Technical note. Computing the indices

The human development index

The HDI is based on three indicators: longevity, as measured by life expectancy at birth; educational attainment, as measured by a combination of the adult literacy rate (two-thirds weight) and the combined gross primary, secondary and tertiary enrolment ratio (one-third weight); and standard of living, as measured by GDP per capita (PPP US\$).

Fixed minimum and maximum values

To construct the index, fixed minimum and maximum values have been established for each of these indicators:

- Life expectancy at birth: 25 years and 85 years.
- Adult literacy rate (age 15 and above): 0% and 100%.
- Combined gross enrolment ratio: 0% and 100%.
- GDP per capita (PPP US\$): \$100 and \$40,000 (PPP US\$).

For any component of the HDI individual indices can be computed according to the general formula:

If, for example, the life expectancy at birth in a country is 65 years, the index of life expectancy for this country would be:

Life expectancy index 5
$$\frac{65 \ 2 \ 25}{85 \ 2 \ 25}$$
 5 $\frac{40}{60}$ 5 0.667

Treatment of income

Constructing the income index is a little more complex. Income enters into the HDI as a surrogate for all the dimensions of human development not reflected in a long and healthy life and in knowledge—in a nutshell, it is a proxy for a decent standard of living. The basic approach in the treatment of income has been driven by the fact that achieving a respectable level of human development does not require unlimited income. To reflect this, income is discounted in calculating the HDI according to the following formula:

$$W(y) = 5 \frac{\log y + 2 \log y_{\min}}{\log y_{\max} + 2 \log y_{\min}}$$

Illustration of the HDI methodology

The construction of the HDI is illustrated with two examples—Ireland and Viet Nam, an industrialized and a developing country.

Country	Life expectancy (years)	Adult literacy rate (% age 15 and above)	Combined gross enrolment ratio (%)	GDP per capita (PPP US\$)
Ireland	76.6	99.0	91.4	21,482
Viet Nam	67.8	92.9	62.9	1,689

Life expectancy index

Ireland 5
$$\frac{76.6 \ 2 \ 25}{85 \ 2 \ 25}$$
 5 $\frac{51.6}{60}$ 5 0.860

Viet Nam 5
$$\frac{67.8 \ 2 \ 25}{85 \ 2 \ 25}$$
 5 $\frac{42.8}{60}$ 5 0.713

Adult literacy index

Ireland 5
$$\frac{99.0 \ 2 \ 0}{100 \ 2 \ 0}$$
 5 $\frac{99.0}{100}$ 5 0.990

Viet Nam 5
$$\frac{92.9 \ 2 \ 0}{100 \ 2 \ 0}$$
 5 $\frac{92.9}{100}$ 5 0.929

Combined gross enrolment index

Ireland 5
$$\frac{91.4 \ 2 \ 0}{100 \ 2 \ 0}$$
 5 0.914

Viet Nam 5
$$\frac{62.9 \ 2 \ 0}{100 \ 2 \ 0}$$
 5 0.629

Educational attainment index Ireland 5 [2(0.990) 1 1(0.914)]/3 5 0.965 Viet Nam 5 [2(0.929) 1 1(0.629)]/3 5 0.829

Adjusted GDP per capita (PPP US\$) index

Ireland 5
$$\frac{\log (21,482) \ 2 \ \log (100)}{\log (40,000) \ 2 \ \log (100)}$$
 5 0.896

Viet Nam 5
$$\frac{\log (1,689) \ 2 \ \log (100)}{\log (40,000) \ 2 \ \log (100)}$$
 5 0.472

Human development index

The HDI is a simple average of the life expectancy index, educational attainment index and adjusted GDP per capita (PPP US\$) index, and so is derived by dividing the sum of these three indices by 3.

Country	Life expectancy index	Educational attainment index	Adjusted GDP (PPP US\$) index	Sum of the three indices	HDI
Ireland	0.860	0.965	0.896	2.721	0.907
Viet Nam	0.713	0.829	0.472	2.014	0.671

The gender-related development index and the gender empowerment measure

For comparisons among countries the GDI and the GEM are limited to data available in international data sets. For this year's Report we have endeavoured to use the most recent, reliable and internally consistent data. Collecting more extensive and more reliable gender-disaggregated data is a challenge that the international community should squarely face. We continue to publish results on the GDI and the GEM—based on the best available estimates—in the expectation that it will help increase the demand for such data. The construction of the GDI and the GEM requires that their income variable, in conformity with the income variable in the HDI, be per capita male GDP (PPP US\$) and per capita female GDP (PPP US\$). In the *Human Development Reports* before 1999 the GDI and GEM variable did not reflect per capita female and male GDP (PPP US\$) and was subject to double discounting. This inconsistency, brought out clearly in Bardhan and Klasen (1999), was rectified in *Human Development Report 1999*.

The gender-related development index

The GDI uses the same variables as the HDI. The difference is that the GDI adjusts the average achievement of each country in life expectancy, educational attainment and income in accordance with the disparity in achievement between women and men. (For a detailed explanation of the GDI methodology see technical note 1 in *Human Development Report 1995.*) For this gender-sensitive adjustment we use a weighting formula that expresses a moderate aversion to inequality, setting the weighting parameter, e, equal to 2. This is the harmonic mean of the male and female values.

The GDI also adjusts the maximum and minimum values for life expectancy, to account for the fact that women tend to live longer than men. For women the maximum value is 87.5 years and the minimum value 27.5 years; for men the corresponding values are 82.5 and 22.5 years.

Calculating the index for income is fairly complex. Values of per capita GDP (PPP US\$) for women and men are calculated from the female share (s_f) and male share (s_m) of earned income. These shares, in turn, are estimated from the ratio of the female wage (w_f) to the male wage (w_m) and the percentage shares of women (ea_f) and men (ea_m) in the economically active population. When data on the wage ratio are not available, a value of 75% is used. The estimates of female and male per capita income (PPP US\$) are treated in the same way as income is treated in the HDI and then used to compute the equally distributed income index.

Female share of the wage bill 5
$$\frac{(w_f/w_m) \ 3 \ ea_f}{[(w_f/w_m) \ 3 \ ea_f] \ 1 \ ea_m}$$

Assuming that the female share of earned income is exactly equal to the female share of the wage bill,

$$s_f = \frac{(w_f / w_m) \ 3 \ ea_f}{[(w_f / w_m) \ 3 \ ea_f] \ 1 \ ea_m}$$

If it is now assumed that the total GDP (PPP US\$) of a country (Y) is also divided between women and men according to s_f , the total GDP (PPP US\$) going to women is given by ($s_f \ 3 \ Y$) and the total GDP (PPP US\$) to men by [$Y2(s_f \ 3 \ Y)$].

Per capita GDP (PPP US\$) of women is $y_f \le s_f \le Y/N_f$, where N_f is the total female population.

Per capita GDP (PPP US\$) of men is y_m 5 [Y 2 (s_f 3 Y)]/ N_m , where N_m is the total male population.

Treating income the same way as in the construction of the HDI, the adjusted income for women, $W(y_t)$, is given by:

$$W(y_f) = \frac{\log y_f 2 \log y_{\min}}{\log y_{\max} 2 \log y_{\min}}$$

The adjusted income for men, $W(y_m)$, is given by:

$$W(y_m) = \frac{\log y_m 2 \log y_{\min}}{\log y_{\max} 2 \log y_{\min}}$$

The equally distributed income index is given by:

{[female population share 3 (adjusted female per capita PPP US\$ GDP)⁻¹] 1 [male population share 3 (adjusted male per capita PPP US\$ GDP)⁻¹]}⁻¹

The indices for life expectancy, educational attainment and income are added together with equal weight to derive the final GDI value.

