

Assessing progress towards the Millennium Development Goals

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This year's *Human Development Report* assesses progress towards the Millennium Development Goals (MDGs) and attempts to quantify the potential benefits of achieving the MDGs by 2015. For each country the exercise attempts to answer two distinct questions for each MDG:

- If the MDG were achieved by 2015, how many fewer people would suffer human deprivation than if progress continued along the trends of the 1990s?
- If progress continued along the trends of the 1990s, when would the MDG be achieved?

The Report makes these assessments for five MDG indicators that have reasonably reliable trend data available on a country-by-country basis (table 1).

Calculating progress towards each MDG

Progress towards each MDG is assessed by comparing average annual progress if current trends prevailed with the annual progress needed to meet the indicator, under the assumption of linear progress.

The average annual rate of progress is calculated using the general formula:

$$\alpha_0 = \frac{(x_{t_1} - x_{t_0}) / x_{t_0}}{t_1 - t_0},$$

where x_{t_1} and x_{t_0} are the values of the indicator for 1990 or the year closest to 1990 for which data are available; t_1 is the most recent year for which data are available, generally 2003; and

t_0 is 1990 or the year closest to 1990 for which data are available. For hunger and under-five mortality rates, for which the most desirable value is 0, the formula is applied without modification.

For the net primary enrolment ratio, gender equality in education (ratio of girls to boys) and share of population with access to safe water and sanitation, for which the most desirable value is 100%, progress is expressed as “shortfall reduction” according to the following formula:

$$\alpha_1 = \frac{(x_{t_1} - x_{t_0}) / (100 - x_{t_0})}{t_1 - t_0}.$$

Calculating the human cost of not meeting the MDGs

The average annual rate of progress is then used to calculate the value of the indicator on current trends in 2015:

$$x_{t_{MDG}} = x_{t_0} + [\alpha_i(t_{MDG} - t_0)],$$

where t_{MDG} denotes 2015, the target year for achieving the MDGs and i can take the value 0 or 1 depending on the indicator.

The indicator is then multiplied by the value of its denominator, w , listed in table 1, as projected by the UN Population Division, to arrive at the total number of deprived people, $p_{t_{MDG}}$, in 2015:

$$p_{t_{MDG}} = x_{t_{MDG}} w_{t_{MDG}}.$$

The number of people deprived if the MDG is met, $\hat{p}_{t_{MDG}}$, is also calculated for each country as the value of the indicator needed to achieve

the MDG, determined by the MDG indicator (x^*), multiplied by its denominator:

$$\hat{p}_{tMDG} = x^* w_{tMDG}$$

The shortfall, the difference between achieving the MDG and progress along current trends, is calculated by adding the differences between these two values for all countries not on track to achieve the MDG:

$$\text{Shortfall} = \sum (p_{tMDG} - \hat{p}_{tMDG}) [p_{tMDG} > \hat{p}_{tMDG}]$$

where $[p_{tMDG} > \hat{p}_{tMDG}]$ is equal to 1 if true and 0 if false.

Calculating the year in which MDGs are achieved on current trends

The necessary level to achieve each MDG is determined by the MDG itself. For example, the target for MDG 4 calls for reducing the under-five mortality rate by two-thirds. The level at which the MDG is achieved is thus set to the initial level multiplied by a coefficient β . For child mortality, this coefficient is set to $\frac{1}{3}$. For hunger, it is set to $\frac{1}{2}$, as determined by the MDG target. The year in which a country will achieve the MDG, \tilde{t} , is then determined by the formula:

$$\tilde{t} = t_0 + \frac{\beta x_{t_0}}{\alpha}$$

Table 1 Millennium Development Goals assessed

| Target | Variable (indicator) | Source agency | Reference year | | Denominator used for calculating counts (w) |
|--|---|---------------------------------|----------------|-----------|---|
| | | | t_0 | t_1 | |
| Goal 1. Eradicate extreme poverty and hunger | | | | | |
| Target 1. Halve the proportion of people whose income is less than \$1 a day | People living on less than \$1 a day (1993 PPP US\$) (%) ^a | World Bank | 1990 | 2000 | Total population |
| Target 2. Halve the proportion of people who suffer from hunger | Undernourished people (%) | FAO | 1990–92 | 1999–2001 | Total population |
| Goal 2. Achieve universal primary education | | | | | |
| Target 3. Ensure that children everywhere will be able to complete a full course of primary schooling | Net primary enrolment ratio (%) | UNESCO Institute for Statistics | 1990/91 | 2002/03 | Children of primary school age |
| Goal 3. Promote gender equality and empower women | | | | | |
| Target 4. Eliminate gender disparity in all levels of education | Female net primary enrolment ratio (%) | UNESCO Institute for Statistics | 1990/91 | 2002/03 | Girls of primary school age |
| Goal 4. Reduce child mortality | | | | | |
| Target 5. Reduce by two-thirds the under-five mortality rate | Under-five mortality rate (per 1,000 live births) | UNICEF and WHO | 1990 | 2003 | Births |
| Goal 7. Ensure environmental sustainability | | | | | |
| Target 10. Halve the proportion of people without sustainable access to safe drinking water and sanitation | People with sustainable access to an improved water source (%) | UNICEF and WHO | 1990 | 2003 | Total population |
| | People with access to improved sanitation (%) | UNICEF and WHO | 1990 | 2003 | Total population |

a. Assessment of human costs only, not timeline.