

**Metadata for  
Millennium  
Development  
Goals  
(MDGs)**



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## **Children under 5 moderately or severely underweight, percentage**

### **Contact point in international agency**

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### **Definition**

Prevalence of (moderately and severely) underweight children is the percentage of children aged 0-59 months whose weights for age are less than two standard deviations below the median weight for age of the international reference population. The international reference population, often referred to as the NCHS/WHO reference population, was formulated by the National Center for Health Statistics (NCHS) as a reference for the United States and later adopted by the World Health Organization (WHO).

The NCHS/WHO reference standard represents the distribution of height and weight by age and sex in a well-nourished population. In a well-nourished population, 2.3 percent of children fall below minus two standard deviations.

A new standard reference population, the WHO Child Growth Standards, was released in April 2006 and is also being used to estimate underweight prevalence (see Comments and Limitations below).

Percentage of children under five that are underweight = (Number of children under age five that fall below minus two standard deviations from the median weight for age of the NCHS/WHO standard (moderate and severe))\*100/ Total number of children under age five that were weighted.

### **Method of computation**

The weights of children under five years of age are compared with the weights given in the NCHS/WHO standard reference population for each age group. The percentage of children whose weights are less than 2 standard deviations below the median weight for

age are then aggregated to form the total percentage of children under five who are underweight.

$$\text{Percentage of children under five that are underweight} = \frac{\text{Number of children under age five that fall below minus two standard deviations from the median weight for age of the NCHS/WHO standard (moderate and severe)}}{\text{Total number of children under age five that were weighed}} * 100$$

### Comments and limitations

In April 2006, the World Health Organization (WHO) released the WHO Child Growth Standards to replace the widely used National Center for Health Statistics (NCHS)/WHO reference population. Studies have shown important differences between these two reference populations, especially during infancy. However, this reference population has not yet been widely used and is therefore not reflected in the current estimates of child malnutrition. It is likely that for some time to come the anthropometric indicators will have to be analyzed using the NCHS/WHO and the new WHO Child Growth Standards, to allow for comparability with past estimates.

The underweight indicator reflects body mass relative to chronological age and is influenced both by the height of the child, and weight-for-height. Its composite nature complicates its interpretation. For example, the indicator fails to distinguish between short children of adequate body weight and tall, thin children.

The accuracy of these nutrition measures depends on proper measurements in age, weight, and height. For example, only those children with month and year of birth recorded and with valid height and weight measurements are included in the calculations. Assessing the adherence to proper measurement protocols by each survey team is not possible.

Underweight prevalence is a useful indicator to assess overall nutritional status of the population. Stunting, or low height for age, is also a useful indicator for tracking trends in child malnutrition. It is defined as the percentage of children under five whose heights are less than two standard deviations below the median height for the age of the standard reference population. Stunting measures the cumulative deficient growth associated with long-term factors, including chronic insufficient daily protein intake.

Low weight for height, or wasting, defined as less than two standard deviations below the median weight for height of the reference population, indicates in most cases a recent and severe process of weight loss, often associated with acute starvation or severe disease.

When possible, all three indicators (underweight, stunting, and wasting) should be analysed and presented since they measure and reflect different aspects of child malnutrition.

### **Sources of discrepancies between global and national figures**

Because all nationally-representative data on underweight prevalence are collected only through large-scale household surveys, there would normally be no discrepancies between global and national figures. However, it is possible that as the new WHO reference population is introduced, differences in the calculation of the estimates (using the old NCHS/WHO reference population or the new WHO reference population) could lead to discrepancies.

### **Process of obtaining data**

At the national level, data are generally available from national household surveys, including Demographic and Health Surveys, Multiple Indicator Cluster Surveys and national nutrition surveys.

For international comparisons and global or regional monitoring, the United Nations Children's Fund (UNICEF) and WHO compile international data series and estimates based on data from national surveys.

### **Treatment of missing values**

There is no treatment of missing values. When the information needed to calculate the indicator is not available, the indicator is not estimated. The estimates are based on only those children with valid dates of birth (both month and year) and a valid measurement of both height and weight.

