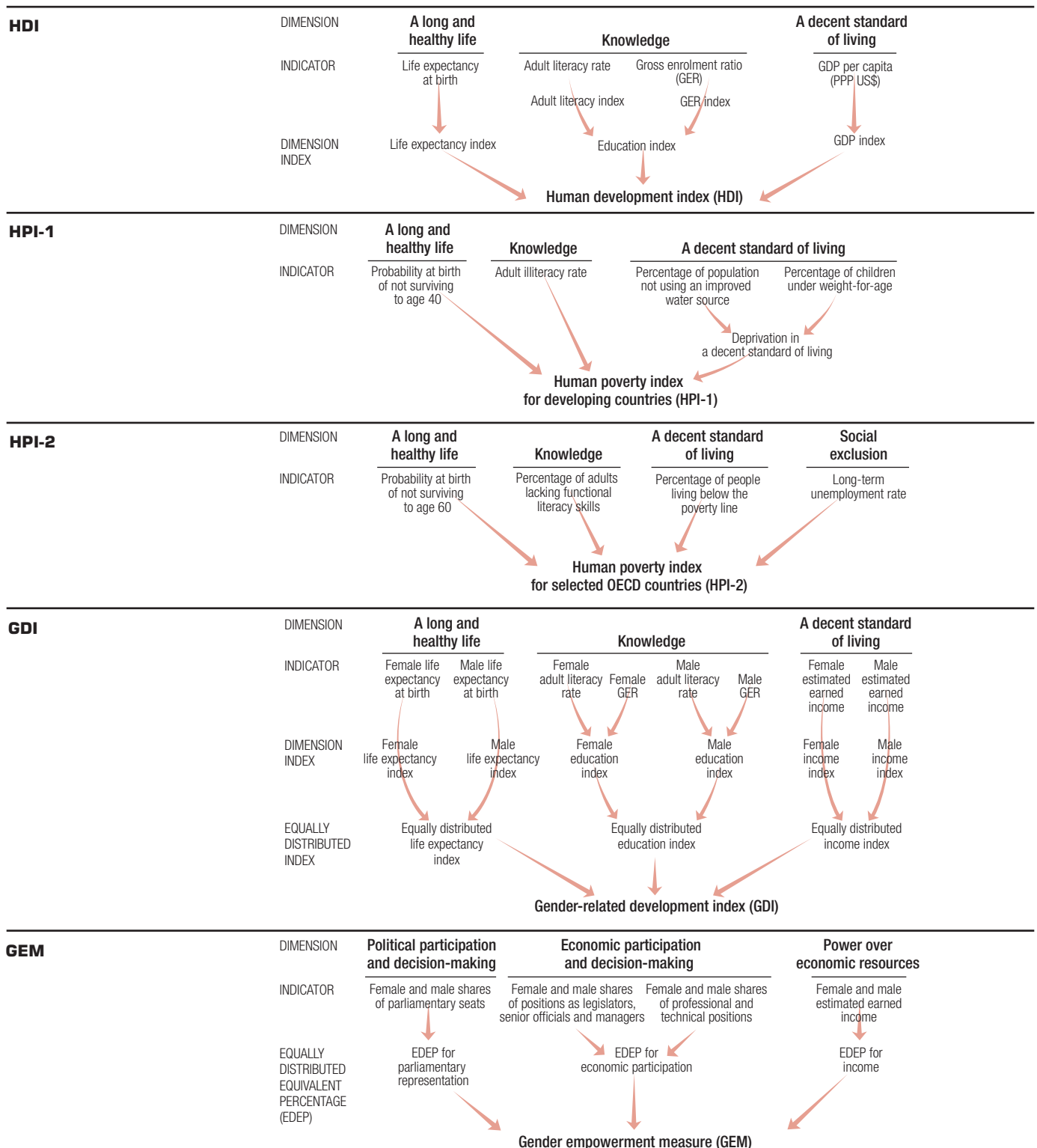


Calculating the human development indices

The diagrams here summarize how the five human development indices used in the *Human Development Report* are constructed, highlighting both their similarities and their differences. The text on the following pages provides a detailed explanation.

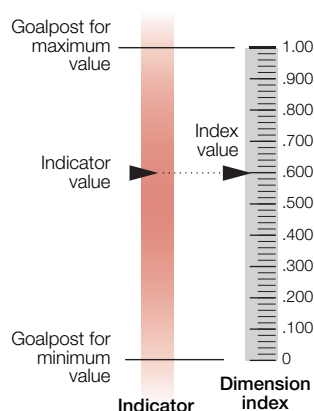


The human development index (HDI)

The HDI is a summary measure of human development. It measures the average achievements in a country in three basic dimensions of human development:

- A long and healthy life, as measured by life expectancy at birth.
- Knowledge, as measured by the adult literacy rate (with two-thirds weight) and the combined primary, secondary and tertiary gross enrolment ratio (with one-third weight).
- A decent standard of living, as measured by GDP per capita in purchasing power parity (PPP) terms in US dollars.

Before the HDI itself is calculated, an index needs to be created for each of these dimensions. To calculate these indices—the life expectancy, education and GDP indices—minimum and maximum values (goalposts) are chosen for each underlying indicator.



Performance in each dimension is expressed as a value between 0 and 1 by applying the following general formula:

$$\text{Dimension index} = \frac{\text{actual value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}}$$

The HDI is then calculated as a simple average of the dimension indices. The box on the right illustrates the calculation of the HDI for a sample country.

Goalposts for calculating the HDI

Indicator	Maximum value	Minimum value
Life expectancy at birth (years)	85	25
Adult literacy rate (%)*	100	0
Combined gross enrolment ratio (%)	100	0
GDP per capita (PPP US\$)	40,000	100

* The goalpost for calculating adult literacy implies the maximum literacy rate is 100%. In practice, the HDI is calculated using an upper bound of 99%.

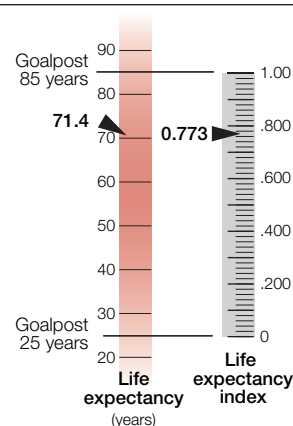
Calculating the HDI

This illustration of the calculation of the HDI uses data for Turkey.

1. Calculating the life expectancy index

The life expectancy index measures the relative achievement of a country in life expectancy at birth. For Turkey, with a life expectancy of 71.4 years in 2005, the life expectancy index is 0.773.

$$\text{Life expectancy index} = \frac{71.4 - 25}{85 - 25} = 0.773$$



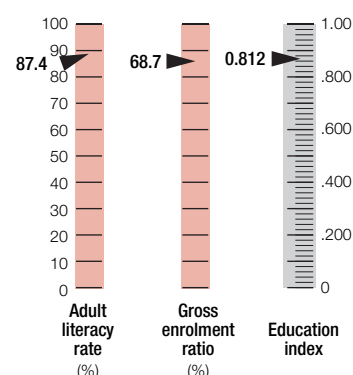
2. Calculating the education index

The education index measures a country's relative achievement in both adult literacy and combined primary, secondary and tertiary gross enrolment. First, an index for adult literacy and one for combined gross enrolment are calculated. Then these two indices are combined to create the education index, with two-thirds weight given to adult literacy and one-third weight to combined gross enrolment. For Turkey, with an adult literacy rate of 87.4% in 2005 and a combined gross enrolment ratio of 68.7% in 2005, the education index is 0.812.

$$\text{Adult literacy index} = \frac{87.4 - 0}{100 - 0} = 0.874$$

$$\text{Gross enrolment index} = \frac{68.7 - 0}{100 - 0} = 0.687$$

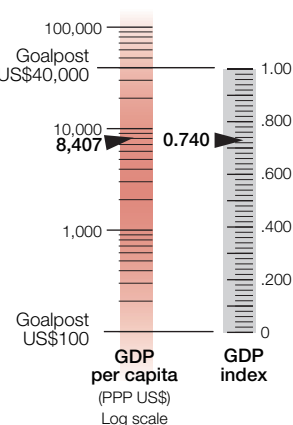
$$\begin{aligned} \text{Education index} &= \frac{2}{3} (\text{adult literacy index}) + \frac{1}{3} (\text{gross enrolment index}) \\ &= \frac{2}{3} (0.874) + \frac{1}{3} (0.687) = 0.812 \end{aligned}$$



3. Calculating the GDP index

The GDP index is calculated using adjusted GDP per capita (PPP US\$). In the HDI income serves as a surrogate for all the dimensions of human development not reflected in a long and healthy life and in knowledge. Income is adjusted because achieving a respectable level of human development does not require unlimited income. Accordingly, the logarithm of income is used. For Turkey, with a GDP per capita of 8,407 (PPP US\$) in 2005, the GDP index is 0.740.

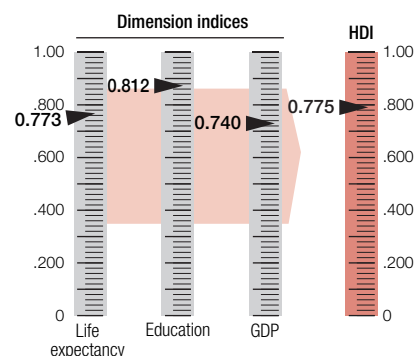
$$\text{GDP index} = \frac{\log(8,407) - \log(100)}{\log(40,000) - \log(100)} = 0.740$$



4. Calculating the HDI

Once the dimension indices have been calculated, determining the HDI is straightforward. It is a simple average of the three dimension indices.

$$\begin{aligned} \text{HDI} &= \frac{1}{3} (\text{life expectancy index}) + \frac{1}{3} (\text{education index}) \\ &\quad + \frac{1}{3} (\text{GDP index}) \\ &= \frac{1}{3} (0.773) + \frac{1}{3} (0.812) + \frac{1}{3} (0.740) = 0.775 \end{aligned}$$



The human poverty index for developing countries (HPI-1)

While the HDI measures average achievement, the HPI-1 measures *deprivations* in the three basic dimensions of human development captured in the HDI:

- A long and healthy life—vulnerability to death at a relatively early age, as measured by the probability at birth of not surviving to age 40.
- Knowledge—exclusion from the world of reading and communications, as measured by the adult illiteracy rate.
- A decent standard of living—lack of access to overall economic provisioning, as measured by the unweighted average of two indicators, the percentage of the population not using an improved water source and the percentage of children under weight-for-age.

Calculating the HPI-1 is more straightforward than calculating the HDI. The indicators used to measure the deprivations are already normalized between 0 and 100 (because they are expressed as percentages), so there is no need to create dimension indices as for the HDI.

The human poverty index for selected OECD countries (HPI-2)

The HPI-2 measures deprivations in the same dimensions as the HPI-1 and also captures social exclusion. Thus it reflects deprivations in four dimensions:

- A long and healthy life—vulnerability to death at a relatively early age, as measured by the probability at birth of not surviving to age 60.
- Knowledge—exclusion from the world of reading and communications, as measured by the percentage of adults (ages 16–65) lacking functional literacy skills.
- A decent standard of living—as measured by the percentage of people living below the income poverty line (50% of the median adjusted household disposable income).
- Social exclusion—as measured by the rate of long-term unemployment (12 months or more).