Illustration of the GDI methodology

We choose Ecuador to illustrate the steps for calculating the gender-related development index. The parameter of inequality aversion, e, equals 2.

Population (millions)Total12.175Females6.060Males6.115

Percentage share of population

Females49.8Males50.2

STEP ONE Computing the equally distributed life expectancy index

Life expectancy at birth (years) Females 72.7 Males 67.5

Life expectancy index Females (72.7 2 27.5)/60 5 0.753 Males (67.5 2 22.5)/60 5 0.750

Equally distributed life expectancy index {[female population share 3 (female life expectancy index)⁻¹] 1 [male population share 3 (male life expectancy index)⁻¹]⁻¹ $[0.498(0.753)^{-1} \ 1 \ 0.502(0.750)^{-1}]^{-1} \ 5 \ 0.752$

Step two

Computing the equally distributed educational attainment index

Adult literacy rate (percent, age 15 and above)Females88.7Males92.5

Adult literacy index

Females (88.7 - 0)/100 = 0.887 Males (92.5 - 0)/100 = 0.925

Combined gross enrolment ratio (percent) Females 72.0 Males 75.3

 Combined gross enrolment index

 Females
 (72.0 2 0)/100 5 0.720

 Males
 (75.3 2 0)/100 5 0.753

Educational attainment index

 2/3(adult literacy index) 1 1/3(combined gross enrolment index)

 Females
 2/3(0.887) 1 1/3(0.720) 5 0.832

 Males
 2/3(0.925) 1 1/3(0.753) 5 0.868

Equally distributed educational attainment index

{[female population share 3 (educational attainment index)⁻¹] 1 [male population share 3 (educational attainment index)⁻¹]}⁻¹ [$0.498(0.832)^{-1}$ 1 $0.502(0.868)^{-1}$]⁻¹ 5 0.849

STEP THREE Computing the equally distributed income index

Percentage share of the economically active populationFemales (ea_f) 27.5Males (ea_m) 72.5

Ratio of female non-agricultural wage to male non-agricultural wage (w_f/w_m) : 0.637

GDP per capita: \$3,003 (PPP US\$)

Total GDP (PPP US\$): \$3,003 3 12.175 million 5 \$36,566 million (PPP US\$)

$$s_{f} = 5 \frac{0.637 \times 30.275}{(0.637 \times 30.275) \times 10.725}$$

$$5 \frac{0.175}{0.175 \times 10.725}$$

5 0.194

Female total GDP (PPP US\$) 5 0.194 3 \$36,566 million (PPP US\$) 5 \$7,106 million (PPP US\$)

Male total GDP (PPP US\$) 5 \$36,566 million (PPP US\$) 2 \$7,106 million (PPP US\$) 5 \$29,460 million (PPP US\$)

Per capita female GDP (PPP US\$) 5 \$7,106 million /6.060 million 5 \$1,173 (PPP US\$)

Per capita male GDP (PPP US\$) 5 \$29,460 million/6.115 million 5 \$4,818 (PPP US\$)

 $\begin{array}{l} W(y_{j}) \ 5 \ [\log (1,173) \ 2 \ \log (100)] / [\log (40,000) \ 2 \ \log (100)] \\ 5 \ (3.069 \ 2 \ 2.000) / (4.602 \ 2 \ 2.000) \end{array}$

5 1.069/2.602 5 0.411

 $\begin{array}{l} W(y_{_{M'}}) \ 5 \ [\log{(4,818)} \ 2 \ \log{(100)}] / [\log{(40,000)} \ 2 \ \log{(100)}] \\ 5 \ (3.683 \ 2 \ 2.000) / (4.602 \ 2 \ 2.000) \\ 5 \ 1.683 / 2.602 \\ 5 \ 0.647 \end{array}$

Equally distributed income index x{female population share 3 $[W(y_j)]^{-1}$ 1 {male population share 3 $[W(y_m)]^{-1}c^{-1}$ $[0.498 3 (0.411)^{-1} 1 0.502 3 (0.647)^{-1}]^{-1}$ 5 $[0.498 3 2.433 1 0.502 3 1.546]^{-1}$ 5 $[1.988]^{-1}$ 5 0.503

STEP FOUR *Computing the GDI* 1/3(0.752 1 0.849 + 0.503) = 0.701

The gender empowerment measure

The GEM uses variables constructed explicitly to measure the relative empowerment of women and men in political and economic spheres of activity.

The first two variables are chosen to reflect economic participation and decisionmaking power: women's and men's percentage shares of administrative and managerial positions and their percentage shares of professional and technical jobs. These are broad, loosely defined occupational categories. Because the relevant population for each is different, we calculate a separate index for each and then add the two together. The third variable, women's and men's percentage shares of parliamentary seats, is chosen to reflect political participation and decision-making power.

For all three of these variables we use the methodology of population-weighted (1 2 e) averaging to derive an "equally distributed equivalent percentage" (EDEP) for both sexes taken together. Each variable is indexed by dividing the EDEP by 50%.

An income variable is used to reflect power over economic resources. It is calculated in the same way as for the GDI except that unadjusted rather than adjusted GDP per capita is used.

The three indices—for economic participation and decision-making, political participation and decision-making, and power over economic resources—are added together to derive the final GEM value.

Illustration of the GEM methodology

We choose Lithuania to illustrate the steps in calculating the GEM. The parameter of inequality aversion, ϵ , equals 2.

Population (millions)		
Total	3.694	
Females	1.949	
Males	1.745	

Percentage share of populationFemales52.77Males47.23

STEP ONE

Calculating indices for parliamentary representation and administrative and managerial, and professional and technical, positions

Percentage share of parliamentary representationFemales17.52Males82.48

Percentage share of administrative and managerial positionsFemales35.67Males64.33

Percentage share of professional and technical positionsFemales69.74Males30.26

Calculating the EDEP for parliamentary representation $[0.528(17.52)^{-1} 1 0.472(82.48)^{-1}]^{-1} 5 27.9$ Calculating the EDEP for administrative and managerial positions $[0.528(35.7)^{-1} 1 0.472(64.3)^{-1}]^{-1} 5 45.2$ Calculating the EDEP for professional and technical positions $[0.528(69.7)^{-1} 1 0.472(30.3)^{-1}]^{-1} 5 43.2$ Indexing parliamentary representation 27.9/50 5 0.558 Indexing administrative and managerial positions 45.2/50 5 0.903 Indexing professional and technical positions 43.2/50 5 0.863 Combining the indices for administrative and managerial, and professional and technical, positions (0.903 1 0.863)/2 5 0.883 STEP TWO Calculating the index for female and male income

Percentage share of the economically active populationFemales (ea_f) 47.9Males (ea_m) 52.1

Ratio of female non-agricultural wage to male non-agricultural wage (w_f/w_m) : 0.764

Per capita GDP (PPP US\$): \$6,436 (PPP US\$)

Total GDP (PPP US\$): \$6,436 3 3.694 million 5 \$23,772 million (PPP US\$)

$$s_{f} = 5 \frac{0.764 \pm 0.479}{(0.764 \pm 0.479) \pm 0.521}$$

$$5 \frac{0.366}{0.366 \pm 0.521}$$

$$5 \quad 0.413$$

Female total GDP (PPP US\$) 5 0.413 3 \$23,772 million (PPP US\$) 5 \$9,818 million (PPP US\$)

Male total GDP (PPP US\$) 5 \$23,772 million (PPP US\$) 2 \$9,818 million (PPP US\$) 5 \$13,954 million (PPP US\$)

Per capita female GDP (PPP US\$) 5 \$9,818 million /1.949 million 5 \$5,037 (PPP US\$)

Per capita male GDP (PPP US\$) 5 \$13,954 million / 1.745 million 5 \$7,998 (PPP US\$)

Index of female per capita GDP 5 <u>
 5,037 2 100</u> 40,000 2 100

Index of male per capita GDP 5 <u>7,998 2 100</u> <u>40,000 2 100</u>

5 0.198

Calculating the equally distributed income index $[0.528(0.124)^{-1} + 0.472(0.198)^{-1}]^{-1} = 0.150$

STEP THREE *Computing the GEM* 1/3(0.558 1 0.883 1 0.150) 5 1/3(1.591) 5 0.531

The human poverty index

Computing the human poverty index for developing countries

The human poverty index for developing countries (HPI-1) concentrates on deprivations in three essential dimensions of human life already reflected in the HDI—longevity, knowledge and a decent standard of living. The first deprivation relates to

survival—vulnerability to death at a relatively early age. The second relates to knowledge—being excluded from the world of reading and communication. The third relates to a decent living standard in terms of overall economic provisioning.