### **Data availability**

Data are available for approximately X110 countries. Provide figures Data are available for Universe/population of interest: please provide details children under five years of age.

The lag between the reference year and actual production of data series depends on the availability and reliability of the household survey for each country. Household budget or income surveys are undertaken at different intervals in different countries. In developing

countries they typically take place every three to five years, with results published within a year of field data collection.

Latest available estimates of underweight prevalence are published annually by UNICEF in The State of the World's Children report, and are available at <http://www.childinfo.org>. WHO also publishes these data through its online database, WHO Database on Child Growth and Nutrition.

### **Regional and Global estimates**

Regional and global estimates are based on averages weighted by the total number of children under five years of age. These estimates are presented only if available data cover at least 50% of the total children under five years of age in the regional or global groupings.

### **Expected time of release**

Latest available estimates of underweight prevalence are published annually in December by UNICEF in The State of the World's Children available at [www.unicef.org](http://www.unicef.org). The databases are also available on [www.childinfo.org](http://www.childinfo.org). WHO also publishes these data through its online database, WHO Database on Child Growth and Nutrition (see <http://www.who.int/nutgrowthdb>) and updates are published bimonthly on its website.

### **Please refer to series metadata**

## **Children under 5 severely underweight, percentage**

### **Contact point in international agency**

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### **Definition**

Prevalence of (severely) underweight children is the percentage of children aged 0-59 months whose weight for age is less than minus 3 standard deviations below the median weight for age of the international reference population. The international reference population, often referred to as the NCHS/WHO reference population, was formulated by

the National Center for Health Statistics (NCHS) as a reference for the United States and later adopted by the World Health Organization (WHO).

The NCHS/WHO reference standard represents the distribution of height and weight by age and sex in a well-nourished population. In a well-nourished population, 0.1 percent of children fall below minus 3 standard deviations.

A new standard reference population, the WHO Child Growth Standards, was released in April 2006 and also being used to estimate underweight prevalence (see Comments and Limitations below).

### Method of computation

The weights of children under five years of age are compared with the weights given in the NCHS/WHO standard reference population for each age group. The percentage of children whose weights are less than three standard deviations below the median are aggregated to form the total percentage of children under five who are underweight.

$$\text{Percentage of children under five that are underweight} = \frac{\text{Number of children under age five that fall below minus three standard deviations from the median weight for age of the NCHS/WHO standard (severe)}}{\text{Total number of children under age five that were weighed}} * 100$$

### Comments and limitations

In April 2006, the World Health Organization (WHO) released the WHO Child Growth Standards to replace the widely used National Center for Health Statistics (NCHS)/WHO reference population. Studies have shown important differences between these two reference populations, especially during infancy. However, this reference population has not yet been widely used and is therefore not reflected in the current estimates of child malnutrition. It is likely that for some time to come the anthropometric indicators will have to be analyzed using both the NCHS/WHO and the new WHO Child Growth Standards, to allow for comparability with past estimates.

One main limitation of using anthropometry in assessing child nutritional status is its lack of specificity, as changes in body measurements are sensitive to many factors including intake of essential nutrients, infection, altitude, stress, and genetic background.

The underweight indicator reflects body mass relative to chronological age and is influenced both by the height of the child, and weight-for-height. Its composite nature complicates its interpretation. For example, the indicator fails to distinguish between short children of adequate body weight and tall, thin children.

The accuracy of these nutrition measures depends on proper measurements in age, weight, and height. For example, only those children with month and year of birth recorded and with valid height and weight measurements are included in the calculations. Assessing the adherence to proper measurement protocols by each survey team is not possible.

Underweight prevalence is a useful indicator to assess overall nutritional status of the population. Stunting, or low height for age, is also a useful indicator for tracking trends in child malnutrition. It is defined as the percentage of children under five whose heights are less than two standard deviations below the median height for the age of the standard reference population. Stunting measures the cumulative deficient growth associated with long-term factors, including chronic insufficient daily protein intake.

Low weight for height, or wasting, defined as less than two standard deviations below the median weight for height of the reference population, indicates in most cases a recent and severe process of weight loss, often associated with acute starvation or severe disease.