Calculating the HPI-1

1. Measuring deprivation in a decent standard of living

An unweighted average of two indicators is used to measure deprivation in a decent standard of living.

$$\text{Unweighted average} = 1/2 (\text{population not using an improved water source}) + 1/2 (\text{children under weight-for-age})$$

A sample calculation: Bolivia

Percentage of population not using an improved water source = 15%

Percentage of children under weight-for-age = 8%

$$\text{Unweighted average} = 1/2 (15) + 1/2 (8) = 11.3\%$$

2. Calculating the HPI-1

The formula used to calculate the HPI-1 is as follows:

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

Where:

P_1 = Probability at birth of not surviving to age 40 (times 100)

P_2 = Adult illiteracy rate

P_3 = Unweighted average of population not using an improved water source and children under weight-for-age

$\alpha = 3$

A sample calculation: Bolivia

$P_1 = 15.5\%$

$P_2 = 13.3\%$

$P_3 = 11.3\%$

$$\text{HPI-1} = [1/3 (15.5^3 + 13.3^3 + 11.3^3)]^{1/3} = 13.6$$

Calculating the HPI-2

The formula used to calculate the HPI-2 is as follows:

$$\text{HPI-2} = [1/4 (P_1^\alpha + P_2^\alpha + P_3^\alpha + P_4^\alpha)]^{1/\alpha}$$

Where:

P_1 = Probability at birth of not surviving to age 60 (times 100)

P_2 = Percentage of adults lacking functional literacy skills

P_3 = Percentage of population below income poverty line (50% of median adjusted household disposable income)

P_4 = Rate of long-term unemployment (lasting 12 months or more)

$\alpha = 3$

A sample calculation: Canada

$P_1 = 8.1\%$

$P_2 = 14.6\%$

$P_3 = 11.4\%$

$P_4 = 0.5\%$

$$\text{HPI-2} = [1/4 (8.1^3 + 14.6^3 + 11.4^3 + 0.5^3)]^{1/3} = 10.9$$

Why $\alpha = 3$ in calculating the HPI-1 and HPI-2

The value of α has an important impact on the value of the HPI. If $\alpha = 1$, the HPI is the average of its dimensions. As α rises, greater weight is given to the dimension in which there is the most deprivation. Thus as α increases towards infinity, the HPI will tend towards the value of the dimension in which deprivation is greatest (for Bolivia, the example used to calculate the HPI-1, would be 15.5, equal to the probability at birth of not surviving to age 40).

In this Report the value 3 is used to give additional but not overwhelming weight to areas of more acute deprivation. For a detailed analysis of the HPI's mathematical formulation, see Sudhir Anand and Amartya Sen's "Concepts of Human Development and Poverty: A Multidimensional Perspective" and the technical note in *Human Development Report 1997* (see the list of selected readings at the end of this technical note).

The gender-related development index (GDI)

While the HDI measures average achievement, the GDI adjusts the average achievement to reflect the *inequalities* between men and women in the following dimensions:

- A long and healthy life, as measured by life expectancy at birth.
- Knowledge, as measured by the adult literacy rate and the combined primary, secondary and tertiary gross enrolment ratio.
- A decent standard of living, as measured by estimated earned income (PPP US\$).

The calculation of the GDI involves three steps. First, female and male indices in each dimension are calculated according to this general formula:

$$\text{Dimension index} = \frac{\text{actual value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}}$$

Second, the female and male indices in each dimension are combined in a way that penalizes differences in achievement between men and women. The resulting index, referred to as the equally distributed index, is calculated according to this general formula:

$$\begin{aligned} & \text{Equally distributed index} \\ &= \{[\text{female population share} (\text{female index}^{1-\epsilon})] \\ &+ [\text{male population share} (\text{male index}^{1-\epsilon})]\}^{1/(1-\epsilon)} \end{aligned}$$

ϵ measures the aversion to inequality. In the GDI $\epsilon = 2$. Thus the general equation becomes:

$$\begin{aligned} & \text{Equally distributed index} \\ &= \{[\text{female population share} (\text{female index}^{-1})] \\ &+ [\text{male population share} (\text{male index}^{-1})]\}^{-1} \end{aligned}$$

which gives the harmonic mean of the female and male indices.

Third, the GDI is calculated by combining the three equally distributed indices in an unweighted average.

Goalposts for calculating the GDI

Indicator	Maximum value	Minimum value
Female life expectancy at birth (years)	87.5	27.5
Male life expectancy at birth (years)	82.5	22.5
Adult literacy rate (%)	100	0
Combined gross enrolment ratio (%)	100	0
Estimated earned income (PPP US\$)	40,000	100

Note: The maximum and minimum values (goalposts) for life expectancy are 5 years higher for women to take into account their longer life expectancy. To preserve the relationship between female and male values of each indicator, scaled values are computed and used in place of figures where either the female or male value exceeds the threshold (in the case of Adult Literacy a practical threshold value of 99% is used). The scaling is achieved by multiplying the female and male values by the practical threshold value divided by the maximum reported value for either females or males.

Calculating the GDI

This illustration of the calculation of the GDI uses data for Botswana.

1. Calculating the equally distributed life expectancy index

The first step is to calculate separate indices for female and male achievements in life expectancy, using the general formula for dimension indices.

FEMALE	MALE
Life expectancy: 48.4 years	Life expectancy: 47.6 years
Life expectancy index = $\frac{48.4 - 27.5}{87.5 - 27.5} = 0.348$	Life expectancy index = $\frac{47.6 - 22.5}{82.5 - 22.5} = 0.419$

Next, the female and male indices are combined to create the equally distributed life expectancy index, using the general formula for equally distributed indices.

FEMALE	MALE
Population share: 0.504	Population share: 0.496
Life expectancy index: 0.348	Life expectancy index: 0.419
Equally distributed life expectancy index = $\{[0.504 (0.348^{-1})] + [0.496 (0.419^{-1})]\}^{-1} = 0.380$	

2. Calculating the equally distributed education index

First, indices for the adult literacy rate and the combined primary, secondary and tertiary gross enrolment ratio are calculated separately for females and males. Calculating these indices is straightforward, since the indicators used are already normalized between 0 and 100.

FEMALE	MALE
Adult literacy rate: 81.8%	Adult literacy rate: 80.4%
Adult literacy index: 0.818	Adult literacy index: 0.804
Gross enrolment ratio: 70.1%	Gross enrolment ratio: 69.0%
Gross enrolment index: 0.701	Gross enrolment index: 0.690

Second, the education index, which gives two-thirds weight to the adult literacy index and one-third weight to the gross enrolment index, is computed separately for females and males.

$$\begin{aligned} \text{Education index} &= 2/3 (\text{adult literacy index}) + 1/3 (\text{gross enrolment index}) \\ \text{Female education index} &= 2/3 (0.818) + 1/3 (0.701) = 0.779 \\ \text{Male education index} &= 2/3 (0.804) + 1/3 (0.690) = 0.766 \end{aligned}$$

Finally, the female and male education indices are combined to create the equally distributed education index.

FEMALE	MALE
Population share: 0.504	Population share: 0.496
Education index: 0.779	Education index: 0.766
Equally distributed education index = $\{[0.504 (0.779^{-1})] + [0.496 (0.766^{-1})]\}^{-1} = 0.773$	

3. Calculating the equally distributed income index

First, female and male earned income (PPP US\$) are estimated (for details on this calculation, see the addendum to this technical note). Then the income index is calculated for each gender. As with the HDI, income is adjusted by taking the logarithm of estimated earned income (PPP US\$):

$$\begin{aligned} \text{Income index} &= \frac{\log(\text{actual value}) - \log(\text{minimum value})}{\log(\text{maximum value}) - \log(\text{minimum value})} \\ \text{FEMALE} & \quad \text{MALE} \\ \text{Estimated earned income (PPP US$): 5,913} & \quad \text{Estimated earned income (PPP US$): 19,094} \\ \text{Income index} = \frac{\log(5,913) - \log(100)}{\log(40,000) - \log(100)} = 0.681 & \quad \text{Income index} = \frac{\log(19,094) - \log(100)}{\log(40,000) - \log(100)} = 0.877 \end{aligned}$$

Calculating the GDI continues on next page

Calculating the GDI (continued)

Second, the female and male income indices are combined to create the equally distributed income index :

FEMALE	MALE
Population share: 0.504	Population share: 0.496
Income index: 0.681	Income index: 0.877

$$\text{Equally distributed income index} = \{[0.504 (0.681^{-1})] + [0.496 (0.877^{-1})]\}^{-1} = 0.766$$

4. Calculating the GDI

Calculating the GDI is straightforward. It is simply the unweighted average of the three component indices—the equally distributed life expectancy index, the equally distributed education index and the equally distributed income index.

$$\begin{aligned} \text{GDI} &= 1/3 (\text{life expectancy index}) + 1/3 (\text{education index}) + 1/3 (\text{income index}) \\ &= 1/3 (0.380) + 1/3 (0.773) + 1/3 (0.766) = 0.639 \end{aligned}$$

Why $\epsilon = 2$ in calculating the GDI

The value of ϵ is the size of the penalty for gender inequality. The larger the value, the more heavily a society is penalized for having inequalities.

If $\epsilon = 0$, gender inequality is not penalized (in this case the GDI would have the same value as the HDI). As ϵ increases towards infinity, more and more weight is given to the lesser-achieving group.

The value 2 is used in calculating the GDI (as well as the GEM). This value places a moderate penalty on gender inequality in achievement.

For a detailed analysis of the GDI's mathematical formulation, see Sudhir Anand and Amartya Sen's "Gender Inequality in Human Development: Theories and Measurement," Kalpana Bardhan and Stephan Klasen's "UNDP's Gender-Related Indices: A Critical Review" and the technical notes in *Human Development Report 1995* and *Human Development Report 1999* (see the list of selected readings at the end of this technical note).

The gender empowerment measure (GEM)

Focusing on women's opportunities rather than their capabilities, the GEM captures gender inequality in three key areas:

- Political participation and decision-making power, as measured by women's and men's percentage shares of parliamentary seats.
- Economic participation and decision-making power, as measured by two indicators—women's and men's percentage shares of positions as legislators, senior officials and managers and women's and men's percentage shares of professional and technical positions.
- Power over economic resources, as measured by women's and men's estimated earned income (PPP US\$).

For each of these three dimensions, an equally distributed equivalent percentage (EDEP) is calculated, as a population-weighted average, according to the following general formula:

$$\text{EDEP} = \frac{\{[\text{female population share} (\text{female index}^{-\epsilon})] + [\text{male population share} (\text{male index}^{-\epsilon})]^{1/\epsilon}\}^{-1}}{\epsilon}$$

ϵ measures the aversion to inequality. In the GEM (as in the GDI) $\epsilon = 2$, which places a moderate penalty on inequality. The formula is thus:

$$\text{EDEP} = \frac{\{[\text{female population share} (\text{female index}^{-1})] + [\text{male population share} (\text{male index}^{-1})]\}^{-1}}{2}$$

For political and economic participation and decision-making, the EDEP is then indexed by dividing it by 50. The rationale for this indexation is that in an ideal society, with equal empowerment of the sexes, the GEM variables would equal 50%—that is, women's share would equal men's share for each variable.

Where a male or female index value is zero, the EDEP according to the above formula is not defined. However, the limit of EDEP, when the index tends towards zero, is zero. Accordingly, in these cases the value of the EDEP is set to zero.

Finally, the GEM is calculated as a simple average of the three indexed EDEPs.

Calculating the GEM

This illustration of the calculation of the GEM uses data for the Russian Federation.

1. Calculating the EDEP for parliamentary representation

The EDEP for parliamentary representation measures the relative empowerment of women in terms of their political participation. The EDEP is calculated using the female and male shares of the population and female and male percentage shares of parliamentary seats according to the general formula.

FEMALE	MALE
Population share: 0.536	Population share: 0.464
Parliamentary share: 8.0%	Parliamentary share: 92.0%

$$\text{EDEP for parliamentary representation} = \frac{\{[0.536 (8.0^{-1})] + [0.464 (92.0^{-1})]\}^{-1}}{2} = 13.88$$

Then this initial EDEP is indexed to an ideal value of 50%.

$$\text{Indexed EDEP for parliamentary representation} = \frac{13.88}{50} = 0.278$$

2. Calculating the EDEP for economic participation

Using the general formula, an EDEP is calculated for women's and men's percentage shares of positions as legislators, senior officials and managers, and another for women's and men's percentage shares of professional and technical positions. The simple average of the two measures gives the EDEP for economic participation.