In constructing the HPI-1, the deprivation in longevity is represented by the percentage of people not expected to survive to age 40 (P_1), and the deprivation in knowledge by the percentage of adults who are illiterate (P_2). The deprivation in living standard is represented by a composite (P_3) of three variables—the percentage of people without access to safe water (P_{31}), the percentage of people without access to health services (P_{32}) and the percentage of moderately and severely underweight children under five (P_{33}).

The composite variable P_3 is constructed by taking a simple average of the three variables P_{31} , P_{32} and P_{33} . Thus

$$P_3 = \frac{(P_{31} + P_{32} + P_{33})}{3}$$

Following technical note 1 in *Human Development Report 1997*, the formula for the HPI-1 is given by:

HPI-1 =
$$[1/3(P_1^3 + P_2^3 + P_3^3)]^{1/2}$$

As an example, we compute the HPI-1 for Zambia.

Country	P ₁	P ₂	P ₃₁	P ₃₂	P ₃₃
	(%)	(%)	(%)	(%)	(%)
Zambia	46.2	23.7	62.0	25.0	24.0

STEP ONE Calculating P₃

$$x = 5 \frac{62 \pm 25 \pm 24}{3} = 537.0$$

STEP TWO Constructing the HPI-1

> HPI-1 5 $[1/3(46.2^3 1 23.7^3 1 37.0^3)]^{1/3}$ 5 $[1/3(98,611.2 1 13,312 1 50,653)]^{1/3}$ 5 $[1/3(162,576.2)]^{1/3}$ 5 $54,192.067^{1/3}$ 5 37.9

Computing the human poverty index for industrialized countries

The human poverty index for industrialized countries (HPI-2) concentrates on deprivations in four dimensions of human life, quite similar to those reflected in the HDI longevity, knowledge, a decent standard of living and social inclusion. (The HPI-2 is used for all OECD countries except the Czech Republic, Hungary, the Republic of Korea, Mexico, Poland and Turkey.) The first deprivation relates to survival—vulnerability to death at a relatively early age. The second relates to knowledge—being deprived of the world of reading and communication. The third relates to a decent standard of living in terms of overall economic provisioning. And the fourth relates to non-participation or exclusion.

In constructing the HPI-2, the deprivation in longevity is represented by the percentage of people not expected to survive to age 60 (P_1), and the deprivation in knowledge by the percentage of people who are functionally illiterate as defined by the OECD (P_2). The deprivation in standard of living is represented by the percentage of people living below the income poverty line, set at 50% of the median disposable household income (P_3). And the fourth deprivation, in non-participation or exclusion, is measured by the rate of long-term (12 months or more) unemployment (P_4) of the labour force.

Following technical note 1 in *Human Development Report 1998*, the formula for the HPI-2 is given by:

HPI-2 5 $[1/4(P_1^3 \perp P_2^3 \perp P_3^3 \perp P_4^3)]^{1/3}$

As an example, we compute the HPI-2 for Australia.

Country	P ₁	P ₂	P ₃	P ₄
	(%)	(%)	(%)	(%)
Australia	8.8	17.0	2.7	11.9

Constructing the HPI-2

HPI-2 5 $[1/4(8.8^{3} 1 17.0^{3} 1 2.7^{3} 1 11.9^{3})]^{1/3}$ 5 $[1/4(681.5 1 4,913.0 1 19.68 1 1,685.2)]^{1/3}$ 5 $[1/4(7,299.38)]^{1/3}$ 5 $1,824.85^{1/3}$ 5 12.2

Note

Calculations based on the data given in the technical note may yield results that differ from those shown because of rounding.

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Definitions of statistical terms

Following are brief explanations of selected statistical indicators presented in the Report. Detailed definitions can be found in the original sources.

Administrators and managers Defined according to the International Standard Classification of Occupations (ISCO-1968).

Agricultural production Refers to production under divisions 1–5 of the International Standard Industrial Classification (ISIC revision 2).

Aid Refers to flows that qualify as *official development assistance* (ODA) or *official aid* (see these terms).

Bank and trade-related lending Covers commercial bank lending and other private credit.

Budget deficit or surplus Central government current and capital revenue and official grants received, less total expenditure and lending minus repayments.

Carbon dioxide (CO₂) emissions Anthropogenic (human-originated) carbon dioxide emissions stemming from the burning of fossil fuels and the production of cement. Emissions are calculated from data on the consumption of solid, liquid and gaseous fuels and gas flaring.

Cellular mobile subscribers People subscribing to a communications service in which voice or data are transmitted by radio frequencies.

Children reaching grade 5 The percentage of children starting primary school who eventually attain grade 5 (grade 4 if the duration of primary school is four years). The estimate is based on the reconstructed cohort method, which uses data on enrolment and repeaters for two consecutive years.

Cigarette consumption per adult The sum of production and imports minus exports of cigarettes divided by the population aged 15 years and older.

Combined gross enrolment ratio See *enrolment ratio, gross.*

Commercial energy use The domestic primary commercial energy supply. It is calculated as local production plus imports and stock changes, minus exports and international marine bunkers.

Contraceptive prevalence rate The percentage of married women of child-bearing age (15–49) who are using, or whose husbands are using, any form of contraception, whether modern or traditional.

Current account balance The difference between (a) exports of goods and services as well as inflows of unrequited transfers but exclusive of foreign aid and (b) imports of goods and services as well as all unrequited transfers to the rest of the world.

Daily per capita calorie supply The calorie equivalent of the net food supply (local production plus imports minus exports) in a country, divided by the population, per day.

Deforestation The permanent clearing of forest land for all agricultural uses and for other land uses such as settlements, other infrastructure and mining. It does not include other alterations such as selective logging.

Dependency ratio The ratio of the population defined as dependent—those under 15 and over 64—to the working-age population, aged 15–64.

Disasters Includes natural and technological disasters. Natural disasters include avalanches, cold waves, cyclones, hurricanes, typhoons, drought, earthquakes, epidemics and famine (but do not include famine relating to conflict because of a lack of reliable data). Technological disasters include accidents, chemical accidents and urban fires.

Disbursement (aid) Records the actual international transfer of financial resources or of goods or services, valued at the cost to the donor.

Doctors Physicians and all graduates of any faculty or school of medicine in any medical field (including practice, teaching, administration and research).

Drug crimes Any crimes involving drugs, including the illicit brokerage, cultivation, delivery, distribution, extraction, exportation or importation, offering for sale, production, purchase, manufacture, sale, traffic, transportation or use of narcotic drugs.

Economic activity rate The proportion of the specified group supplying labour for the production of economic goods and services during a specified period.

Education index One of the three indicators on which the human development index is built. It is based on the combined primary, secondary and tertiary gross enrolment ratio and the adult literacy rate. For details on how the index is calculated, see the technical note.