When possible, all three indicators (underweight, stunting, and wasting) should be analysed and presented since they measure and reflect different aspects of child malnutrition.

### **Sources of discrepancies between global and national figures**

Because all nationally-representative data on underweight prevalence are collected only through large-scale household surveys, there would normally be no discrepancies between global and national figures. However, it is possible that as the new WHO reference population is introduced, differences in the calculation of the estimates (using the old NCHS/WHO reference population or the new WHO reference population) could lead to discrepancies.

### **Process of obtaining data**

At the national level, data are generally available from national household surveys, including Demographic and Health Surveys, Multiple Indicator Cluster Surveys and national nutrition surveys.

For international comparisons and global or regional monitoring, the United Nations Children's Fund (UNICEF) and WHO compile international data series and estimates based on data from national surveys.

### **Treatment of missing values**

There is no treatment of missing values. When the information needed to calculate the indicator is not available, the indicator is not estimated. The estimates are based on only those children with valid dates of birth (both month and year) and a valid measurement of both height and weight.

### **Data availability**

Data are available for approximately 110 countries.

Data are available for children under five years of age.

The lag between the reference year and actual production of data series depends on the availability of the household survey for each country. In developing countries they typically take place every three to five years, with results published within a year of field data collection.

Latest available estimates of underweight prevalence are published annually by UNICEF in The State of the World's Children report, and are available at <http://www.childinfo.org>. WHO also publishes these data through its online database, WHO Database on Child Growth and Nutrition.

### **Regional and Global estimates**

Regional and global estimates are based on averages weighted by the total number of children under five years of age. These estimates are presented only if available data cover at least 50% of the total children under five years of age in the regional or global groupings.

### **Expected time of release**

Latest available estimates of underweight prevalence are published annually in December by UNICEF in The State of the World's Children available at [www.unicef.org](http://www.unicef.org). The databases are also available at [www.childinfo.org](http://www.childinfo.org) WHO also publishes these data through its online database, WHO Database on Child Growth and Nutrition (see <http://www.who.int/nutgrowthdb> and updates are published bimonthly on its website.

### **Please refer to series metadata**

## **AIDS deaths**

### **Contact point in international agency**

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### **Definition**

AIDS deaths are defined as the estimated number of adults and children who died due to AIDS. AIDS, the acquired immunodeficiency syndrome, is caused by Human Immunodeficiency Virus (HIV), a virus that weakens the immune system and destroys the body's ability to fight off infection and disease, which can ultimately lead to death.

### **Method of computation**

Estimates of AIDS mortality are based on estimates of the numbers of adults and children who are HIV-infected, and estimations of survival times from infection with HIV to death for adults and children infected with HIV. The survival time from infection with HIV to death is modified by the provision of antiretroviral therapy (ART).

### **Comments and limitations**

Where insufficient data are available for a country, UNAIDS does not generate data for this country.

### **Sources of discrepancies between global and national figures**

The global estimates are representative of the national estimates for a given year.

### **Process of obtaining data**

Civil registration systems are the best source to obtain an estimate of the mortality due to AIDS. However, in most countries with generalized epidemics, coverage of civil registration is too low to provide useful information on AIDS mortality. Some countries have local demographic surveillance or general information on adult mortality from censuses and surveys that can help estimate mortality levels due to AIDS. Estimating

mortality in countries with low-level or concentrated epidemics is even more difficult. Some at-risk groups are likely to have different background mortality, in other words they are more prone to other causes of death (for example, injecting drug users are vulnerable to fatal drug overdoses and other life-threatening hazards). All this can have substantial effects on patterns of mortality. Unfortunately, country-specific data on mortality and on changes in risk behaviour are seldom available. However, some countries with low-level/concentrated epidemics have well-functioning vital registration systems that include the cause of death.