FEMALE	MALE
Population share: 0.536	Population share: 0.464
Percentage share of positions as legislators, senior officials and managers: 39.0%	Percentage share of positions as legislators, senior officials and managers: 61.0%
Percentage share of professional and technical positions: 64.7%	Percentage share of professional and technical positions: 35.3%

$$\text{EDEP for positions as legislators, senior officials and managers} = \frac{\{[0.536 (39.0^{-1})] + [0.464 (61.0^{-1})]\}^{-1}}{2} = 46.85$$

$$\text{Indexed EDEP for positions as legislators, senior officials and managers} = \frac{46.85}{50} = 0.937$$

$$\text{EDEP for professional and technical positions} = \frac{\{[0.536 (64.7^{-1})] + [0.464 (35.3^{-1})]\}^{-1}}{2} = 46.67$$

$$\text{Indexed EDEP for professional and technical positions} = \frac{46.67}{50} = 0.933$$

The two indexed EDEPs are averaged to create the EDEP for economic participation:

$$\text{EDEP for economic participation} = \frac{0.937 + 0.933}{2} = 0.935$$

3. Calculating the EDEP for income

Earned income (PPP US\$) is estimated for women and men separately and then indexed to the scaled goalposts as was done for the GDI (for details, see the addendum to this technical note.). For the GEM, however, the income index is based on unadjusted values, not the logarithm of estimated earned income.

FEMALE	MALE
Population share: 0.536	Population share: 0.464
Estimated earned income (PPP US\$): 8,476	Estimated earned income (PPP US\$): 13,581

$$\text{Income index} = \frac{8,476 - 100}{40,000 - 100} = 0.210 \quad \text{Income index} = \frac{13,581 - 100}{40,000 - 100} = 0.338$$

The female and male indices are then combined to create the equally distributed index:

$$\text{EDEP for income} = \frac{\{[0.536 (0.210^{-1})] + [0.464 (0.338^{-1})]\}^{-1}}{2} = 0.255$$

4. Calculating the GEM

Once the EDEP has been calculated for the three dimensions of the GEM, determining the GEM is straightforward. It is a simple average of the three EDEP indices.

$$\text{GEM} = \frac{0.278 + 0.935 + 0.255}{3} = 0.489$$

TECHNICAL NOTE 1 ADDENDUM

Female and male earned income

Despite the importance of having gender-disaggregated data on income, direct measures are unavailable. For this Report crude estimates of female and male earned income have therefore been derived.

Income can be seen in two ways: as a resource for consumption and as earnings by individuals. The use measure is difficult to disaggregate between men and women because they share resources within a family unit. By contrast, earnings are separable because different members of a family tend to have separate earned incomes.

The income measure used in the GDI and the GEM indicates a person's capacity to earn income. It is used in the GDI to capture the disparities between men and women in command over resources and in the GEM to capture women's economic independence. (For conceptual and methodological issues related to this approach, see Sudhir, Anand and Amartya Sen's "Gender Inequality in Human Development" and, in *Human Development Report 1995*, chapter 3 and *Technical notes 1 and 2*; see the list of selected readings at the end of this technical note.)

Female and male earned income (PPP US\$) are estimated using the following data:

- Ratio of the female nonagricultural wage to the male nonagricultural wage.
- Male and female shares of the economically active population.
- Total female and male population.
- GDP per capita (PPP US\$).

Key

W_f/W_m = ratio of female nonagricultural wage to male nonagricultural wage
 EA_f = female share of economically active population
 EA_m = male share of economically active population
 S_f = female share of wage bill
 Y = total GDP (PPP US\$)
 N_f = total female population
 N_m = total male population
 Y_f = estimated female earned income (PPP US\$)
 Y_m = estimated male earned income (PPP US\$)

Note

Because of rounding, calculations carried out by hand may yield results that differ from those printed in the technical notes and indicator tables.

Estimating female and male earned income

This illustration of the estimation of female and male earned income uses 2005 data for Sweden.

1. Calculating total GDP (PPP US\$)

Total GDP (PPP US\$) is calculated by multiplying the total population by GDP per capita (PPP US\$).

Total population: 9,024 (thousand)

GDP per capita (PPP US\$): 32,525

Total GDP (PPP US\$) = 9,024 (32,525) = 293,510,764 (thousand)

2. Calculating the female share of the wage bill

Because data on wages in rural areas and in the informal sector are rare, the Report has used nonagricultural wages and assumed that the ratio of female wages to male wages in the nonagricultural sector applies to the rest of the economy. The female share of the wage bill is calculated using the ratio of the female nonagricultural wage to the male nonagricultural wage and the female and male percentage shares of the economically active population. Where data on the wage ratio are not available, a value of 75% is used.

Ratio of female to male nonagricultural wage (W_f/W_m) = 0.907

Female percentage share of economically active population (EA_f) = 47.4%

Male percentage share of economically active population (EA_m) = 52.6%

$$\text{Female share of wage bill } (S_f) = \frac{W_f/W_m (EA_f)}{[W_f/W_m (EA_f)] + EA_m} = \frac{0.907 (47.4)}{[0.907 (47.4) + 52.6]} = 0.450$$

3. Calculating female and male earned income (PPP US\$)

An assumption has to be made that the female share of the wage bill is equal to the female share of GDP.

Female share of wage bill (S_f) = 0.450

Total GDP (PPP US\$) (Y) = 293,510,764 (thousand)

Female population (N_f) = 4,546 (thousand)

$$\text{Estimated female earned income (PPP US$)} (Y_f) = \frac{S_f (Y)}{N_f} = \frac{0.450 (293,510,764)}{4,546} = 29,044$$

Male population (N_m) = 4,478 (thousand)

$$\text{Estimated male earned income (PPP US$)} (Y_m) = \frac{Y - S_f (Y)}{N_m} = \frac{293,510,764 - [0.450 (293,510,764)]}{4,478} = 36,059$$

Selected readings

- Anand, Sudhir, and Amartya Sen. 1994.** "Human Development Index: Methodology and Measurement". Occasional Paper 12, United Nations Development Programme, Human Development Report Office, New York. (*HDI*)
- , 1995, "Gender Inequality in Human Development Theories and Measurement." Occasional Paper 19, United Nations Development Programme, Human Development Report Office, New York. (*GDI, GEM*)
- , 1997, "Concepts of Human Development and Poverty: A Multi-dimensional Perspective." In United Nations Development Programme, *Human Development Report 1997 Papers: Poverty and Human Development* New York. (*HPI-1, HPI-2*)

- Bardhan, Kalpana, and Stephan Klasen. 1999.** "UNDP's Gender-Related Indices. A Critical Review." *World Development* 27 (6): 985–1010 (*GDI, GEM*)
- United Nations Development Programme. 1995.** *Human Development Report 1995*. New York: Oxford University Press, Technical notes 1 and 2 and chapter 3. (*GDI, GEM*)
- , 1997, *Human Development Report 1997*. New York: Oxford University Press. Technical note 1 and chapter 1. (*HPI-1, HPI-2*)
- , 1999, *Human Development Report 1999*. New York: Oxford University Press. Technical note (*HDI, GDI*)
- Klasen, Stephan. 2006.** "UNDP's Gender-related Measures: Some Conceptual Problems and Possible Solutions." *Journal of Human Development Alternative Economics in Action*, 7 (2): 243 - 274.

Measuring the short and long-term effects of climate-related disasters

Human development is about expanding freedoms and capabilities. Yet, as explained in chapter 2, this process can be derailed by climate-related disasters. Besides their immediate costs in terms of lives lost and livelihoods disrupted, climate-related shocks carry substantial intrinsic costs that are likely to follow people throughout their lives, locking them into low human development traps. Climate change promises to raise these stakes for billions of vulnerable people.

To capture the extent of the threat to human development that is embedded in climate-related shocks, the short and long-term effects of being born in a disaster-affected area were measured. More specifically, some critical determinants of human development outcomes were examined for children under five years of age and adult women between the ages of 15 and 30, and those who were affected by a disaster were compared with those who were not.

Data

Data for the research were derived from Demographic and Health Surveys (DHS) and the international disasters database EM-DAT maintained by the University of Louvain.

Demographic and Health Surveys (DHS)

The DHS are household and community surveys administered by Macro International and partly financed by the United States Agency for International Development (USAID). These surveys collect information on a wide range of socio-economic variables at individual, household and community levels, and are usually conducted every five years to allow comparisons over time. DHS generally consist of a sample of 5,000–30,000 households but are not longitudinal in design. The survey

design is representative at national, urban and rural levels.

Although their primary focus is on women aged 15–49, DHS also collect information on demographic indicators for all members of the household. For children under five years of age, these surveys also collect such monitoring and impact evaluation variables as health and nutrition indicators.

International disasters database EM-DAT

The EM-DAT is an international disasters database that presents core data on the occurrence of disasters worldwide from 1900 to the present. Disasters in EM-DAT are defined as: “a situation or event which overwhelms local capacity, necessitating a request to the national or international level for external assistance, or is recognized as such by a multilateral agency or at least by two sources, such as national, regional or international assistance groups and the media”. For a disaster to be recorded in the database, it has to meet one or more of the following criteria:

- 10 or more people are killed;
- 100 people or more are reported affected;
- A state of emergency is declared;
- An international call for assistance is issued.

A key feature of this database is that it records both the date of occurrence of a disaster—relatively recent ones—its location, and the extent of its severity through the number of people affected, the number of casualties and the financial damage.¹

Country selection criteria

For the purposes of this study, only countries where over 1,000,000 people were reported affected by a disaster were selected. For children

under the age of five countries that had a DHS with a geographic positioning system (GPS) module two to three years following a disaster were selected. The selection of countries with GPS modules was necessary, especially for countries where some administrative districts were more affected than others. For adult women selection was limited to major disasters that had occurred during the 1970s and 1980s; with the requirement that the disaster in question occurred at least 15 years prior to the first DHS. See table for country coverage and sample characteristics.

Methodology

This approach borrows from impact evaluation techniques widely used in the social sciences. For children under the age of five, the outcome indicators used were: stunting (low height for age), wasting (low weight for height) and malnourishment (low weight for age). For adult women 15–30, the outcome indicator was educational outcome. In the absence of longitudinal data, a set of synthetic before and after cohorts were constructed and their outcomes compared using logit regressions with a difference-in-difference approach, controlling for individual, household and community characteristics.

To construct the cohorts, children and adult women in DHS were identified and their birth dates tracked. The subject's birth date and birth location were then crosschecked against the occurrence of a natural disaster as indicated in EM-DAT. The following groups were identified:

- Subjects born before a disaster in an area that was subsequently affected (born before, affected—group 1, affected).
- Subjects born before a disaster in an area that was not subsequently affected (born before, not affected—group 1, not affected).
- Subjects born during a disaster in an area that was affected (born during, affected—group 2, affected).

- Subjects born during a disaster in an area that was not affected (born during, not affected—group 2, not affected).

Using these different groups, the following model was estimated:

$$\hat{\phi} = \frac{1}{N} \sum_{i=1}^n [(y_{i2}^a - y_{i1}^a) - (y_{i2}^{na} - y_{i1}^{na})] \text{ where } y_i \text{ is the outcome in question for the } i^{\text{th}} \text{ person.}^2$$

At each step, a set of control variables were used to identify the effects of specific characteristics on children's nutritional outcomes. These included individual variables (the sex of the child, birth intervals and such maternal characteristics as mother's age and education) and community-level variables (e.g., urban/rural location). A regression analysis was then conducted to isolate the specific risks associated with being affected by a disaster.

For adults, if it is assumed that disasters are a deterministic process, then virtually every indicator including household socio-economic characteristics is determined by early exposure to a disaster, and is therefore endogenous. As a result, only variables that can reasonably be assumed exogenous, such as religion, were included.

Most of the results are shown and discussed in chapter 2 and in Fuentes and Seck 2007.

Notes

- 1 Guha-Sapir et al. 2004
- 2 Cameron and Trivedi 2005

Table	Country coverage and sample characteristics				
Country	Year of survey	Sample size	Stunted (%)	Malnourished (%)	Wasted (%)
Children					
Ethiopia	2005	9,861	43.4	37.8	11.1
Kenya	2003	5,949	32.5	20.2	6.7
Niger	1992	6,899	38.2	38.9	14.5
Adults					
Country	Year of survey	Sample size	No education (%)	At least primary education (%)	At least secondary education (%)
India	1998	90,303	35.3	50.5	33.6

Definitions of statistical terms

Antimalarial measures, fevers treated with anti-malarial drugs The percentage of children under age five who were ill with fever in the two weeks before the survey and received antimalarial drugs.

