of property, and any other taxes such as entertainment or hotel taxes, motor vehicle taxes, and taxes on business, which do not reflect the direct provision of services.

User charges include any local government charges for services provided, such as water, refuse collection, building permits. Betterment levies should also be included.

Other own source income includes interest and principal received, sales of capital items, but not donations, voluntary contributions or aid.

Transfers include formula driven payments (such as repatriation of income tax) or other grant donations from national or state governments.

Loans include borrowing from all sources, including bonds.

Other income includes any other income such as donations or aid.

The average should be taken over three years in real terms (allowing for inflation).

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

Indicator 21: Per-capita capital expenditure

\$

Defined as the capital expenditure in US dollars per person, by all local governments in the metropolitan area, averaged over the last three years.

Expenditure on both fixed capital and plant as per the capital account should be included.

This indicator measures the degree of responsiveness of local government to the infrastructure needs of business and residents. It should be a three year average because infrastructure investment may be spread over time in an unequal manner. The amount of investment is affected by the ability of local governments to obtain loan finance for capital investments and by grants from higher levels of government.

Indicator 22: Debt service charge

%

Total principal and interest repaid, including bond maturations, as a fraction of total expenditure by local governments.

This indicator measures the debt burden of local government, which may reflect on its financial viability. Local governments can become excessively indebted, if they are not careful. One simple measure of their capacity to carry debt is the ratio of debt repayments to expenditure.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

Extensive indicators

Indicator A65: Change in real per capita total revenue



Average annual change in real per capita income over a three-year period.

This indicator measures the changing revenue base. Measures growth or decline in revenue, which gives an idea of the improved or decreased ability of local governments to meet the needs of the community.

Indicator A66: Change in real per capita own-source revenues



Defined as average annual change in real per-capita own-source revenues over a three-year period.

The indicator measures growth or decline in local revenue base.

Where local governments raise a greater proportion of the revenues available to finance social and infrastructure services, they may also retain the greater autonomy that is necessary to satisfy the preference of local residents.

Data sources:

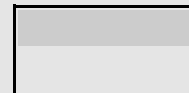
Notes: (Background, geographical area, method of calculation, time period, other).

PRODUCTIVITY AND PRIVATE SECTOR INVOLVEMENT

Key indicators

Indicator 23: Local government employees

Defined as total local government employees per 1000 population.



This indicator will measure the number of employees required to deliver local services to the population, and is a crude measure of efficiency. It will differ according to the number of services provided by local government, to the labour intensity of production, and to the level of contracting out of services.

Indicator 24: Wages in the budget

Defined as proportion of recurrent expenditure spent on wage costs.



A high value for this indicator implies that the city has very few funds left for operations, and there may be excessive employment.

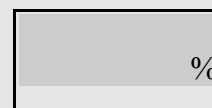
All forms of personnel expenditure should be included: wages, salaries and overheads.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

Indicator 25: Contracted recurrent expenditure ratio



Defined as the proportion of recurrent expenditure spent on contracted activity

This provides a measure of the involvement of the private sector in activities which are the responsibility of local government. It will not however indicate activities that have been completely privatised.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

LOCAL INDEPENDENCE AND PARTICIPATION

Alternate indicators

Indicator A67: Number of elected and nominated councillors

Elected	a) Male	<input type="text"/>	b) Female	<input type="text"/>
Nominated	c) Male	<input type="text"/>	d) Female	<input type="text"/>

Defined as total number of elected and of nominated local government representatives by sex, per 10 000 metropolitan population, by sex.

The number of representatives provides some idea of the level of local political representation, and the involvement of women in the local political process.

Indicator A68: Voter participation rates, by sex

a. Male	<input type="text"/> %	b. Female	<input type="text"/> %
---------	------------------------	-----------	------------------------

Defined as percentage of adult population (having reached voting age) who voted in the last municipal election.

Enter zero if there have been no municipal elections in the last five years.

Number of councillors is a measure of political participation by both men and women.

Indicator A69: Number of associations per 10 000 population

Defined as number of voluntary non-profit organisations, including NGOs, political sporting or social organisations, registered or with premises in the city, per 10 000 population.

Voluntary organisations of all kinds provide avenues for the citizenry to act collectively and independently of government, for mutual benefit, and provide a measure of the plurality of society.

URBAN INDICATORS WORKSHEET

Indicator A70: Citizen involvement in major planning decisions

Check boxes if a formal participatory process exists for the following

Alterations New highway Other major
in zoning proposals projects

A formal participatory process might involve:

- public announcement, receipt and processing of objections
- public meetings and consultations
- formation of oversight committees involving NGOs and public representatives

Indicator A71: Decentralised district units

Defined as number of separate local governments or administrative units (quarters, wards, regions or similar) which are responsible for provision of more than two local services

Type of unit (check box)

Separate local
governments

Subordinate to
main city
government

This indicator ascertains whether there are municipal sub-areas with administrations responsible for the provision of a number of services (e.g. roads, refuse, water). Separate administrations may be more responsive to local demands for action than centralised administrations.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

REGULATORY AUDIT

This submodule contains several checklists, which firstly distinguish which types of organisations are providing urban services, and secondly which attempt to determine the independence of local government from higher levels of government.

Key indicators

Indicator 26: Government level providing services

Which types of agencies deliver urban services to the population? Check boxes if significant services (more than 20%) are provided by organisations of this type.

Services Provided	Public			Other	
	Local government	National government	State/regional	Semi-Public (commercial, NGO)	Private
water					
sewerage					
refuse collection					
electricity					
telephone					
public or mass transport					
emergency (fire/ambulance)					
road maintenance					
education					
health care					
public housing					
recreation/ sports facilities					

Leave row blank if there are no services of this type.

Statutory authorities and other semi-independent government bodies which are not fully commercial should be included in the level of government to which they report.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).

URBAN INDICATORS WORKSHEET

Indicator 27: Control by higher levels of government

Check boxes if the answer to the following questions is affirmative

Can higher levels of government (national, state/provincial):

Close the local government (e.g. appoint an administrator or a new council, call new elections)?

Remove councillors from office? All Some

Can the local government, without permission from higher governments:

Set local tax levels (property tax etc.)? All Some

Set user charges for services? All Some

Borrow funds?

Choose contractors for projects? All Some

Is the amount of fund transfers from higher governments known in advance of the local budget setting process

All Some (give percent)

%

If these things can only be done under specific circumstances, please note these circumstances.

These questions attempt to determine the independence of action of local governments.

It is considered particularly important that local governments should know what level of funding they will receive from higher governments, either as a formula-driven transfer or as a triennium or long-term allocation. The viability of the local government may be seriously compromised if its budget is altered mid-term at the discretion of higher level governments.

Data sources:

Notes: (Background, geographical area, method of calculation, time period, other).