In the past several years, for example, UNAIDS and World Health Organization (WHO), along with their technical partners (including East-West Center, Family Health International, The Futures Group, the US Census Bureau and the US Centers for Disease Control and Prevention), carried out a series of regional training workshops in which epidemiologists from over 150 countries were trained in the HIV estimation process. Such efforts have led to much greater involvement by national programmes, national statistics offices and other government and academic organizations in the production of estimates. The result has been better quality estimates, due to the use of additional data and the application of local knowledge. UNAIDS and WHO continue to work with countries, partner organizations and experts to improve data collection. These efforts will ensure that the best possible estimates are available to assist governments, non-governmental organizations and others in gauging the status of the epidemic and monitoring the effectiveness of prevention and care efforts.

### **Treatment of missing values**

There is no treatment of missing values. When the information needed to calculate the indicator is not available, the indicator is not estimated.

### **Data availability**

Data are available for approximately 147 countries.

Data are collected for the total number of AIDS deaths, as well as separately for adults 15+ and children less than 15 years of age.

The lag between the reference year and actual production is from the period of regional workshops conducted every 2 years to publication of regional estimates in December, followed by publication of country estimates in the Global Report the following July.

### **Regional and Global estimates**

Regional and global estimates are estimated using the epidemiological tools described in [http://www.unaids.org/en/KnowledgeCentre/HIVData/Epidemiology/epi\\_software2007.asp](http://www.unaids.org/en/KnowledgeCentre/HIVData/Epidemiology/epi_software2007.asp)

### **Expected time of release**

Regional estimates are released annually in the Epidemic Update in December. National estimates are released in the Global Report every 2 years in July.

### **Please refer to series metadata**

## **Population below national poverty line, total, percentage**

### **Contact point in international agency**

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### **Definition**

The national poverty rate is the percentage of the total population living below the national poverty line. The rural poverty rate is the percentage of the rural population living below the national poverty line (or in cases where a separate, rural poverty line is used, the rural poverty line). Urban poverty rate is the percentage of the urban population living below the national poverty line (or in cases where a separate, urban poverty line is used, the urban poverty line). Estimates are based on population-weighted subgroup estimates from household surveys.

### **Method of computation**

The formula for calculating the proportion of the total, urban and rural population living below the national poverty line, or headcount index, is as follows:

$$F_0 = \frac{1}{N} \sum_{i=1}^N I(y_i \leq z) = \frac{N_f}{N}$$

Where  $I(.)$  is an indicator function that takes on a value of 1 if the bracketed expression is true, and 0 otherwise. If individual consumption or income ( $y_i$ ) is less than the poverty line ( $z$ ), then  $I(.)$  is equal to 1 and the individual is counted as poor.  $N_p$  is the total, urban or rural number of poor.  $N$  is the total, urban or rural population.

Consumption or income data are gathered from nationally representative household surveys, which contain detailed responses to questions regarding spending habits and sources of income. Consumption, including consumption from own production, or income is calculated for the entire household. In some cases, an “effective” household size is calculated from the actual household size to reflect assumed efficiencies in consumption; adjustments may also be made to reflect the number of children in a household. The number of people in those households is aggregated to estimate the number of poor persons.

National poverty rates use a country specific poverty line, reflecting the country's economic and social circumstances. In some case, the national poverty line is adjusted for different areas (such as urban and rural) within the country, to account for differences in prices or the availability of goods and services. Typically the urban poverty line is set higher than the rural poverty line; reflecting the relatively higher costs of living in urban areas.

### **Comments and limitations**

National poverty lines are used to make more accurate estimates of poverty consistent with the country's specific economic and social circumstances, and are not intended for international comparisons of poverty rates. National poverty lines tend to increase in purchasing power with the average level of income in a country.

Issues also arise when comparing poverty measures within countries when urban and rural poverty lines represent different purchasing powers. For example, the cost of living is typically higher in urban than in rural areas. One reason is that food staples tend to be more expensive in urban areas. So the urban monetary poverty line should be higher than the rural poverty line. But it is not always clear that the difference between urban and rural poverty lines found in practice reflects only differences in the cost of living. In some countries the urban poverty line in common use has a higher real value—meaning that it allows the purchase of more commodities for consumption—than does the rural poverty line. Sometimes the difference has been so large as to imply that the incidence of poverty is greater in urban than in rural areas, even though the reverse is found when adjustments are made only for differences in the cost of living. As with international

comparisons, when the real value of the poverty line varies it is not clear how meaningful such urban-rural comparisons are.