Antimalarial measures, use of insecticide treated bednets The percentage of children under age five sleeping under insecticide treated bednets.

Armed forces, total 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.

Arms transfers, conventional Refers to the voluntary transfer by the supplier (and thus excludes captured weapons and weapons obtained through defectors) of weapons with a military purpose destined for the armed forces, paramilitary forces or intelligence agencies of another country. These include major conventional weapons or systems in six categories: ships, aircraft, missiles, artillery, armoured vehicles and guidance and radar systems (excluded are trucks, services, ammunition, small arms, support items, components and component technology and towed or naval artillery under 100-millimetre calibre).

Births attended by skilled health personnel The percentage of deliveries attended by personnel (including doctors, nurses and midwives) trained to give the necessary care, supervision and advice to women during pregnancy, labour and the post-partum period; to conduct deliveries on their own; and to care for newborns. Traditional birth attendants, trained or not, are not included in this category.

Birthweight, infants with low The percentage of infants with a birthweight of less than 2,500 grams.

Carbon dioxide emissions Anthropogenic (human originated) carbon dioxide emissions stemming from the burning of fossil fuels, gas flaring and the production of cement. Emissions are calculated from data on the consumption of solid, liquid and gaseous fuels; gas flaring; and the production of cement. Carbon dioxide can also be emitted by forest biomass through depletion of forest areas.

Carbon intensity of energy refers to the amount of carbon dioxide (CO₂) generated for every unit of energy used. It is the ratio of emitted CO₂ to energy use.

Carbon intensity of growth also known as the carbon intensity of the economy, refers to the amount of carbon dioxide generated by every dollar of growth in the world economy. It is the ratio of emitted CO₂ to GDP (in PPP terms).

Cellular subscribers Subscribers to an automatic public mobile telephone service that provides access to the public switched telephone network using cellular technology. Systems can be analogue or digital.

Children reaching grade 5 The percentage of children starting primary school who eventually attain grade 5. The estimates are based on the reconstructed cohort student flow method, which uses data on enrolment and repeaters for two consecutive school years in order to estimate the survival rates to successive grades of primary school.

Children under age five with diarrhoea receiving oral rehydration and continued feeding The percentage of children (aged 0–4) with diarrhoea in the two weeks preceding the survey who received either oral rehydration therapy (oral rehydration solutions or recommended homemade fluids) or increased fluids and continued feeding.

Condom use at last high-risk sex The percentage of men and women who have had sex with a nonmarital, noncohabiting partner in the last 12 months and who say they used a condom the last time they did so.

Consumer price index, average annual change in Reflects changes in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or may change at specified intervals.

Contraceptive prevalence rate The percentage of women of reproductive age (15–49 years) who are using, or whose partners are using, any form of contraception, whether modern or traditional.

Contributing family worker Defined according to the 1993 International Classification by Status in Employment (ICSE) as a person who works without pay in an economic enterprise operated by a related person living in the same household.

Debt service, total The sum of principal repayments and interest actually paid in foreign currency, goods or services on long-term debt (having a maturity of more than one year), interest paid on short-term debt and repayments to the International Monetary Fund.

Earned income (PPP US\$), estimated Derived on the basis of the ratio of the female nonagricultural wage to the male nonagricultural wage, the female and male shares of the economically active population, total female and male population and GDP per capita (in purchasing power parity terms in US dollars; see *PPP*). For details of this estimation, see *Technical note 1*.

Earned income, ratio of estimated female to male The ratio of estimated female earned income to estimated male earned income. See *Earned income (PPP US\$), estimated*.

Education expenditure, current public Spending on goods and services that are consumed within the current year and that would need to be renewed the following year, including such expenditures as staff salaries and benefits, contracted or purchased services, books and teaching materials, welfare services, furniture and equipment, minor repairs, fuel, insurance, rents, telecommunications and travel.

Education expenditure, public Includes both capital expenditures (spending on construction, renovation, major repairs and purchases of heavy equipment or vehicles) and current expenditures. See *Education expenditure, current public*.

Education index One of the three indices on which the human development index is built. It is based on the adult literacy rate and the combined gross enrolment ratio for primary, secondary and tertiary schools. See *Literacy rate, adult*, and *enrolment ratio, gross combined, for primary, secondary and tertiary schools*. For details on how the index is calculated, see *Technical note 1*.

Education levels Categorized as pre-primary, primary, secondary, post-secondary and tertiary in accordance with the International Standard Classification of Education (ISCED). *Pre-primary education* (ISCED level 0) is the initial stage of organized instruction, designed primarily to introduce very young children to a school-type environment and to provide a bridge between home and school. *Primary education* (ISCED level 1) provides a sound basic education in reading, writing and mathematics along with an elementary understanding of other subjects such as history, geography, natural and social science, art, music and religion. *Secondary education* (ISCED levels 2 and 3) is generally designed to continue the basic programmes of the primary level but the instruction is typically more subject-focused, requiring more specialized teachers for each subject area. *Post-secondary (non-tertiary) education* (ISCED level 4) includes programmes which lie between upper secondary (ISCED 3) and tertiary education (ISCED 5 and 6) in an international context though typically are clearly within one or other level in the national context in different countries. ISCED 4 programmes are usually not significantly more advanced than ISCED 3 programmes but they serve to broaden the knowledge of students who have already completed an upper secondary programme. *Tertiary education* (ISCED levels 5 and 6) refers to programmes with an educational content

that is more advanced than upper secondary or post-secondary education. The first stage of tertiary education (ISCED 5) is composed both of programmes of a theoretical nature (ISCED 5A) intended to provide access to advanced research programmes and professions with high skill requirements as well as programmes of a more practical, technical or occupationally specific nature (ISCED 5B). The second stage of tertiary education (ISCED 6) comprises programmes devoted to advanced study and original research, leading to the award of an advanced research qualification such as a doctorate.

Energy supply, primary refers to the supply of energy extracted or captured directly from natural resources such as crude oil, hard coal, natural gas, or are produced from primary commodities. Primary energy commodities may also be divided into fuels of fossil origin and renewable energy commodities. See *fossil fuels and renewable energy*.

Electricity consumption per capita Refers to gross production in per capita terms and includes consumption by station auxiliaries and any losses in transformers that are considered integral parts of the station. Also included is total electric energy produced by pumping installations without deduction of electric energy absorbed by pumping.

Electricity, people without access refers to the lack of access to electricity at the household level; that is the number of people who do not have electricity in their home. Access to electricity is comprised of electricity sold commercially, both on-grid and off-grid. It also includes self-generated electricity in those countries where access to electricity has been assessed through surveys by national administrations. This data does not capture unauthorised connections.

Electrification rates indicate the number of people with electricity access as a percentage of the total population.

Employment by economic activity Employment in industry, agriculture or services as defined according to the International Standard Industrial Classification (ISIC) system (revisions 2 and 3). *Industry* refers to mining and quarrying, manufacturing, construction and public utilities (gas, water and electricity). *Agriculture* refers to activities in agriculture, hunting, forestry and fishing. *Services* refer to wholesale and retail trade; restaurants and hotels; transport, storage and communications; finance, insurance, real estate and business services; and community, social and personal services.

Energy use, GDP per unit of The ratio of GDP (in 2000 PPP US\$) to commercial energy use, measured in kilograms of oil equivalent. This indicator provides a measure of energy efficiency by showing comparable and consistent estimates of real GDP across countries relative to physical inputs (units of energy use). See *GDP (gross domestic product)* and *PPP (purchasing power parity)*. Differences in this ratio over time and across countries partly reflect structural changes in the economy, changes in energy efficiency of particular sectors, and differences in fuel mixes.

Enrolment ratio, gross The total number of pupils or students enrolled in a given level of education, regardless of age, expressed as a percentage of the population in the theoretical age group for the same level of education. For the tertiary level, the population used is the five-year age group following on from the secondary school leaving age. Gross enrolment ratios in excess of 100% indicate that there are pupils or students outside the theoretical age group who are enrolled in that level of education. See *Education levels*.

Enrolment ratio, gross combined, for primary, secondary and tertiary schools The number of students enrolled in primary, secondary and tertiary levels of education, regardless of age, as a percentage of the population of theoretical school age for the three levels. See *Education levels* and *Enrolment ratio, gross*.

Enrolment rate, net The number of pupils of the theoretical school-age group for a given level of education level who are enrolled in that level, expressed as a percentage of the total population in that age group. See *Education levels*.

Exports, high-technology Exports of products with a high intensity of research and development. They include high-technology products such as those used in aerospace, computers, pharmaceuticals, scientific instruments and electrical machinery.

Exports, manufactured Defined according to the Standard International Trade Classification to include exports of chemicals, basic manufactures, machinery and transport equipment and other miscellaneous manufactured goods.

Exports of goods and services The value of all goods and other market services provided to the rest of the world. Included is the value of merchandise, freight, insurance, transport, travel, royalties, licence fees and other services, such as communication, construction, financial, information, business, personal and government services. Excluded are labour and property income and transfer payments.

Exports, primary Defined according to the Standard International Trade Classification to include exports of food, agricultural raw materials, fuels and ores and metals.

Fertility rate, total The number of children that would be born to each woman if she were to live to the end of her child-bearing years and bear children at each age in accordance with prevailing age-specific fertility rates in a given year/period, for a given country, territory or geographical area.

Foreign direct investment, net inflows of Net inflows of investment to acquire a lasting management interest (10% or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital and short-term capital.

Forest area is land under natural or planted stands of trees, whether productive or not.

Fossil fuels are fuels taken from natural resources which were formed from biomass in the geological past. The main fossil fuels are coal, oil and natural gas. By extension, the term fossil is also applied to any secondary fuel manufactured from a fossil fuel. Fossil Fuels belong to the primary energy commodities group.

GDP (gross domestic product) The sum of value added by all resident producers in the economy plus any product taxes (less subsidies) not included in the valuation of output. It is calculated without making deductions for depreciation of fabricated capital assets or for depletion and degradation of natural resources. Value added is the net output of an industry after adding up all outputs and subtracting intermediate inputs.

GDP (US\$) Gross domestic product converted to US dollars using the average official exchange rate reported by the International Monetary Fund. An alternative conversion factor is applied if the official exchange rate is judged to diverge by an exceptionally large margin from the rate effectively applied to transactions in foreign currencies and traded products. See *GDP (gross domestic product)*.

GDP index One of the three indices on which the human development index is built. It is based on gross domestic product per capita (in purchasing power parity terms in US dollars; see *PPP*). For details on how the index is calculated, see *Technical note 1*.

GDP per capita (PPP US\$) Gross domestic product (in purchasing power parity terms in US dollars) divided by midyear population. See *GDP (gross domestic product)*, *PPP (purchasing power parity)* and *Population, total*.

GDP per capita (US\$) Gross domestic product in US dollar terms divided by midyear population. See *GDP (US\$)* and *Population, total*.

GDP per capita annual growth rate Least squares annual growth rate, calculated from constant price GDP per capita in local currency units.

Gender empowerment measure (GEM) A composite index measuring gender inequality in three basic dimensions of empowerment—economic participation and decision-making, political participation, and decision-making and power over economic resources. For details on how the index is calculated, see *Technical note 1*.

Gender-related development index (GDI) A composite index measuring average achievement in the three basic dimensions captured in the human development index—a long and healthy life, knowledge and a decent standard of living—adjusted to account for inequalities between men and women. For details on how the index is calculated, see *Technical note 1*.

Gini index Measures the extent to which the distribution of income (or consumption) among individuals or households within a country deviates from a perfectly equal distribution. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest

individual or household. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. A value of 0 represents absolute equality, a value of 100 absolute inequality.

GNI (gross national income) The sum of value added by all resident producers in the economy plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad. Value added is the net output of an industry after adding up all outputs and subtracting intermediate inputs. Data are in current US dollars converted using the *World Bank Atlas* method.