Education levels Education has been categorized as primary, secondary or tertiary in accordance with the International Standard Classification of Education (ISCED). Primary education (ISCED level 1) provides the basic elements of education at such establishments as primary or elementary schools. Secondary education (ISCED levels 2 and 3) is based on at least four years of previous instruction at the first level and provides general or specialized instruction, or both, at such institutions as middle school, secondary school, high school, teacher training school at this level and vocational or technical school. Tertiary education (ISCED levels 5-7) refers to education at such institutions as universities, teachers colleges and higher-level professional schools-requiring as a minimum condition of admission the successful completion of education at the second level or evidence of the attainment of an equivalent level of knowledge.

Electricity consumption The production of heat and power plants less own use and distribution losses.

Enrolment ratio, age group (adjusted) The *primary school age group enrolment ratio* is the enrolments of primary school age (regardless of the education level in which the pupils are enrolled) as a percentage of the population of official primary school age. The *secondary school age group enrolment ratio* is the enrolments of secondary school age (regardless of the education level in which the pupils are enrolled) as a percentage of the population of official secondary school age (regardless of the education level in which the pupils are enrolled) as a percentage of the population of official secondary school age. The term *adjusted* indicates that the age groups used to calculate the ratios correspond to the structure of the education system in each country.

Enrolment ratio, gross The number of students enrolled in a level of education, regardless of age, as a percentage of the population of official school age for that level. The combined gross primary, secondary and tertiary enrolment ratio refers to the number of students at all these levels as a percentage of the population of official school age for these levels.

Exports of conventional weapons Exports of weapons as defined under *transfers of conventional weapons* (see this term).

Exports of goods and services The value of all goods and non-factor services provided to the rest of the world, including merchandise freight, insurance, travel and other non-factor services.

External debt Debt owed by a country to non-residents that is repayable in foreign currency, goods or services.

Food aid in cereals The quantity of cereals provided by donor countries and international organizations, including the World Food Programme and the International Wheat Council, as reported for a crop year.

Foreign direct investment (net inflows) Capital provided by a foreign direct investor (parent enterprise) to an affiliate enterprise in the host country. It implies that the foreign direct investor exerts significant influence on the management of the enterprise resident in the other economy. The capital provided can consist of equity capital, reinvested earnings or intracompany loans.

Fresh water withdrawals Total water withdrawals, not counting evaporation losses from storage basins. Withdrawals include water from non-renewable groundwater sources, river flows from other countries and desalination plants in countries where they are a significant source.

Functional illiteracy rate The proportion of the adult population aged 16–65 scoring at level 1 on the prose literacy scale of the International Adult Literacy Survey (IALS).

GDP See gross domestic product.

GDP index One of the three indicators on which the human development index is built. It is based on GDP per capita (PPP US\$). For details on how the index is calculated, see the technical note.

GDP per capita (PPP US\$) The GDP per capita of a country converted into US dollars on the basis of the purchasing power parity (PPP) exchange rate.

GDP per unit of energy use The US dollar estimate of real GDP (at 1995 prices) per kilogram of oil equivalent of commercial energy use.

Gender empowerment measure (GEM) A composite index using variables constructed explicitly to measure the relative empowerment of women and men in political and economic spheres of activity. Three indices—for economic participation and decision-making, for political participation and decisionmaking and for power over economic resources—are added to derive the final GEM value.

Gender-related development index (GDI) A composite index using the same variables as the human development index. The difference is that the GDI adjusts the average achievement of each country in life expectancy, educational attainment and income in accordance with the disparity in achievement between women and men. For more details on how the index is calculated, see the technical note.

GNP See gross national product.

Government consumption Includes all current expenditures for purchases of goods and services by all levels of government, excluding most government enterprises.

Government expenditure Includes non-repayable current and capital expenditure. It does not include government lending or repayments to the government or government acquisition of equity for public policy purposes.

Gross domestic investment Outlays on additions to the fixed assets of the economy plus net changes in the level of inventories.

Gross domestic product (GDP) The total output of goods and services for final use produced by an economy by both residents and non-residents, regardless of the allocation to domestic and foreign claims. It does not include deductions for depreciation of physical capital or depletion and degradation of natural resources.

Gross domestic savings Calculated as the difference between GDP and total consumption.

Gross national product (GNP) Comprises GDP plus net factor income from abroad, which is the income residents receive from abroad for factor services (labour and capital), less similar payments made to nonresidents who contribute to the domestic economy.

Hazardous waste Refers to the waste streams to be controlled according to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal. The data do not necessarily represent all hazardous waste nor its potential toxicity.

Health services (access to) The proportion of the population that can expect treatment for common diseases and injuries, including essential drugs on the national list, within one hour's walk or travel.

Homicides Intentional deaths purposely inflicted by another person.

Human development index (HDI) A composite index based on three indicators: longevity, as measured by life expectancy at birth; educational attainment, as measured by a combination of adult literacy (two-thirds weight) and the combined gross primary, secondary and tertiary enrolment ratio (one-third weight); and standard of living, as measured by GDP per capita (PPP US\$). For more details on how the index is calculated, see the technical note.

Human poverty index (HPI) The human poverty index for developing countries (HPI-1) measures deprivations in three dimensions of human life—longevity, knowledge and a decent standard of living. The HPI for industrialized countries (HPI-2) includes, in addition to these three dimensions, social exclusion. For more details on how these indices are calculated, see the technical note.

Illiteracy rate (adult) Calculated as 100 minus the *literacy rate (adult)* (see this term).

Imports of conventional weapons Imports of weapons as defined under *transfers of conventional weapons* (see this term).

Imports of goods and services The value of all goods and non-factor services purchased from the rest of the world, including merchandise freight, insurance, travel and other non-factor services.

Industrial production Comprises value added in mining, manufacturing, construction, electricity, water and gas.

Infant mortality rate The probability of dying between birth and exactly one year of age times 1,000.

Infants with low birth-weight The percentage of babies born weighing less than 2,500 grams.

Inflation A fall in the purchasing power of money reflected in a persistent increase in the general level of prices as generally measured by the retail price index.

Internal renewable water resources Refers to the average annual flow of rivers and recharge of ground-water generated from endogenous precipitation.

Internally displaced Refers to people who are displaced within their own country and to whom the United Nations High Commissioner for Refugees extends protection or assistance, or both, in pursuance to a special request by a competent organ of the United Nations.

International tourism departures The number of departures that people make from their country of usual residence to any other country for any purpose other than a remunerated activity in the country visited.

Internet host A computer system connected to the Internet—either a single terminal directly connected or a computer that allows multiple users to access network services through it.

Involuntary part-time workers Part-time workers who say they are working part time because they could not find full-time work.

Life expectancy at birth The number of years a newborn infant would live if prevailing patterns of mortality at the time of birth were to stay the same throughout the child's life.

Life expectancy index One of the three indicators on which the human development index is built. For details on how the index is calculated, see the technical note.

Literacy rate (adult) The percentage of people aged 15 and above who can, with understanding, both read and write a short, simple statement on their everyday life.

Main telephone line Refers to a telephone line connecting a subscriber to the telephone exchange equipment.

Major protected areas See *protected areas* (*major*).

Maternal mortality ratio The annual number of deaths of women from pregnancy-related causes per 100,000 live births.

Military expenditure All expenditures of the defence ministry and other ministries on recruiting and training military personnel as well as on construction and purchase of military supplies and equipment. Military assistance is included in the expenditures of the donor country.

Municipal waste Waste collected by municipalities or by their order that has been generated by households, commercial activities, office buildings, schools, government buildings and small businesses.

Nuclear waste generated Refers to spent fuel, one part of the radioactive waste generated at various stages of the fuel cycle (uranium mining and milling, fuel enrichment, reactor operation, spent fuel reprocessing). Data do not represent all radioactive waste generated, and the amounts of spent fuel generated depend on the share of nuclear electricity in the energy supply and on the nuclear plant technologies adopted.