To be useful for poverty estimates, surveys must be nationally representative. They must also include enough information to compute a comprehensive estimate of total household consumption or income (including consumption or income from own production) and to construct a correctly weighted distribution of consumption or income per person.

Despite these quality standards, there are numerous potential problems associated with household survey data. Some warrant more detailed discussion.<sup>1</sup>

Consumption is measured by using household surveys questions on food and nonfood expenditures as well as food consumed from the household's own production, which is particularly important in the poorest developing countries. This information is collected either through recall questions using lists of consumption items or through diaries in which respondents record all expenditures daily. But these methods do not always provide equivalent information, and depending on the approach used, consumption can be underestimated or overestimated. Different surveys use different recall or reference periods. Depending on the true flow of expenditures, the rate of spending reported is sensitive to the length of reporting period. The longer the reference period, the more likely respondents will fail to recall certain expenses—especially food items—thus resulting in underestimation of true expenditure.

Best-practice surveys administer detailed lists of specific consumption items. These individual items collected through the questionnaires are then aggregated afterwards. But many surveys use questionnaires in which respondents are asked to report expenditures for broad categories of goods. In other words, specific consumption items are implicitly aggregated by virtue of the questionnaire design. This shortens the interview, reducing the cost of the survey. A shorter questionnaire is also thought to reduce the likelihood of fatigue for both respondents and interviewers, which can lead to reporting errors. However, there is also evidence that less detailed coverage of specific items in the questionnaire can lead to underestimation of actual household consumption. The reuse of questionnaires may cause new consumption goods to be omitted, leading to further underreporting.

Invariably some sampled households do not participate in surveys because they refuse to do so or because nobody is at home. This is often referred to as “unit nonresponse” and is distinct from “item nonresponse,” which occurs when some of the sampled respondents participate but refuse to answer certain questions, such as those pertaining to consumption or income. To the extent that survey nonresponse is random, there is no

concern regarding biases in survey-based inferences; the sample will still be representative of the population. However, households with different incomes are not equally likely to respond. Relatively rich households may be less likely to participate because of the high opportunity cost of their time or because of concerns about intrusion in their affairs. It is conceivable that the poorest can likewise be underrepresented; some are homeless and hard to reach in standard household survey designs, and some may be physically or socially isolated and thus less easily interviewed. If nonresponse systematically increases with income, surveys will tend to overestimate poverty. But if compliance tends to be lower for both the very poor and the very rich, there will be potentially offsetting effects on the measured incidence of poverty.

Consumption is the preferred welfare indicator for a number of reasons. Income is generally more difficult to measure accurately. For example, the poor who work in the informal sector may not receive or report monetary wages; self-employed workers often experience irregular income flows; and many people in rural areas depend on idiosyncratic, agricultural incomes. Moreover, consumption accords better with the idea of the standard of living than income, which can vary over time even if the actual standard of living does not. Thus, whenever possible, consumption-based welfare indicators are used to estimate the poverty measures reported here. But consumption data are not always available; for instance, in Latin America and the Caribbean the vast majority of countries collect primarily income data. In those cases there is little choice but to use income data.

Even if survey data were entirely accurate and comprehensive, the measure of poverty obtained could still fail to capture important aspects of individual welfare. For example, using household consumption measures ignores potential inequalities within households. Thus, consumption- or income-based poverty measures are informative but should not be interpreted as a sufficient statistic for assessing the quality of people's lives. The national poverty rate, a "headcount" measure, is one of the most commonly calculated measures of poverty. Yet it has the drawback that it does not capture income inequality among the poor or the depth of poverty. For instance, it fails to account for the fact that some people may be living just below the poverty line, while others experience far greater shortfalls. Policymakers seeking to make the largest possible impact on the headcount measure might be tempted to direct their poverty alleviation resources to those closest to the poverty line (and therefore least poor).