Health expenditure per capita (PPP US\$) The sum of public and private expenditure (in purchasing power parity terms in US dollars), divided by the mid-year population. Health expenditure includes the provision of health services (preventive and curative), family planning activities, nutrition activities and emergency aid designated for health, but excludes the provision of water and sanitation. See *Health expenditure, private*; *Health expenditure, public*; *Population, total*; and *PPP (purchasing power parity)*.

Health expenditure, private Direct household (out of pocket) spending, private insurance, spending by non-profit institutions serving households and direct service payments by private corporations. Together with public health expenditure, it makes up total health expenditure. See *Health expenditure per capita (PPP US\$)* and *Health expenditure, public*.

Health expenditure, public Current and capital spending from government (central and local) budgets, external borrowings and grants (including donations from international agencies and nongovernmental organizations) and social (or compulsory) health insurance funds. Together with private health expenditure, it makes up total health expenditure. See *Health expenditure per capita (PPP US\$)* and *Health expenditure, private*.

HIV prevalence The percentage of people aged 15–49 years who are infected with HIV.

Human development index (HDI) A composite index measuring average achievement in three basic dimensions of human development—a long and healthy life, knowledge and a decent standard of living. For details on how the index is calculated, see *Technical note 1*.

Human poverty index for developing countries (HPI-1) A composite index measuring deprivations in the three basic dimensions captured in the human development index—a long and healthy life, knowledge and a decent standard of living. For details on how the index is calculated, see *Technical note 1*.

Human poverty index for selected high-income OECD countries (HPI-2) A composite index measuring deprivations in the three basic dimensions captured in the human development index—a long and healthy life, knowledge and a decent standard of living—and

also capturing social exclusion. For details on how the index is calculated, see *Technical note 1*.

Homicide, intentional Death deliberately inflicted on a person by another person, including infanticide.

Illiteracy rate, adult Calculated as 100 minus the adult literacy rate. See *Literacy rate, adult*.

Immunization, one-year-olds fully immunized against measles or tuberculosis One-year-olds injected with an antigen or a serum containing specific antibodies against measles or tuberculosis.

Imports of goods and services The value of all goods and other market services received from the rest of the world. Included is the value of merchandise, freight, insurance, transport, travel, royalties, licence fees and other services, such as communication, construction, financial, information, business, personal and government services. Excluded are labour and property income and transfer payments.

Income poverty line, population below The percentage of the population living below the specified poverty line:

- US\$1 a day—at 1985 international prices (equivalent to US\$1.08 at 1993 international prices), adjusted for purchasing power parity.
- US\$2 a day—at 1985 international prices (equivalent to US\$2.15 at 1993 international prices), adjusted for purchasing power parity.
- US\$4 a day—at 1990 international prices, adjusted for purchasing power parity.
- US\$11 a day (per person for a family of three)—at 1994 international prices, adjusted for purchasing power parity.
- National poverty line—the poverty line deemed appropriate for a country by its authorities. National estimates are based on population-weighted subgroup estimates from household surveys.
- 50% of median income—50% of the median adjusted disposable household income. See *PPP (purchasing power parity)*.

Income or consumption, shares of The shares of income or consumption accruing to subgroups of population indicated by deciles or quintiles, based on national household surveys covering various years. Consumption surveys produce results showing lower levels of inequality between poor and rich than do income surveys, as poor people generally consume a greater share of their income. Because data come from surveys covering different years and using different methodologies, comparisons between countries must be made with caution.

Infant mortality rate See *Mortality rate, infant*.

Informal sector The informal sector, as defined by the International Expert Group on Informal Sector

Statistics (the Delhi Group) includes private unincorporated enterprises (excluding quasi-corporations), which produce at least some of their goods and services for sale or barter, have less than five paid employees, are not registered, and are engaged in nonagricultural activities (including professional or technical activities). Paid domestic employees are excluded from this category.

Informal sector, employment in, as a percentage of nonagricultural employment Refers to the ratio of total employment in the informal sector to total employment in all nonagricultural sectors. See *Informal sector*.

Internally displaced people People or groups of people who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized state border.

Internet users People with access to the worldwide network.

Labour force All people employed (including people above a specified age who, during the reference period, were in paid employment, at work, self-employed or with a job but not at work) and unemployed (including people above a specified age who, during the reference period, were without work, currently available for work and actively seeking work).

Labour force participation rate A measure of the proportion of a country's working-age population that engages actively in the labour market, either by working or actively looking for work. It is calculated by expressing the number of persons in the labour force as a percentage of the working-age population. The working-age population is the population above 15 years of age (as used in this Report). See *Labour force*.

Labour force participation rate, female The number of women in the labour force expressed as a percentage of the female working-age population. See *Labour force participation rate* and *Labour force*.

Legislators, senior officials and managers, female Women's share of positions defined according to the International Standard Classification of Occupations (ISCO-88) to include legislators, senior government officials, traditional chiefs and heads of villages, senior officials of special-interest organizations, corporate managers, directors and chief executives, production and operations department managers and other department and general managers.

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

Life expectancy index One of the three indices on which the human development index is built. For details on how the index is calculated, see *Technical note 1*.

Literacy rate, adult The proportion of the adult population aged 15 years and older which is literate, expressed as a percentage of the corresponding population, total or for a given sex, in a given country, territory, or geographic area, at a specific point in time, usually mid-year. For statistical purposes, a person is literate who can, with understanding, both read and write a short simple statement on his/her everyday life.

Literacy rate, youth The percentage of people aged 15–24 years who can, with understanding, both read and write a short, simple statement related to their everyday life, see *Literacy rate, adult*.

Literacy skills, functional, people lacking The share of the population aged 16–65 years scoring at level 1 on the prose literacy scale of the International Adult Literacy Survey. Most tasks at this level require the reader to locate a piece of information in the text that is identical to or synonymous with the information given in the directive.

Market activities See *Time use, market activities*.

Medium-variant projection Population projections by the United Nations Population Division assuming medium-fertility path, normal mortality and normal international migration. Each assumption implies projected trends in fertility, mortality and net migration levels, depending on the specific demographic characteristics and relevant policies of each country or group of countries. In addition, for the countries highly affected by the HIV/AIDS epidemic, the impact of HIV/AIDS is included in the projection. The United Nations Population Division also publishes low- and high-variant projections. For more information, see <http://esa.un.org/unpp/assumptions.html>.

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.

Mortality rate, infant The probability of dying between birth and exactly one year of age, expressed per 1,000 live births.

Mortality rate, under-five The probability of dying between birth and exactly five years of age, expressed per 1,000 live births.

Mortality ratio, maternal The quotient between the number of maternal deaths in a given year and the number of live births in that same year, expressed per 100,000 live births, for a given country, territory, or geographic area. Maternal death is defined as the death of a woman while pregnant or within the 42 days after termination of that pregnancy, regardless of the length and site of the pregnancy, due to any cause related to or aggravated by the pregnancy itself or its care, but not due to accidental or incidental causes.

Mortality ratio, maternal adjusted Maternal mortality ratio adjusted to account for well-documented

problems of under reporting and misclassification of maternal deaths, as well as estimates for countries with no data. See *Mortality ratio, maternal*.

Mortality ratio, maternal reported Maternal mortality ratio as reported by national authorities. See *Mortality ratio, maternal*.

Nonmarket activities See *Time use, nonmarket activities*.

Official aid Grants or loans that meet the same standards as for official development assistance (ODA) except that recipient countries do not qualify as recipients of ODA. These countries are identified in part II of the Development Assistance Committee (DAC) list of recipient countries, which includes more advanced countries of Central and Eastern Europe, the countries of the former Soviet Union and certain advanced developing countries and territories. See *Official development assistance (ODA), net*.

Official development assistance (ODA), net Disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the Development Assistance Committee (DAC), by multilateral institutions and by non-DAC countries to promote economic development and welfare in countries and territories in part I of the DAC list of aid recipients. It includes loans with a grant element of at least 25% (calculated at a discount rate of 10%).

Official development assistance (ODA), per capita of donor country Official development assistance granted by a specific country divided by the country's total population. See *Official development assistance (ODA), net* and *population, total*.

Official development assistance (ODA) to basic social services ODA directed to basic social services, which include basic education (primary education, early childhood education and basic life skills for youth and adults), basic health (including basic health care, basic health infrastructure, basic nutrition, infectious disease control, health education and health personnel development) and population policies and programmes and reproductive health (population policy and administrative management; reproductive health care; family planning; control of sexually transmitted diseases, including HIV/AIDS; and personnel development for population and reproductive health). Aid to water supply and sanitation is included only if it has a poverty focus.

Official development assistance (ODA) to least developed countries See *Official development assistance (ODA), net* and country classifications for least developed countries.

Official development assistance (ODA), untied Bilateral ODA for which the associated goods and services may be fully and freely procured in substantially all countries and that is given by one country to another.

Patents granted to residents Refer to documents issued by a government office that describe an inven-

tion and create a legal situation in which the patented invention can normally be exploited (made, used, sold, imported) only by or with the authorization of the patentee. The protection of inventions is generally limited to 20 years from the filing date of the application for the grant of a patent.

Physicians Includes graduates of a faculty or school of medicine who are working in any medical field (including teaching, research and practice).

Population growth rate, annual Refers to the average annual exponential growth rate for the period indicated. See *Population, total*.

Population, total Refers to the de facto population in a country, area or region as of 1 July of the year indicated.

Population, urban Refers to the de facto population living in areas classified as urban according to the criteria used by each area or country. Data refer to 1 July of the year indicated. See *Population, total*.

PPP (purchasing power parity) A rate of exchange that accounts for price differences across countries, allowing international comparisons of real output and incomes. At the PPP US\$ rate (as used in this Report), PPP US\$1 has the same purchasing power in the domestic economy as US\$1 has in the United States.

Private flows, other A category combining non-debt-creating portfolio equity investment flows (the sum of country funds, depository receipts and direct purchases of shares by foreign investors), portfolio debt flows (bond issues purchased by foreign investors) and bank and trade-related lending (commercial bank lending and other commercial credits).

Probability at birth of not surviving to a specified age Calculated as 100 minus the probability (expressed as a percentage) of surviving to a specified age for a given cohort. See *Probability at birth of surviving to a specified age*.

Probability at birth of surviving to a specified age The probability of a newborn infant surviving to a specified age if subject to prevailing patterns of age-specific mortality rates, expressed as a percentage.

Professional and technical workers, female Women's share of positions defined according to the International Standard Classification of Occupations (ISCO-88) to include physical, mathematical and engineering science professionals (and associate professionals), life science and health professionals (and associate professionals), teaching professionals (and associate professionals) and other professionals and associate professionals.

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. *Country of asylum* is the country in which a refugee has filed a claim of asylum but has not

yet received a decision or is otherwise registered as an asylum seeker. *Country of origin* refers to the claimant's nationality or country of citizenship.

Renewable energy Energy derived from natural processes that are constantly replenished. Among the forms of renewable energy are deriving directly or indirectly from the sun, or from heat generated deep within the earth. Renewable energy includes energy generated from solar, wind, biomass, geothermal, hydropower and ocean resources and some waste. Renewable energy commodities belong to the primary energy commodities group.

Research and development (R&D) expenditures Current and capital expenditures (including overhead) on creative, systematic activity intended to increase the stock of knowledge. Included are fundamental and applied research and experimental development work leading to new devices, products or processes.

Researchers in R&D People trained to work in any field of science who are engaged in professional research and development activity. Most such jobs require the completion of tertiary education.

Royalties and licence fees, receipts of Receipts by residents from nonresidents for the authorized use of intangible, nonproduced, nonfinancial assets and proprietary rights (such as patents, trademarks, copyrights, franchises and industrial processes) and for the use, through licensing agreements, of produced originals of prototypes (such as films and manuscripts). Data are based on the balance of payments.

Sanitation facilities, improved, population using The percentage of the population with access to adequate excreta disposal facilities, such as a connection to a sewer or septic tank system, a pour-flush latrine, a simple pit latrine or a ventilated improved pit latrine. An excreta disposal system is considered adequate if it is private or shared (but not public) and if it can effectively prevent human, animal and insect contact with excreta.