Official aid Grants or loans that meet the same standards as for *official development assistance (ODA)* (see that term) except that recipients do not qualify as recipients of ODA. Part two of the Development Assistance Committee (DAC) list of recipient countries identifies these countries.

Official development assistance (ODA) Grants or loans to qualifying developing countries or territories, identified in part one of the Development Assistance Committee (DAC) list of recipient countries, that are undertaken by the official sector with promotion of economic development and welfare as the main objective, on concessional financial terms.

Oral rehydration therapy use rate The percentage of all cases of diarrhoea in children under five years of age treated with oral rehydration salts, recommended home fluids or both.

Paper (printing and writing) consumed Newsprint and other paper used in printing or writing. This does not cover articles manufactured from printing paper, such as stationery, exercise books, registers and the like.

Part-time employment Refers to people who usually work less than 30 hours a week in their main job. Data include only people declaring usual hours.

People incarcerated The number of people in prison. *Prison* refers to all public and privately financed institutions in which people are deprived of their liberty. These institutions could include, but are not limited to, penal, correctional or psychiatric facilities.

Population Includes all residents regardless of legal status or citizenship—except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of their country of origin. Data refer to midyear estimates.

Population below income poverty line Refers to the percentage of the population living below the specified poverty line:

• *\$1 a day*—at 1993 international prices, adjusted for purchasing power parity.

• *\$2 a day*—at 1993 international prices, adjusted for purchasing power parity.

• *\$4 a day*—at 1990 international prices, adjusted for purchasing power parity.

• *\$14.40 a day*—at 1985 international prices, adjusted for purchasing power parity.

• *National poverty line*—the poverty line deemed appropriate for a country by its authorities.

• 50% of median income—50% of the median disposable household income.

Portfolio investment flows (net) Non-debt-creating portfolio equity flows (the sum of country funds, depository receipts and direct purchases of shares by foreign investors) and portfolio debt flows (bond issues purchased by foreign investors).

Primary education See education levels.

Printing and writing paper See *paper* (*printing and writing*) *consumed*.

Private consumption The market value of all goods and services, including durable products, purchased or received as income in kind by households and nonprofit institutions.

Probability of surviving to age 40 (60) The probability of a newborn infant surviving to age 40 (60) if the prevailing patterns of age-specific mortality at the time of birth remain the same throughout the child's life.

Professional and technical workers Defined according to the International Standard Classification of Occupations (ISCO-1968).

Protected areas (major) Natural areas of at least 1,000 hectares that are totally or partially protected.

Public expenditure on education Public spending on public education plus subsidies to private education at the primary, secondary and tertiary levels. It includes expenditure at every level of administration—central, regional and local.

Public expenditure on health Recurrent and capital spending from central and local government budgets, external borrowings and grants (including donations from international agencies and nongovernmental organizations) and social health insurance funds. **Purchasing power parity (PPP)** At the PPP rate, one dollar has the same purchasing power over domestic GDP as the US dollar has over US GDP. PPP could also be expressed in other national currencies or in special drawing rights (SDRs). PPP rates allow a standard comparison of real price levels between countries, just as conventional price indices allow comparison of real values over time; normal exchange rates may over- or undervalue purchasing power.

Refugees People who have fled their country because of a well-founded fear of persecution for reasons of their race, religion, nationality, political opinion or membership in a particular social group, and who cannot or do not want to return.

Safe water (access to) The proportion of the population using any of the following types of water supply for drinking: piped water, public tap, borehole or pump, well (protected or covered) or protected spring.

Sanitation (access to) The proportion of the population who have, within their dwelling or compound, a toilet connected to a sewerage system, any other flush toilet, an improved pit latrine or a traditional pit latrine.

Seats in parliament held by women Refers to seats held by women in a lower or single house and an upper house or senate, where relevant.

Secondary education See education levels.

Services production Refers to production under divisions 50–99 of the International Standard Industrial Classification (ISIC revision 2).

Share of ODA through NGOs The percentage of *official development assistance* (see this term) distributed through non-governmental organizations.

Shares of income or consumption The distribution of income or expenditure accruing to percentile groups of households ranked by total household income or consumption.

Sovereign long-term debt rating As determined by Standard & Poor's, an assessment of a country's capacity and willingness to repay debt according to its terms. The ratings range from AAA to CC (investment grade AAA to BBB–, and speculative grade BB+ and lower).

Sulphur dioxide (SO₂) emissions Emissions of sulphur in the form of sulphur oxides and of nitrogen in

the form of its various oxides, which together contribute to acid rain and adversely affect agriculture, forests, aquatic habitats and the weathering of building materials.

Tax revenue Compulsory, unrequited, nonrepayable receipts collected by central governments for public purposes.

Tertiary education See education levels.

Time allocation and time use Allocation of time between market (SNA) and non-market (non-SNA) activities according to the UN System of National Accounts (SNA).

Total armed forces Strategic, land, naval, air, command, administrative and support forces. Also included are paramilitary forces such as the gendarmerie, customs service and border guard if these are trained in military tactics.

Total debt service The sum of principal repayments and interest actually paid in foreign currency, goods or services on long-term debt, interest paid on shortterm debt and repayments to the International Monetary Fund. Total debt service is an important indicator of a country's relative external debt servicing burden.

Total fertility rate The average number of children that would be born alive to a woman during her lifetime if she were to bear children at each age in accord with prevailing age-specific fertility rates.

Traditional fuel consumption Estimated consumption of fuel wood, charcoal, bagasse and animal and vegetable wastes. Traditional fuel use together with commercial energy use make up total energy use.

Transfers of conventional weapons (arms trade) Refers to orders and deliveries of major conventional weapons (rather than contracts placed), such as aircraft, armoured vehicles, artillery, guidance and radar systems, missiles and ships. Items must be transferred voluntarily by the supplier and be destined for the armed forces, paramilitary forces or intelligence agencies of another country.

Under-five mortality rate The probability of dying between birth and exactly five years of age times 1,000.

Underweight children under age five The percentage of the population under five years of age with moderate or severe underweight, defined as a weight below minus two standard deviations from the median weight.

Unemployment All people above a specified age who are not in paid employment or self-employed, but are available and have taken specific steps to seek paid employment or self-employment.

Unpaid family workers Household members involved in unremunerated subsistence and nonmarket activities, such as agricultural production for household consumption, and in household enterprises producing for the market for which more than one household member provides unpaid labor.

Urban population The midyear population of areas defined as urban in each country and reported to the United Nations. Because the data are based on national definitions of what constitutes a city or metropolitan area, cross-country comparisons should be made with caution.

Voter turnout The number of votes (including blank or invalid votes) as a percentage of the number of registered voters.

Waste recycling The reuse of material that diverts it from the waste stream, except for recycling within industrial plants and the reuse of material as fuel.