Lastly, this income/consumption based poverty indicator does not fully reflect the other dimensions of poverty such as inequality, vulnerability, and lack of voice and power of the poor.

- 1 This section draws from “Poverty data: A supplement to World Development Indicators 2008”, World Bank, forthcoming in December 2008.

## **Sources of discrepancies between global and national figures**

In principle, global and national poverty figures cannot be compared because they are based on different poverty lines.

### **Process of obtaining data**

Data for developing countries comes mainly from the World Bank’s Poverty Assessments. The World Bank periodically prepares poverty assessments of countries in which it has an active program, in close collaboration with national institutions, other development agencies, and civil society groups, including poor people’s organizations. Poverty assessments report the extent and causes of poverty and propose strategies to reduce it. The poverty assessments are the best available source of information on poverty estimates using national poverty lines. They often include separate assessments of urban and rural poverty. Data are derived from nationally representative household surveys conducted by national statistical offices or by private agencies under the supervision of government or international agencies and obtained from government statistical offices and World Bank Group country departments.

Data for developed countries are typically gathered from national poverty reports.

World Bank staff at the country offices and the headquarters are heavily involved in validation of poverty indicators through regular work programs including Poverty Assessment and Economic and Sector work.

As poverty indicators derived using national poverty lines are intended to reflect a specific country’s economic and social circumstances, the data are not adjusted for international comparability.

### **Treatment of missing values**

In principle, there is no adjustment for missing data, as the indicator is calculated only in year for which a suitable survey data are available.

### **Data availability**

Data availability depends on the availability of household surveys and frequency of the World Bank’s Poverty Assessment for each country. Since 1992 the World Bank has conducted about 200 poverty assessments.<sup>1</sup>

Total poverty estimates are available for approximately 87 countries; rural poverty estimates are available for approximately 77 countries, and urban poverty estimates are available for approximately 72 countries.

Most developing countries where the World Bank has conducted a poverty assessment have data. Some high-income countries also report national poverty estimates.

The lag between the reference year and actual production of data series depends on the availability of household surveys and frequency of World Bank's poverty assessment for each country. Household budget or income surveys are undertaken at different intervals in different countries. In developing countries they typically take place every three to five years. World Bank poverty assessments typically coincide with the availability of these surveys.

Data are updated semi-annually in April and September of each year, but the availability of new estimate for a country will also depend on availability of new household surveys.

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## **Regional and Global estimates**

Regional and global estimates are not applicable for these indicators.

## **Expected time of release**

The World Bank's World Development Indicators (WDI) Online database which contains these series is updated semi-annually in April and September each year. However, availability of new estimate for a country will depend on availability of new household surveys and new poverty assessment.

## **Population below national poverty line, urban, percentage**

### **Contact point in international agency**

Data Help Desk

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## Definition

The national poverty rate is the percentage of the total population living below the national poverty line. The rural poverty rate is the percentage of the rural population living below the national poverty line (or in cases where a separate, rural poverty line is used, the rural poverty line). Urban poverty rate is the percentage of the urban population living below the national poverty line (or in cases where a separate, urban poverty line is used, the urban poverty line). Estimates are based on population-weighted subgroup estimates from household surveys.

## Method of computation

The formula for calculating the proportion of the total, urban and rural population living below the national poverty line, or headcount index, is as follows:

$$P_0 = \frac{1}{N} \sum_{i=1}^N I(y_i \leq z) = \frac{N_p}{N}$$

Where  $I(\cdot)$  is an indicator function that takes on a value of 1 if the bracketed expression is true, and 0 otherwise. If individual consumption or income ( $y_i$ ) is less than the poverty line ( $z$ ), then  $I(\cdot)$  is equal to 1 and the individual is counted as poor.  $N_p$  is the total, urban or rural number of poor.  $N$  is the total, urban or rural population.

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National poverty rates use a country specific poverty line, reflecting the country's economic and social circumstances. In some case, the national poverty line is adjusted for different areas (such as urban and rural) within the country, to account for differences in prices or the availability of goods and services. Typically the urban poverty line is set higher than the rural poverty line; reflecting the relatively higher costs of living in urban areas.