Science, maths and engineering, tertiary students in The share of tertiary students enrolled in natural sciences; engineering; mathematics and computer sciences; architecture and town planning; transport and communications; trade, craft and industrial programmes; and agriculture, forestry and fisheries. See *Education levels*.

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

Smoking, prevalence among adults of The percentage of men and women who smoke cigarettes.

Telephone mainlines Telephone lines connecting a customer's equipment to the public switched telephone network.

Terms of trade The ratio of the export price index to the import price index measured relative to a base year. A value of more than 100 means that the price of exports has risen relative to the price of imports.

Time use, market activities Time spent on activities such as employment in establishments, primary production not in establishments, services for income and other production of goods not in establishments as defined according to the 1993 revised UN System of National Accounts. See *Time use, nonmarket activities* and *Time use, work time, total*.

Time use, nonmarket activities Time spent on activities such as household maintenance (cleaning, laundry and meal preparation and cleanup), management and shopping for own household; care for children, the sick, the elderly and the disabled in own household; and community services, as defined according to the 1993 revised UN System of National Accounts. See *Time use, market activities* and *Time use, work time, total*.

Time use, work time, total Time spent on market and nonmarket activities as defined according to the 1993 revised UN System of National Accounts. See *Time use, market activities* and *Time use, nonmarket activities*.

Treaties, ratification of After signing a treaty, a country must ratify it, often with the approval of its legislature. Such process implies not only an expression of interest as indicated by the signature, but also the transformation of the treaty's principles and obligations into national law.

Tuberculosis cases, prevalence The total number of tuberculosis cases reported to the World Health Organization. A tuberculosis case is defined as a patient in whom tuberculosis has been bacteriologically confirmed or diagnosed by a clinician.

Tuberculosis cases cured under DOTS The percentage of estimated new infectious tuberculosis cases cured under DOTS, the internationally recommended tuberculosis control strategy.

Tuberculosis cases detected under DOTS The percentage of estimated new infectious tuberculosis cases detected (diagnosed in a given period) under DOTS, the internationally recommended tuberculosis control strategy.

Under-five mortality rate See *Mortality rate, under-five*.

Under height for age, children under age five Includes moderate stunting (defined as between two and three standard deviations below the median height-for-age of the reference population), and severe stunting (defined as more than three standard deviations below the median height-for-age of the reference population).

Underweight for age, children under age five Includes moderate underweight (defined as between two and three standard deviations below the median weight-for-age of the reference population), and severe underweight (defined as more than three standard deviations below the median weight-for-age of the reference population).

Undernourished people People whose food intake is chronically insufficient to meet their minimum energy requirements.

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

Unemployment, long-term Unemployment lasting 12 months or longer. See *Unemployment*.

Unemployment rate The unemployed divided by the labour force (those employed plus the unemployed). See *Unemployment* and *Labour force*.

Unemployment rate, youth Refers to the unemployment rate between the ages of 15 or 16 and 24, depending on the national definition. See *Unemployment* and *Unemployment rate*.

Water source, improved, population not using Calculated as 100 minus the percentage of the population using an improved water source. Unimproved sources include vendors, bottled water, tanker trucks

and unprotected wells and springs. See *Water source, improved, population using*.

Water source, improved, population using The share of the population with reasonable access to any of the following types of water supply for drinking: household connections, public standpipes, boreholes, protected dug wells, protected springs and rainwater collection. *Reasonable access* is defined as the availability of at least 20 litres a person per day from a source within one kilometre of the user's dwelling.

Women in government at ministerial level Includes deputy prime ministers and ministers. Prime ministers were included when they held ministerial portfolios. Vice-presidents and heads of ministerial-level departments or agencies were also included when exercising a ministerial function in the government structure.

Work time, total See *Time use, work time, total*.

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Classification of countries

Countries in the human development aggregates

High human development

(HDI 0.800 and above)

Albania	Poland
Antigua and Barbuda	Portugal
Argentina	Qatar
Australia	Romania
Austria	Russian Federation
Bahamas	Saint Kitts and Nevis
Bahrain	Saudi Arabia
Barbados	Seychelles
Belarus	Singapore
Belgium	Slovakia
Bosnia and Herzegovina	Slovenia
Brazil	Spain
Brunei Darussalam	Sweden
Bulgaria	Switzerland
Canada	Tonga
Chile	Trinidad and Tobago
Costa Rica	United Arab Emirates
Croatia	United Kingdom
Cuba	United States
Cyprus	Uruguay
Czech Republic	(70 countries or areas)
Denmark	
Estonia	
Finland	
France	
Germany	
Greece	
Hong Kong, China (SAR)	
Hungary	
Iceland	
Ireland	
Israel	
Italy	
Japan	
Korea (Republic of)	
Kuwait	
Latvia	
Libyan Arab Jamahiriya	
Lithuania	
Luxembourg	
Macedonia (TFYR)	
Malaysia	
Malta	
Mauritius	
Mexico	
Netherlands	
New Zealand	
Norway	
Oman	
Panama	

Medium human development

(HDI 0.500–0.799)

Algeria	Myanmar
Armenia	Namibia
Azerbaijan	Nepal
Bangladesh	Nicaragua
Belize	Occupied Palestinian Territories
Bhutan	Pakistan
Bolivia	Papua New Guinea
Botswana	Paraguay
Cambodia	Peru
Cameroon	Philippines
Cape Verde	Saint Lucia
China	Saint Vincent and the Grenadines
Colombia	Samoa
Comoros	Sao Tome and Principe
Congo	Solomon Islands
Djibouti	South Africa
Dominica	Sri Lanka
Dominican Republic	Sudan
Ecuador	Suriname
Egypt	Swaziland
El Salvador	Syrian Arab Republic
Equatorial Guinea	Tajikistan
Fiji	Thailand
Gabon	Timor-Leste
Gambia	Togo
Georgia	Tunisia
Ghana	Turkey
Grenada	Turkmenistan
Guatemala	Uganda
Guyana	Ukraine
Haiti	Uzbekistan
Honduras	Vanuatu
India	Venezuela (Bolivarian Republic of)
Indonesia	Viet Nam
Iran (Islamic Republic of)	Yemen
Jamaica	Zimbabwe
Jordan	(85 countries or areas)
Kazakhstan	
Kenya	
Kyrgyzstan	
Lao People's Democratic Republic	
Lebanon	
Lesotho	
Madagascar	
Maldives	
Mauritania	
Moldova	
Mongolia	
Morocco	

Low human development

(HDI below 0.500)

Angola
Benin
Burkina Faso
Burundi
Central African Republic
Chad
Congo (Democratic Republic of the)
Côte d'Ivoire
Eritrea
Ethiopia
Guinea
Guinea-Bissau
Malawi
Mali
Mozambique
Niger
Nigeria
Rwanda
Senegal
Sierra Leone
Tanzania (United Republic of)
Zambia
(22 countries or areas)

Note: The following UN member countries are not included in the human development aggregates because the HDI cannot be computed for them: Afghanistan, Andorra, Iraq, Kiribati, Korea (Democratic People's Republic of), Liberia, Liechtenstein, Marshall Islands, Micronesia (Federated States of), Monaco, Montenegro, Nauru, Palau, San Marino, Serbia, Somalia and Tuvalu.

Countries in the income aggregates

High income

(GNI per capita of US\$10,726 or more in 2005)

Andorra	United Arab Emirates
Antigua and Barbuda	United Kingdom
Aruba	United States
Australia	United States Virgin Islands
Austria	(55 countries or areas)
Bahamas	
Bahrain	
Belgium	
Bermuda	
Brunei Darussalam	
Canada	
Cayman Islands	
Cyprus	
Denmark	
Faeroe Islands	
Finland	
France	
French Polynesia	
Germany	
Greece	
Greenland	
Guam	
Hong Kong, China (SAR)	
Iceland	
Ireland	
Isle of Man	
Israel	
Italy	
Japan	
Korea (Republic of)	
Kuwait	
Liechtenstein	
Luxembourg	
Macao, China (SAR)	
Malta	
Monaco	
Netherlands	
Netherlands Antilles	
New Caledonia	
New Zealand	
Norway	
Portugal	
Puerto Rico	
Qatar	
San Marino	
Saudi Arabia	
Singapore	
Slovenia	
Spain	
Sweden	
Switzerland	

Middle income

(GNI per capita of US\$876–US\$10,725 in 2005)

Albania	Libya Arab Jamahiriya
Algeria	Lithuania
American Samoa	Macedonia (TFYR)
Angola	Malaysia
Argentina	Maldives
Armenia	Marshall Islands
Azerbaijan	Mauritius
Barbados	Mexico
Belarus	Micronesia (Federated States of)
Belize	Moldova
Bolivia	Montenegro
Bosnia and Herzegovina	Morocco
Botswana	Namibia
Brazil	Nicaragua
Bulgaria	Northern Mariana Islands
Cameroon	Occupied Palestinian Territories
Cape Verde	Oman
Chile	Palau
China	Panama
Colombia	Paraguay
Congo	Peru
Costa Rica	Philippines
Croatia	Poland
Cuba	Romania
Czech Republic	Russian Federation
Djibouti	Saint Kitts and Nevis
Dominica	Saint Lucia
Dominican Republic	Saint Vincent and the Grenadines
Ecuador	Samoa
Egypt	Serbia
El Salvador	Seychelles
Equatorial Guinea	Slovakia
Estonia	South Africa
Fiji	Sri Lanka
Gabon	Suriname
Georgia	Swaziland
Grenada	Syrian Arab Republic
Guatemala	Thailand
Guyana	Tonga
Honduras	Tunisia
Hungary	Turkey
Indonesia	Turkmenistan
Iran (Islamic Republic of)	Ukraine
Iraq	Uruguay
Jamaica	Vanuatu
Jordan	Venezuela (Bolivarian Republic of)
Kazakhstan	(97 countries or areas)
Kiribati	
Latvia	
Lebanon	
Lesotho	

Low income

(GNI per capita of US\$875 or less in 2005)

Afghanistan	Uganda
Bangladesh	Uzbekistan
Benin	Viet Nam
Bhutan	Yemen
Burkina Faso	Zambia
Burundi	Zimbabwe
Cambodia	(54 countries or areas)
Central African Republic	
Chad	
Comoros	
Congo (Democratic Republic of the)	
Côte d'Ivoire	
Eritrea	
Ethiopia	
Gambia	
Ghana	
Guinea	
Guinea-Bissau	
Haiti	
India	
Kenya	
Korea (Democratic People's Republic of)	
Kyrgyzstan	
Lao People's Democratic Republic	
Liberia	
Madagascar	
Malawi	
Mali	
Mauritania	
Mongolia	
Mozambique	
Myanmar	
Nepal	
Niger	
Nigeria	
Pakistan	
Papua New Guinea	
Rwanda	
Sao Tome and Principe	
Senegal	
Sierra Leone	
Solomon Islands	
Somalia	
Sudan	
Tajikistan	
Tanzania (United Republic of)	
Timor-Leste	
Togo	

Note: Income aggregates use World Bank classification (effective 1 July 2006) based on gross national income (GNI) per capita. They include the following countries or areas that are not UN member states and therefore not included in the HDI tables: high income - Aruba, Bermuda, Cayman Islands, Faeroe Islands, French Polynesia, Greenland, Guam, Isle of Man, Macao, China (SAR), Netherlands Antilles, New Caledonia, Puerto Rico and United States Virgin Islands; middle income - American Samoa. These countries or areas are included in the aggregates by income level. UN member countries Nauru and Tuvalu are not included because of lack of data.