Classification of countries

Countries in the human development aggregates

High human development (HDI 0.800 and above)

Antigua and Barbuda Argentina Australia Austria Bahamas Bahrain Barbados Belgium Brunei Darussalam Canada Chile Cyprus Czech Republic Denmark Estonia Finland France Germany Greece Hong Kong, China (SAR) Hungary Iceland Ireland Israel Italy Japan Korea, Rep. of Kuwait Luxembourg Malta Netherlands New Zealand Norway Poland Portugal Qatar Singapore Slovakia Slovenia Spain Sweden Switzerland United Arab Emirates United Kingdom United States Uruguay

Medium human development (HDI 0.500–0.799)

Albania Algeria Armenia Azerbaijan Belarus Belize Bolivia Botswana Brazil Bulgaria Cambodia Cameroon Cape Verde China Colombia Comoros Congo Costa Rica Croatia Cuba Dominica Dominican Republic Ecuador Egypt El Salvador Equatorial Guinea Fiji Gabon Georgia Ghana Grenada Guatemala Guyana Honduras India Indonesia Iran, Islamic Rep. of Iraq Jamaica Jordan Kazakhstan Kenya Kyrgyzstan Latvia Lebanon Lesotho Libyan Arab Jamahiriya Lithuania Macedonia, TFYR Malaysia Maldives Mauritius Mexico Moldova, Rep. of Mongolia Morocco Myanmar Namibia Nicaragua Oman Pakistan Panama Papua New Guinea Paraguay Peru Philippines Romania Russian Federation Saint Kitts and Nevis Saint Lucia Saint Vincent and the Grenadines Samoa (Western) São Tomé and Principe Saudi Arabia Sevchelles Solomon Islands South Africa Sri Lanka Suriname Swaziland Syrian Arab Republic Tajikistan Thailand Trinidad and Tobago Tunisia Turkey Turkmenistan Ukraine Uzbekistan Vanuatu Venezuela Viet Nam Zimbabwe

Low human development (HDI below 0.500)

Angola Bangladesh Benin Bhutan Burkina Faso Burundi Central African Republic Chad Congo, Dem. Rep. of the Côte d'Ivoire Djibouti Eritrea Ethiopia Gambia Guinea Guinea-Bissau Haiti Lao People's Dem. Rep. Madagascar Malawi Mali Mauritania Mozambique Nepal Niger Nigeria Rwanda Senegal Sierra Leone Sudan Tanzania, U. Rep. of Togo Uganda Yemen Zambia

High income (GNP per capita of \$9,361 or more in 1998) Middle income (GNP per capita of \$761–9,360 in 1998)

Australia Austria Bahamas Belgium Brunei Darussalam Canada Cyprus Denmark Finland France Germany Greece Hong Kong, China (SAR) Iceland Ireland Israel Italy Japan Kuwait Luxembourg Malta Netherlands New Zealand Norway Portugal Qatar Singapore Slovenia Spain Sweden Switzerland United Arab Emirates United Kingdom United States

Albania Algeria Antigua and Barbuda Argentina Bahrain Barbados Belarus Belize Bolivia Botswana Brazil Bulgaria Cape Verde Chile Colombia Costa Rica Croatia Cuba Czech Republic Diibouti Dominica Dominican Republic Ecuador Egypt El Salvador Equatorial Guinea Estonia Fiii Gabon Georgia Grenada Guatemala Guvana Hungary Iran, Islamic Rep. of Iraq Jamaica Iordan Kazakhstan Korea, Rep. of Latvia

Lebanon Libyan Arab Jamahiriya Lithuania Macedonia, TFYR Malaysia Maldives Mauritius Mexico Morocco Namibia Oman Panama Papua New Guinea Paraguay Peru Philippines Poland Romania Russian Federation Saint Kitts and Nevis Saint Lucia Saint Vincent and the Grenadines Samoa (Western) Saudi Arabia Sevchelles Slovakia South Africa Sri Lanka Suriname Swaziland Syrian Arab Republic Thailand Trinidad and Tobago Tunisia Turkey Ukraine Uruguay Uzbekistan Vanuatu Venezuela

Low income (GNP per capita of \$760 or less in 1998)

Angola Armenia Azerbaijan Bangladesh Benin Bhutan Burkina Faso Burundi Cambodia Cameroon Central African Republic Chad China Comoros Congo Congo, Dem. Rep. of the Côte d'Ivoire Eritrea Ethiopia Gambia Ghana Guinea Guinea-Bissau Haiti Honduras India Indonesia Kenva Kyrgyzstan Lao People's Dem. Rep. Lesotho Madagascar Malawi Mali Mauritania Moldova, Rep. of Mongolia Mozambique Myanmar Nepal Nicaragua

Niger Nigeria Pakistan Rwanda São Tomé and Principe Senegal Sierra Leone Solomon Islands Sudan Taiikistan Tanzania, U. Rep. of Togo Turkmenistan Uganda Viet Nam Yemen Zambia Zimbabwe

a. Based on World Bank classifications (valid through July 2000).

All developing countries

Algeria Angola Antigua and Barbuda Argentina Bahamas Bahrain Bangladesh Barbados Belize Benin Bhutan Bolivia Botswana Brazil Brunei Darussalam Burkina Faso Burundi Cambodia Cameroon Cape Verde Central African Republic Chad Chile China Colombia Comoros Congo Congo, Dem. Rep. of the Costa Rica Côte d'Ivoire Cuba Cyprus Djibouti Dominica Dominican Republic Ecuador Egypt El Salvador Equatorial Guinea Eritrea Ethiopia Fiji Gabon Gambia Ghana Grenada Guatemala Guinea Guinea-Bissau Guyana Haiti Honduras Hong Kong, China (SAR) India Indonesia

Iran, Islamic Rep. of Iraq Jamaica Jordan Kenya Korea, Rep. of Kuwait Lao People's Dem. Rep. Lebanon Lesotho Libyan Arab Jamahiriya Madagascar Malawi Malaysia Maldives Mali Mauritania Mauritius Mexico Mongolia Morocco Mozambique Myanmar Namibia Nepal Nicaragua Niger Nigeria Oman Pakistan Panama Papua New Guinea Paraguay Peru Philippines Qatar Rwanda Saint Kitts and Nevis Saint Lucia Saint Vincent and the Grenadines Samoa (Western) São Tomé and Principe Saudi Arabia Senegal Sevchelles Sierra Leone Singapore Solomon Islands South Africa Sri Lanka Sudan Suriname Swaziland Syrian Arab Republic

Tanzania, U. Rep. of Thailand Togo Trinidad and Tobago Tunisia Turkey Uganda United Arab Emirates Uruguay Vanuatu Venezuela Viet Nam Yemen Zambia Zimbabwe Least developed countries Angola Bangladesh Benin Bhutan Burkina Faso Burundi Cambodia Cape Verde Central African Republic Chad Comoros Congo, Dem. Rep. of the Djibouti Equatorial Guinea Eritrea Ethiopia Gambia Guinea Guinea-Bissau Haiti Lao People's Dem. Rep. Lesotho Madagascar Malawi Maldives Mali Mauritania Mozambique Myanmar Nepal Niger Rwanda Samoa (Western) São Tomé and Principe Sierra Leone Solomon Islands Sudan

Tanzania, U. Rep. of Togo Uganda Vanuatu Yemen Zambia

Eastern Europe and the Commonwealth of Independent States (CIS)

Albania Armenia Azerbaijan Belarus Bulgaria Croatia Czech Republic Estonia Georgia Hungary Kazakhstan Kyrgyzstan Latvia Lithuania Macedonia, TFYR Moldova, Rep. of Poland Romania Russian Federation Slovakia Slovenia Tajikistan Turkmenistan Ukraine Uzbekistan

OECD countries

Australia Austria Belgium Canada Czech Republic Denmark Finland France Germany Greece Hungary Iceland Ireland Italy Japan Korea, Rep. of Luxembourg Mexico Netherlands New Zealand Norway Poland Portugal Spain Sweden Switzerland Turkey United Kingdom United States