Countries in the major world aggregates

Developing countries

Afghanistan	Guyana	Paraguay
Algeria	Haiti	Peru
Angola	Honduras	Philippines
Antigua and Barbuda	Hong Kong, China (SAR)	Qatar
Argentina	India	Rwanda
Bahamas	Indonesia	Saint Kitts and Nevis
Bahrain	Iran (Islamic Republic of)	Saint Lucia
Bangladesh	Iraq	Saint Vincent and the Grenadines
Barbados	Jamaica	Samoa
Belize	Jordan	Sao Tome and Principe
Benin	Kenya	Saudi Arabia
Bhutan	Kiribati	Senegal
Bolivia	Korea (Democratic People's Republic of)	Seychelles
Botswana	Korea (Republic of)	Sierra Leone
Brazil	Kuwait	Singapore
Brunei Darussalam	Lao People's Democratic Republic	Solomon Islands
Burkina Faso	Lebanon	Somalia
Burundi	Lesotho	South Africa
Cambodia	Liberia	Sri Lanka
Cameroon	Libya	Sudan
Cape Verde	Madagascar	Suriname
Central African Republic	Malawi	Swaziland
Chad	Malaysia	Syrian Arab Republic
Chile	Maldives	Tanzania (United Republic of)
China	Mali	Thailand
Colombia	Marshall Islands	Timor-Leste
Comoros	Mauritania	Togo
Congo	Mauritius	Tonga
Congo (Dem. Rep. of the)	Mexico	Trinidad and Tobago
Costa Rica	Micronesia (Federated States of)	Tunisia
Côte d'Ivoire	Mongolia	Turkey
Cuba	Morocco	Tuvalu
Cyprus	Mozambique	Uganda
Djibouti	Myanmar	United Arab Emirates
Dominica	Namibia	Uruguay
Dominican Republic	Nauru	Vanuatu
Ecuador	Nepal	Venezuela (Bolivarian Republic of)
Egypt	Nicaragua	Viet Nam
El Salvador	Niger	Yemen
Equatorial Guinea	Nigeria	Zambia
Eritrea	Occupied Palestinian Territories	Zimbabwe
Ethiopia	Oman	(137 countries or areas)
Fiji	Pakistan	Least developed countries^a
Gabon	Palau	Afghanistan
Gambia	Panama	Angola
Ghana	Papua New Guinea	Bangladesh

Central and Eastern Europe and the Commonwealth of Independent States (CIS)

Albania	Iceland
Armenia	Ireland
Azerbaijan	Italy
Belarus	Japan
Bosnia and Herzegovina	Korea (Republic of)
Bulgaria	Luxembourg
Croatia	Mexico
Czech Republic	Netherlands
Estonia	New Zealand
Georgia	Norway
Hungary	Poland
Kazakhstan	Portugal
Kyrgyzstan	Slovakia
Guinea	Spain
Guinea-Bissau	Sweden
Haiti	Switzerland
Kiribati	Turkey
Lao People's Democratic Republic	United Kingdom
Lesotho	United States
Liberia	(30 countries or areas)
Madagascar	
Malawi	
Maldives	
Mali	
Mauritania	
Mozambique	
Myanmar	
Nepal	
Niger	
Rwanda	
Samoa	
Sao Tome and Principe	
Senegal	
Sierra Leone	
Solomon Islands	
Somalia	
Sudan	
Tanzania (United Republic of)	
Timor-Leste	
Togo	
Tuvalu	
Uganda	
Vanuatu	
Yemen	
Zambia	
Zimbabwe	

High-income OECD countries

Poland	Australia
Romania	Austria
Russian Federation	Belgium
Serbia	Canada
Slovakia	Denmark
Slovenia	Finland
Tajikistan	France
Turkmenistan	Germany
Ukraine	Greece
Uzbekistan	Iceland
(28 countries or areas)	Ireland

Organisation for Economic Co-operation and Development (OECD)

Australia	Korea (Republic of)
Austria	Luxembourg
Belgium	Netherlands
Canada	New Zealand
Czech Republic	Norway
Denmark	Portugal
Finland	Spain
France	Sweden
Germany	Switzerland
Greece	United Kingdom
Hungary	United States
	(24 countries or areas)

^a UN classification based on UN-OHRLS 2007.

Developing countries in the regional aggregates

Arab States

Algeria
Bahrain
Djibouti
Egypt
Iraq
Jordan
Kuwait
Lebanon
Libya
Morocco
Occupied Palestinian Territories
Oman
Qatar
Saudi Arabia
Somalia
Sudan
Syrian Arab Republic
Tunisia
United Arab Emirates
Yemen
(20 countries or areas)

East Asia and the Pacific

Brunei Darussalam
Cambodia
China
Fiji
Hong Kong, China (SAR)
Indonesia
Kiribati
Korea (Democratic People's Republic of)
Korea (Republic of)
Lao People's Democratic Republic
Malaysia
Marshall Islands
Micronesia (Federated States of)
Mongolia
Myanmar
Nauru
Palau
Papua New Guinea
Philippines
Samoa
Singapore
Solomon Islands
Thailand
Timor-Leste
Tonga
Tuvalu
Vanuatu
Viet Nam
(28 countries or areas)

South Asia

Afghanistan
Bangladesh
Bhutan
India
Iran (Islamic Republic of)
Maldives
Nepal
Pakistan
Sri Lanka
(9 countries or areas)

Latin America and Caribbean

Antigua and Barbuda
Argentina
Bahamas
Barbados
Belize
Bolivia
Brazil
Chile
Colombia
Costa Rica
Cuba
Dominica
Dominican Republic
Ecuador
El Salvador
Grenada
Guatemala
Guyana
Haiti
Honduras
Jamaica
Mexico
Nicaragua
Panama
Paraguay
Peru
Saint Kitts and Nevis
Saint Lucia
Saint Vincent and the Grenadines
Suriname
Trinidad and Tobago
Uruguay
Venezuela (Bolivarian Republic of)
(33 countries or areas)

Southern Europe

Cyprus
Turkey
(2 countries or areas)

Sub-Saharan Africa

Angola
Benin
Botswana
Burkina Faso
Burundi
Cameroon
Cape Verde
Central African Republic
Chad
Comoros
Congo
Congo (Democratic Republic of the)
Côte d'Ivoire
Equatorial Guinea
Eritrea
Ethiopia
Gabon
Gambia
Ghana
Guinea
Guinea-Bissau
Kenya
Lesotho
Liberia
Madagascar
Malawi
Mali
Mauritania
Mauritius
Mozambique
Namibia
Niger
Nigeria
Rwanda
Sao Tome and Principe
Senegal
Seychelles
Sierra Leone
South Africa
Swaziland
Tanzania (United Republic of)
Togo
Uganda
Zambia
Zimbabwe
(45 countries or areas)

Index to indicators

Indicator table	Indicator
A	
	Armed forces
26	index
26	total
	Arms transfers, conventional
	exports
26	share
26	total
26	imports, total
B	
6	Births, % attended by skilled health personnel
8	poorest 20%
8	richest 20%
7	Birthweight, % of infants with low
C	
	Carbon dioxide emissions
24	average annual change
24	from forest biomass
24	per capita
24	per unit of energy use
24	per unit of GDP
24	share of world total
24	total
	Carbon stocks in forests
24	total
13	Cellular subscribers
	Children
9	fevers, treated with antimalarial drugs (malaria treatment)
8, 10	mortality rate, infant
1a, 8, 10	mortality rate, under-five
	one-year olds fully immunized, total
6	against measles
6	against tuberculosis
8	poorest 20%
8	richest 20%
12	reaching grade 5
7, 8	under height for age (stunted)

Indicator table	Indicator
3, 7	under weight for age (wasted)
9	use of insecticide-treated bed nets (malaria prevention)
6	with diarrhoea, receiving oral rehydration and continued feeding
	Condom use rate, at last high-risk sex
9	men
9	women
14	Consumer price index, average annual change in
6	Contraceptive prevalence rate
	Contributing family workers
31	men
31	women
	Conventions, treaties and international instruments
25	environmental treaties, status of major international
34	human rights instruments, status of major international
35	labour rights conventions, status of fundamental
D	
27	Death penalty, year of abolition
	Debt service, total
18	as % of exports of goods and services and net income from abroad
18, 19	as % of GDP
	Diarrhoea
6	treatment, children with diarrhoea receiving oral rehydration and continued feeding
E	
	Economic activity rate
31	female
31	as % of male rate
31	index
	Education expenditure, public
11, 19	as % of GDP
11	as % of total government expenditure
	Education expenditure, current public (% share on)
11	pre-primary and primary
11	secondary and post-secondary non-tertiary
11	tertiary
1	Education index

Indicator table **Indicator**

33	Elected or appointed to parliament, year first woman
33	Election, year women received right to stand for
	Electricity consumption per capita
22	kilowatt-hours
22	% change
22	Electricity, population without
22	Electrification rate
	Emancipation of women
33	women in government at ministerial level
33	year first woman elected or appointed to parliament
33	year women received right to stand for election
33	year women received right to vote
21	Employment, thousands
	by economic activity
21	agriculture, % of total
31	men
31	women
21	industry, % of total
31	men
31	women
21	services, % of total
31	men
31	women
21	in informal sector, as % of non-agricultural employment
21	female
21	male
21	total
	Energy supply, primary
23	biomass and waste
23	coal
23	hydropower and other renewables
23	natural gas
23	nuclear
23	oil
23	total
22	Energy use, GDP per unit of Enrolment ratio, gross
1,1a	combined primary, secondary and tertiary education, total
28	female
28	male
	primary
30	female
30	ratio of female rate to male rate
	secondary
30	female
30	ratio of female rate to male rate
	tertiary
30	female
30	ratio of female rate to male rate

Indicator table **Indicator**

	Enrolment rate, net
1a, 12	primary, total
30	female
30	ratio of female rate to male rate
12	secondary, total
25	Environmental treaties, status of major international
	Expenditure on
18, 19	debt service
11, 19	education
6, 19	health
19	military
13	research and development (R&D)
	Exports
26	conventional arms transfers
16	goods and services, as % of GDP
16	high technology, as % of manufactured exports
16	manufactured, as % of merchandise exports
16	primary, as % of merchandise exports

F

	Family workers, contributing
31	men
31	women
1a, 5	Fertility rate, total
	Foreign direct investment, net inflows of
18	as % of GDP
	Forest area
22	average annual change
22	% of total land area
22	total
22	total change
	Forests
24	carbon dioxide emissions from
24	carbon stocks in

G

1	GDP index
	GDP per capita
14	annual growth rate
14	in US\$
1, 1a	in PPP US\$
14	in 2005 PPP US\$
14	highest value in period 1975–2005
14	year of highest value
	GDP, total
14	in US\$ billions
14	in PPP US\$ billions
22	per unit of energy use

Indicator table **Indicator**

	Gender empowerment measure (GEM)
29	rank
29	value
	Gender-related development index (GDI)
28	HDI rank minus GDI rank
28	rank
28	value
15	Gini index
	Goods and services
16	exports of, as % of GDP
16	imports of, as % of GDP

H

	Health expenditure
6	per capita
6	private, as a % of GDP
6, 19	public, as a % of GDP
1a, 9	HIV prevalence rate
27	Homicides, intentional
	Human development index (HDI)
1	GDP per capita rank minus HDI rank
1	rank
2	trends in
1	value
	Human poverty index (HPI-1)
3	HPI-1 rank minus income poverty rank
3	rank
3	value
	Human poverty index (HPI-2)
4	HPI-2 rank minus income poverty rank
4	rank
4	value
34	Human rights instruments, status of major international

I

	Illiteracy rate, adult
3	total
	Immunized, one year olds fully
6	against measles
6	against tuberculosis
8	poorest 20%
8	richest 20%
	Imports
26	conventional arms transfers
16	goods and services as % of GDP
	Income, estimated earned
28	female
28	male

Indicator table **Indicator**

29	ratio of female to male
	Income inequality measures
15	Gini index
15	income ratio, richest 10% to poorest 10%
15	income ratio, richest 20% to poorest 20%
	Income or expenditure, share of
15	poorest 10%
15	poorest 20%
15	richest 10%
15	richest 20%
10	Infant mortality rate, total
8	poorest 20%
8	richest 20%
26	Internally displaced persons
	International instruments, conventions and treaties
25	environmental treaties, status of major international
34	human rights instruments, status of major international
35	labour rights conventions, status of fundamental
13	Internet users