Developing countries in the regional aggregates

Arab States	Asia and the Pacific	Latin America and the Caribbean (including Mexico)	Southern Europe	Sub-Saharan Africa
Algeria	East Asia	Antigua and Barbuda	Cyprus	Angola
Bahrain	China	Argentina	Turkey	Benin
Djibouti	Hong Kong, China (SAR)	Bahamas	тиксу	Botswana
Egypt	Korea, Rep. of	Barbados		Burkina Faso
Iraq	Mongolia	Belize		Burundi
Jordan	Moligona	Bolivia		Cameroon
Kuwait	South-East Asia	Brazil		Cape Verde
Lebanon	and the Pacific	Chile		Central African Republic
Libyan Arab Jamahiriya	Brunei Darussalam	Colombia		Chad
Morocco	Cambodia	Costa Rica		Comoros
Oman	Fiji	Cuba		Congo
Qatar	Indonesia	Dominica		Congo, Dem. Rep. of the
Saudi Arabia	Lao People's Dem. Rep.	Dominican Republic		Côte d'Ivoire
Sudan	Malaysia	Ecuador		Equatorial Guinea
Syrian Arab Republic	Myanmar	El Salvador		Eritrea
Tunisia	Papua New Guinea	Grenada		Ethiopia
United Arab Emirates	Philippines	Guatemala		Gabon
Yemen	Samoa (Western)	Guyana		Gambia
	Singapore	Haiti		Ghana
	Solomon Islands	Honduras		Guinea
	Thailand	Jamaica		Guinea-Bissau
	Vanuatu	Mexico		Kenya
	Viet Nam	Nicaragua		Lesotho
		Panama		Madagascar
	South Asia	Paraguay		Malawi
	Bangladesh	Peru		Mali
	Bhutan	Saint Kitts and Nevis		Mauritania
	India	Saint Lucia		Mauritius
	Iran, Islamic Rep. of	Saint Vincent and the		Mozambique
	Maldives	Grenadines		Namibia
	Nepal	Suriname		Niger
	Pakistan	Trinidad and Tobago		Nigeria
	Sri Lanka	Uruguay		Rwanda
		Venezuela		São Tomé and Principe
				Senegal
				Seychelles
				Sierra Leone
				South Africa
				Swaziland
				Tanzania, U. Rep. of
				Togo Usan la
				Uganda Zamlia
				Zambia Zimla 1
				Zimbabwe

INDEX TO INDICATORS

Indicator	Indicator tables
A	
Administrators and managers, female	3
Agriculture, as % of GDP	14
Anaemia, pregnant women with	10
Areas, major protected	22
Armed forces, total	16
index	16
	27
Births to mothers under 20	27
Birth-weight, infants with low	10
Budget surplus/deficit, as % of GDP	14
С	
Calories, daily per capita supply of	23, 32
Carbon dioxide emissions, total	21
per capita	21
share of world total	21
Children reaching grade 5	11
Cigarette consumption, annual average	10
index	10
Computers, personal	12
Consumption	
government, as % of GDP	14
private, as % of GDP	14
Contraceptive prevalence rate	19
Convictions, juvenile	26
Crimes, recorded, total	26
D	
Debt, external, total	18
as % of GNP	18
Debt rating, long-term, sovereign	15
Debt service, total	18
Deforestation, average annual rate of	21
Dependency ratio	19
Disasters, people killed by, total	27
by single worst disaster	27
Displaced people, internally	27
Divorces	27
Doctors	10
Drug offences, recorded, total	26
E	
E Economic activity rate, female	29
as % of male rate	29 29
index	29 29
Education expenditure, public, as % of GNP	29 11, 16
as % of total government expenditure	11, 10
pre-primary, primary and secondary	11
tertiary	11
Education index	1
Elections, date of latest	25
members elected or appointed	25
voter turnout at latest	25
Electricity consumption, total	20
index	20
IIIIIA	20

Indicator	Indicator tables
per capita	20
Employment, involuntary part-time	24
part-time, female and male	24
Energy, commercial use, total	20
GDP output per kilogram	20
per capita	20
Energy imports, net	20
Enrolment ratio	-0
gross, combined primary, secondary and tertiary	1
gross, combined primary, secondary and tertiary,	1
female and male	2
primary age group (adjusted)	11
	28
primary age group (adjusted), female	
primary age group (adjusted), female, as % of male	28
primary age group (adjusted), female, index	28
secondary age group (adjusted)	11
secondary age group (adjusted), female	28
secondary age group (adjusted), female, as % of male	28
secondary age group (adjusted), female, index	28
tertiary, female, as % of male	28
tertiary, female, index	28
tertiary, female, total	28
tertiary science	11
tertiary science, female	28
Exports of goods and services, as % of GDP	15
F Fat, daily per capita supply of, total change Fertility rate, total	23 23 19, 32
Food aid in cereals	23
Food consumption	23
Food imports	23
Food price index	13
Food production index	23
-	
Fuel consumption, traditional	20
G GDP index	1
GDP, total	14
per capita	8
per capita, peak and trough	7
per capita, PPP US\$	1
per capita, PPP US\$, female	3
per capita, PPP US\$, female and male	2
Gender empowerment measure (GEM)	2 3, 6
as % of highest value in group	5, 6 6
rank	3
Gender-related development index (GDI)	2,6
as % of highest value in group	6
rank	2
GNP, total	13, 32
annual growth rate	13
per capita	13, 32
per capita, annual growth rate	13, 52
Government, central, expenditure, as % of GDP	13
	17
tax revenue, as % of GDP	14

INDEX TO INDICATORS

Indicator	ndicator tables	Indicator
H Health expenditure, public, as % of GDP	16	Official development
Health services, population without access to	4	as % of central gover
HIV/AIDS, people living with, total	10	as % of GNP
adult rate	10	by NGOs as % of G
Homicides, recorded, in country	26	multilateral, as % of
in largest city	26	per capita of donor of
Human development index (HDI)	1,6	share through NGO
as % of highest value in group	6	to least developed co
change in	8	Official development
trends	7	as % of GNP
Human poverty index (HPI) as % of lowest value in group	6	per capita
Human poverty index (HPI-1)	4,6	Oral rehydration ther
rank	4	
Human poverty index (HPI-2)	5,6	Р
rank	5	Paper, printing and w
Human rights instruments, international, status	A2.1	Political parties repre-
		— upper house or sena
I		Population, total
Illiteracy rate, adult	4	aged 65 and above
functional illiteracy rate	5	annual growth rate
Immunization, against measles	10	urban
against tuberculosis	10	Poverty, income
Imports of goods and services, as % of GDP	15	population below 50
Incarcerated people	26	population below \$1
Income or consumption, share, poorest 20%	4,5	population below \$4
richest 20%	4,5	population below \$1
richest 20% to poorest 20%	4,5	population below na
Industry, as % of GDP	14	Professional and tech
Infant mortality rate	9,32	Protein, daily per cap
Inflation, average annual rate of	13	change
Internet hosts	12	R
Investment, gross domestic, as % of GDP	14 15	Rapes, recorded
Investment flows, foreign direct, net	15 15	Refugees, by country
portfolio, net	15	 by country of origin
L		Road accidents, injuri
Labour rights conventions, ratification of	A2.2	
Lending, bank and trade-related, net	15	S
Life expectancy at birth	1, 9, 32	Sanitation, population
female and male	2	population without a
Life expectancy index	1	Savings, gross domest
Literacy rate, adult	1, 11, 32	Services, as % of GDI
female	2,28	Suicides, female and r
female as % of male	28	Sulphur dioxide emis
female index	28	Survival
female and male	2	people not expected
Literacy rate, youth	11	people not expected
М		
Malaria cases	10	Tax revenue, as % of
Mataria cases Maternal mortality ratio reported	9	Telephones, cellular r
Military expenditure, as % of GDP	16	main lines
winnary experimenter, as 70 01 GDP	10	— public
Ν		Televisions
Nurses	10	Tourism, internationa
		- index