L

35	Labour rights conventions, status of fundamental
	Legislators, senior officials and managers
29	female
1, 1a, 10	Life expectancy at birth, total
28	female
28	male
1	Life expectancy index
	Literacy rate, adult
28, 30	female
28	male
30	ratio of female rate to male rate
1, 1a, 12	total
	Literacy rate, youth
30	female
30	ratio of female rate to male rate
12	total
4	Literacy skills, % population lacking functional

M

	Malaria
9	prevention, children under age five using insecticide-treated bed nets
9	treatment, children under age five with fever treated with antimalarial drugs
	Maternal mortality ratio
10	adjusted
10	reported

Indicator table **Indicator**

	Measles	
6	one-year olds fully immunized against	
19	Military expenditure, as a % of GDP	
33	Ministerial level, women in government at	
	Mortality rates	
8, 10	infant	
10	maternal	
1a, 8, 10	under-five	
O		
	Official development assistance (ODA) disbursed, net	
17	as % of GNI	
17	per capita of donor country	
17	to basic social services, % of total allocable by sector	
17	to least developed countries, % of total	
17	total	
17	untied bilateral, % of total	
	Official development assistance (ODA) received	
	(net disbursements)	
18	as % of GDP	
18	per capita	
18	total	

P

	Parliament	
33	year first woman elected or appointed to parliament	
33	year women received right to stand for election	
	to parliament	
29	Parliamentary seats held by women	
33	lower or single house	
33	upper house or senate	
13	Patents, granted to residents	
6	Physicians	
	Population	
5	aged 65 and above	
5	annual growth rate	
4	% lacking functional literacy skills	
3	living below US\$1 a day	
3	living below US\$2 a day	
4	living below US\$4 a day	
4	living below US\$11 a day	
4	living below 50% of median income	
3	living below national poverty line	
27	in prisons	
1a, 5	total	
5	under age 15	
1a, 7	% undernourished	
5	urban	

Indicator table **Indicator**

7	using improved sanitation	
1a, 7	using an improved water source	
3	not using an improved water source	
22	without electricity	
	Poverty, income	
3	population living below US\$1 a day	
3	population living below US\$2 a day	
4	population living below US\$4 a day	
4	population living below US\$11 a day	
4	population living below 50% of median income	
3	population living below national poverty line	
	Primary energy supply	
23	biomass and waste	
23	coal	
23	hydropower and other renewables	
23	natural gas	
23	nuclear	
23	oil	
23	total	
	Prison population	
27	% female	
27	per 100,000 population	
27	total	
	Private flows (of capital), other	
18	as % of GDP	
	Professional and technical workers	
29	female	

R

	Refugees	
26	by country of asylum	
26	by country of origin	
	Research and development (R&D)	
13	expenditure	
13	researchers	
13	Royalties and licence fees, receipts of	

S

7	Sanitation, population using improved	
29	Seats in parliament held by women	
33	lower or single house	
33	upper house or senate	
	Smoking, adult prevalence of	
9	men	
9	women	
	Survival	
12	children reaching grade 5	
3	probability at birth of not surviving to age 40	

Indicator table	Indicator
4	probability at birth of not surviving to age 60 probability at birth of surviving to age 65
10	female
10	male
T	
Telephones	
13	cellular subscribers
13	mainlines
Tertiary students	
12	% in science, engineering, manufacturing and construction
Time spent on	
non-market activities, care of children	
32	men
32	women
non-market activities, cooking and cleaning	
32	men
32	women
other activities, free time	
32	men
32	women
other activities, personal care	
32	men
32	women
work, total	
32	men
32	women
work, market activities only	
32	men, % of total work
32	women, % of total work
16	Trade, terms of
Treaties, conventions and international instruments	
25	environmental treaties, status of major international
34	human rights instruments, status of major international
35	labour rights conventions, status of fundamental
Tuberculosis	
cases	
9	cured under DOTS
9	detected under DOTS
9	prevalence rate
6	one-year olds fully immunized against
U	
1a, 10	Under-five mortality rate, total
8	poorest 20%
8	richest 20%
7	Under height for age, % of children under age five
8	poorest 20%

Indicator table	Indicator
8	richest 20%
1a, 7	Undernourished population, %
3, 7	Under weight for age, % of children under age five
20, 21	Unemployed people
Unemployment, long-term	
20	% of unemployed men
20	% of unemployed women
Unemployment, rate	
adult	
20	average annual
20, 21	female rate as % of male rate
20, 21	total
long-term	
4	total
youth	
20	female rate as % of male rate
20	total
V	
33	Vote, year women received right to
W	
Water source, improved	
1a, 7	% population using
3	% population not using
Women's economic and political participation	
29	female legislators, senior officials and managers
29	female professional and technical workers
29	seats in parliament held by women
33	lower or single house
33	upper house or senate
33	women in government at ministerial level
33	year first woman elected or appointed to parliament
33	year woman received right to stand for election
33	year woman received right to vote
Work time	
total	
32	men
32	women
market activities only	
32	men, % of total work
32	women, % of total work

Index to Millennium Development Goal indicators in the HDR indicator tables

Goals and targets from the Millennium Declaration*	Indicators for monitoring progress	Indicator tables
Goal 1: Eradicate extreme poverty and hunger		
Target 1: Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day	1. Proportion of population below one dollar (PPP) a day 2. Poverty gap ratio [incidence x depth of poverty] 3. Share of poorest quintile in national consumption	3 15
Target 2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger	4. Prevalence of underweight children under-five years of age 5. Proportion of population below minimum level of dietary energy consumption	3, 7 1a ^a , 7 ^a
Goal 2: Achieve universal primary education		
Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling	6. Net enrolment ratio in primary education 7. Proportion of pupils starting grade 1 who reach grade 5 8. Literacy rate of 15–24 year-olds	1a, 12 12 12
Goal 3: Promote gender equality and empower women		
Target 4: Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education not later than 2015	9. Ratio of girls to boys in primary, secondary and tertiary education 10. Ratio of literate women to men, 15–24 years old 11. Share of women in wage employment in the non-agricultural sector 12. Proportion of seats held by women in national parliament	30 ^b 30 31 ^c 29, 33 ^d
Goal 4: Reduce child mortality		
Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate	13. Under-five mortality rate 14. Infant mortality rate 15. Proportion of 1 year-old children immunised against measles	1a, 10 10 6
Goal 5: Improve maternal health		
Target 6: Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio	16. Maternal mortality ratio 17. Proportion of births attended by skilled health personnel	10 6
Goal 6: Combat HIV/AIDS, malaria and other diseases		
Target 7: Have halted by 2015 and begun to reverse the spread of HIV/AIDS	18. HIV prevalence among pregnant women aged 15–24 years 19. Condom use rate of the contraceptive prevalence rate 19a. Condom use at last high-risk sex 19b. Proportion of population aged 15–24 years with comprehensive correct knowledge of HIV/AIDS 19c. Contraceptive prevalence rate 20. Ratio of school attendance of orphans to school attendance of non-orphans aged 10–14 years	1a ^e , 9 ^e 9 6
Target 8: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases	21. Prevalence and death rates associated with malaria 22. Proportion of population in malaria-risk areas using effective malaria prevention and treatment measures 23. Prevalence and death rates associated with tuberculosis 24. Proportion of tuberculosis cases detected and cured under directly observed treatment short course (DOTS)	9 ^f 9 ^g 9
Goal 7: Ensure environmental sustainability		
Target 9: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources	25. Proportion of land area covered by forest 26. Ratio of area protected to maintain biological diversity to surface area 27. Energy use (kg oil equivalent) per US\$1 GDP (PPP) 28. Carbon dioxide emissions per capita and consumption of ozone-depleting CFCs (ODP tons) 29. Proportion of population using solid fuels	22 22 ^h 24 ⁱ
Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation	30. Proportion of population with sustainable access to an improved water source, urban and rural 31. Proportion of population with access to improved sanitation, urban and rural	1a, 7, 3 ^j 7

Index to Millennium Development Goal indicators in the HDR indicator tables (continued)

Goals and targets from the Millennium Declaration*	Indicators for monitoring progress	Indicator tables
Target 11: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers	32. Proportion of households with access to secure tenure.	
Goal 8: Develop a global partnership for development		
Target 12: Develop further an open, rule-based, predictable, non-discriminatory trading and financial system. Includes a commitment to good governance, development and poverty reduction—both nationally and internationally	Some of the indicators listed below are monitored separately for the least developed countries (LDCs), Africa, landlocked developing countries and small island developing States.	
<i>Official development assistance (ODA)</i>		
Target 13: Address the special needs of the least developed countries Includes: tariff and quota free access for the least developed countries' exports; enhanced programme of debt relief for heavily indebted poor countries (HIPC) and cancellation of official bilateral debt; and more generous ODA for countries committed to poverty reduction	33. Net ODA, total and to the least developed countries, as percentage of OECD/DAC donors' gross national income	17 k
	34. Proportion of total bilateral, sector-allocable ODA of OECD/DAC donors to basic social services (basic education, primary health care, nutrition, safe water and sanitation)	17
	35. Proportion of bilateral official development assistance of OECD/DAC donors that is untied	17
Target 14: Address the special needs of landlocked developing countries and small island developing States (through the Programme of Action for the Sustainable Development of Small Island Developing States and the outcome of the twenty-second special session of the General Assembly)	36. ODA received in landlocked developing countries as a proportion of their gross national incomes	18 l
	37. ODA received in small island developing States as a proportion of their gross national incomes	18 l
<i>Market access</i>		
Target 15: Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term	38. Proportion of total developed country imports (by value and excluding arms) from developing countries and least developed countries, admitted free of duty	
	39. Average tariffs imposed by developed countries on agricultural products and textiles and clothing from developing countries	
	40. Agricultural support estimate for OECD countries as a percentage of their gross domestic product	
	41. Proportion of ODA provided to help build trade capacity	
<i>Debt sustainability</i>		
	42. Total number of countries that have reached their HIPC decision points and number that have reached their HIPC completion points (cumulative)	
	43. Debt relief committed under HIPC initiative	
	44. Debt service as a percentage of exports of goods and services	18
Target 16: In cooperation with developing countries, develop and implement strategies for decent and productive work for youth.	45. Unemployment rate of young people aged 15–24 years, each sex and total	
Target 17: In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries	46. Proportion of population with access to affordable essential drugs on a sustainable basis	
Target 18: In cooperation with the private sector, make available the benefits of new technologies, especially information and communications	47. Telephone lines and cellular subscribers per 100 people	13 m
	48a. Personal computers in use per 100 people	
	48b. Internet users per 100 people	13 m

* The Millennium Development Goals and targets come from the Millennium Declaration, signed by 189 countries, including 147 heads of State and Government, in September 2000 (<http://www.un.org/millennium/declaration/ares552e.htm>). The goals and targets are interrelated and should be seen as a whole. They represent a partnership between the developed countries and the developing countries "to create an environment – at the national and global levels alike – which is conducive to development and the elimination of poverty".

a Tables 1a and 7 present this indicator as undernourished people as a percentage of total population.

b Table presents female (net or gross) enrolment ratio as a percentage of male ratio for primary, secondary and tertiary education levels separately.

c Table includes data on female employment by economic activity.

d Table 33 presents a breakdown of the percentage of lower and upper house seats held by women.

e Tables 1a and 9 present HIV prevalence among people ages 15–49.

f Table includes data on children under five using insecticide-treated bed nets, and children under five with fever treated with antimalarial drugs.

g Table presents tuberculosis prevalence rates. Data on death rates are not included.

h Table shows data as GDP per unit of energy use in 2000 PPP US\$ per kg of oil equivalent.

i Table shows data on carbon dioxide emissions per capita. Data on consumption of ozone depleting CFCs are not included.

j Tables 1a and 7 present this indicator as the percentage of people with access to an improved drinking water source, and Table 3 includes data on people without access to an improved drinking water source.

k Table includes data on official development assistance (ODA) to least developed countries as a percentage of total ODA.

l Table includes data on received ODA by all recipient countries as percentage of GDP.

m Data on telephone mainlines, cellular subscribers and internet users expressed in 'per 1,000 people'.