ndicator	Indicator tables
2	
) Official doubloomont excistence disburged total	17
Official development assistance disbursed, total	17
as % of central government budget	17
as % of GNP	17
by NGOs as % of GNP	17
multilateral, as % of GNP	17
per capita of donor country	17
share through NGOs	17
to least developed countries	17
Official development assistance received, total	18
as % of GNP	18
per capita	18
Dral rehydration therapy use rate	10
)	
Paper, printing and writing, consumed	21
Political parties represented, lower or single house	25
upper house or senate	25
Population, total	19, 32
aged 65 and above	19, 52
annual growth rate	19
urban	19
Poverty, income	_
population below 50% of median income	5
population below \$1 a day (1993 PPP US\$)	4
population below \$4 a day (1990 PPP US\$)	5
population below \$14.40 a day (1985 PPP US\$)	5
population below national poverty line	4
Professional and technical workers, female	3
Protein, daily per capita supply of, total	23
change	23
}	
Rapes, recorded	26
Refugees, by country of asylum	27
by country of origin	27, 32
Road accidents, injuries and deaths from	27
	22
anitation, population served by public services	22
population without access to	4
bavings, gross domestic, as % of GDP	14
Services, as % of GDP	14
Suicides, female and male	27
Sulphur dioxide emissions, per capita	21
Survival	
people not expected to survive to age 40	4
people not expected to survive to age 60	5,9
 [
Fax revenue, as % of GDP	14
Felephones, cellular mobile subscribers	14
main lines	12
public	12
Televisions	12
Fourism, international departures, total	12
index	12

INDEX TO INDICATORS

Indicator	Indicator tables
Tuberculosis cases	10
U	
Under-five mortality rate	9,32
Underweight children under age five	4
Unemployed people	24
Unemployment, long-term, total	5
female and male	24
Unemployment compensation, public expenditur	e on,
as % of GDP	24
Unemployment rate, total	24
female and male	29
index	24
youth, female and male	29
Unpaid family workers, female	29
W	
Waste generated, hazardous	22
municipal	22
nuclear	22
Waste recycling, as % of apparent consumption,	glass 22
paper and cardboard	22

	licator ables
Waste services, municipal, population served by	22
Water, safe, population without access to	4, 32
Water resources, internal renewable, per capita	21
Water withdrawals, fresh, annual	21
per capita	21
Weapons, exports of conventional, total	16
share	16
Weapons, imports of conventional, total	16
index	16
Women in government	
at all levels	31
at ministerial level	31
at subministerial level	31
parliamentary seats held by women	3
year women received right to vote	31
year women received right to stand for elections	31
year first woman elected or appointed to parliament	31
Work	
burden of, female and male	30
burden of, females as % of males	30
time allocation, market and non-market	30
time allocation, market and non-market, female and male	30

Countries and regions that have produced human development reports

Arab States

Algeria, 1998, 1999 Bahrain, 1998 Egypt, 1994, 1995, 1996, 1997–98 Iraq, 1995 Kuwait, 1997, 1999 Lebanon, 1997, 1999 Morocco, 1997, 1999 Occupied Palestinian territory, 1997 Somalia, 1998 Sudan, 1998 Syrian Arab Republic, 1999 Tunisia, 1999 United Arab Emirates, 1998 Yemen, 1998

Asia and the Pacific

Bangladesh, 1992, 1993, 1994, 1995, 1996, 1997, 1998 Cambodia, 1997, 1998, 1999 China, 1997, 1999 India, Karnataka, 1999 India, Madhya Pradesh, 1995, 1998 Indonesia, 1997 Iran, Islamic Rep. of, 1999 Lao People's Dem. Rep., 1998 Maldives, 1999 Mongolia, 1997, 2000 Myanmar, 1998 Nepal, 1998, 1999 Pakistan, 1992 Papua New Guinea, 1999 Philippines, 1994, 1997, 2000 Samoa (Western), 1998 Sri Lanka, 1998 Thailand, 1999 Tuvalu, 1999 Vanuatu, 1996

Europe and the CIS

Albania, 1995, 1996, 1997, 1998 Armenia, 1995, 1996, 1997, 1998 Azerbaijan, 1995, 1996, 1997, 1998, 1999 Belarus, 1995, 1996, 1997, 1998, 1999 Bosnia and Herzegovina, 1998, 1999 Bulgaria, 1995, 1996, 1997, 1998, 1999 Bulgaria, Sofia, 1997 Croatia, 1997, 1998 Czech Republic, 1996, 1997, 1998 Estonia, 1995, 1996, 1997, 1998

Georgia, 1995, 1996, 1997, 1998, 1999 Hungary, 1995, 1996, 1998 Kazakhstan, 1995, 1996, 1997, 1998, 1999 Kyrgyzstan, 1995, 1996, 1997, 1998, 1999 Latvia, 1995, 1996, 1997, 1998, 1999 Lithuania, 1995, 1996, 1997, 1998, 1999 Macedonia, TFYR, 1997, 1998 Malta, 1996 Moldova, Rep. of, 1995, 1996, 1997, 1998 Poland, 1995, 1996, 1997, 1998, 1999 Romania, 1995, 1996, 1997, 1998 Russian Federation, 1995, 1996, 1997, 1998, 1999 Saint Helena, 1999 Slovakia, 1995, 1997, 1998 Slovenia, 1998 Tajikistan, 1995, 1996, 1997, 1998, 1999 Turkey, 1995, 1996, 1997, 1998 Turkmenistan, 1995, 1996, 1997, 1998, 1999 Ukraine, 1995, 1996, 1997, 1998 Uzbekistan, 1995, 1996, 1997, 1998 Yugoslavia, 1996, 1997

Latin America and the Caribbean

Argentina, 1995, 1996, 1997, 1998, 1999 Argentina, Buenos Aires, 1996, 1997, 1998.1999 Belize, 1997, 1998 Bolivia, 1998, 2000 Bolivia, Cochabamba, 1995 Bolivia, La Paz, 1995 Bolivia, Santa Cruz, 1995 Brazil, 1996 Chile, 1996, 1998, 2000 Colombia, 1998, 1999 Costa Rica, 1995, 1996, 1997, 1998 Cuba, 1996, 1999 Dominican Republic, 1997, 1999 Ecuador, 1999 El Salvador, 1997, 1999 Guatemala, 1998, 1999 Guyana, 1996 Honduras, 1998, 1999 Nicaragua, 1997 Paraguay, 1995, 1996 Peru, 1997 Uruguay, 1999 Venezuela, 1995, 1996, 1997, 1998, 1999

Sub-Saharan Africa

Angola, 1997, 1998, 1999 Benin, 1997, 1998, 1999 Botswana, 1993, 1997 Burkina Faso, 1997, 1998 Burundi, 1997, 1999 Cameroon, 1992, 1993, 1996, 1998 Cape Verde, 1997, 1998 Central African Republic, 1996 Chad. 1997 Comoros, 1997 Côte d'Ivoire, 1997 Equatorial Guinea, 1996, 1997 Ethiopia, 1997, 1998 Gabon, 1998, 1999 Gambia, 1997 Ghana, 1997, 1999 Guinea, 1997 Guinea-Bissau, 1997 Kenya, 1999 Lesotho, 1998 Liberia, 1997 Madagascar, 1997, 1999 Malawi, 1997, 1998 Mali, 1995, 1997, 1998, 1999 Mauritania, 1996, 1997 Mauritius, 1998 Mozambique, 1998 Namibia, 1996, 1997, 1998 Niger, 1997, 1998 Nigeria, 1996, 1998 São-Tomé and Principe, 1998 Senegal, 1998 Sierra Leone, 1996 South Africa, 1998 Swaziland, 1997, 1998 Tanzania, U. Rep. of, 1997 Togo, 1995, 1997 Uganda, 1996, 1998 Zambia, 1997, 1998 Zimbabwe, 1998

Regional reports

Africa, 1995 Central America, 1999 Europe and the CIS, 1995, 1996, 1999 Pacific Islands, 1994, 1999 South Asia, 1997, 1998, 1999 Southern African Development Community, 1998

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