In principle, global and national poverty figures cannot be compared because they are based on different poverty lines.

### **Comments and limitations**

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Issues also arise when comparing poverty measures within countries when urban and rural poverty lines represent different purchasing powers. For example, the cost of living is typically higher in urban than in rural areas. One reason is that food staples tend to be more expensive in urban areas. So the urban monetary poverty line should be higher than the rural poverty line. But it is not always clear that the difference between urban and rural poverty lines found in practice reflects only differences in the cost of living. In some countries the urban poverty line in common use has a higher real value—meaning that it allows the purchase of more commodities for consumption—than does the rural poverty line. Sometimes the difference has been so large as to imply that the incidence of poverty is greater in urban than in rural areas, even though the reverse is found when adjustments are made only for differences in the cost of living. As with international comparisons, when the real value of the poverty line varies it is not clear how meaningful such urban-rural comparisons are.

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1 This section draws from "Poverty data: A supplement to World Development Indicators 2008", World Bank, forthcoming in December 2008.

### **Sources of discrepancies between global and national figures**

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### **Treatment of missing values**

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Data availability depends on the availability of household surveys and frequency of the World Bank's Poverty Assessment for each country. Since 1992 the World Bank has conducted about 200 poverty assessments.<sup>1</sup>

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## Regional and Global estimates

Regional and global estimates are not applicable for these indicators.

## Expected time of release

The World Bank's World Development Indicators (WDI) Online database which contains these series is updated semi-annually in April and September each year. However, availability of new estimate for a country will depend on availability of new household surveys and new poverty assessment.

## Population below national poverty line, rural, percentage

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### Definition

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$$P_0 = \frac{1}{N} \sum_{i=1}^N I(y_i \leq z) = \frac{N_p}{N}$$

Where  $I(.)$  is an indicator function that takes on a value of 1 if the bracketed expression is true, and 0 otherwise. If individual consumption or income ( $y_i$ ) is less than the poverty line ( $z$ ), then  $I(.)$  is equal to 1 and the individual is counted as poor.  $N_p$  is the total, urban or rural number of poor.  $N$  is the total, urban or rural population.

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National poverty rates use a country specific poverty line, reflecting the country's economic and social circumstances. In some case, the national poverty line is adjusted for different areas (such as urban and rural) within the country, to account for differences in prices or the availability of goods and services. Typically the urban poverty line is set higher than the rural poverty line; reflecting the relatively higher costs of living in urban areas.

In principle, global and national poverty figures cannot be compared because they are based on different poverty lines.

### **Comments and limitations**

National poverty lines are used to make more accurate estimates of poverty consistent with the country's specific economic and social circumstances, and are not intended for international comparisons of poverty rates. National poverty lines tend to increase in purchasing power with the average level of income in a country.

Issues also arise when comparing poverty measures within countries when urban and rural poverty lines represent different purchasing powers. For example, the cost of living is typically higher in urban than in rural areas. One reason is that food staples tend to be more expensive in urban areas. So the urban monetary poverty line should be higher than the rural poverty line. But it is not always clear that the difference between urban and rural poverty lines found in practice reflects only differences in the cost of living. In some countries the urban poverty line in common use has a higher real value—meaning that it allows the purchase of more commodities for consumption—than does the rural poverty line. Sometimes the difference has been so large as to imply that the incidence of poverty is greater in urban than in rural areas, even though the reverse is found when

adjustments are made only for differences in the cost of living. As with international comparisons, when the real value of the poverty line varies it is not clear how meaningful such urban-rural comparisons are.

To be useful for poverty estimates, surveys must be nationally representative. They must also include enough information to compute a comprehensive estimate of total household consumption or income (including consumption or income from own production) and to construct a correctly weighted distribution of consumption or income per person.

Despite these quality standards, there are numerous potential problems associated with household survey data. Some warrant more detailed discussion.<sup>1</sup>

Consumption is measured by using household surveys questions on food and nonfood expenditures as well as food consumed from the household's own production, which is particularly important in the poorest developing countries. This information is collected either through recall questions using lists of consumption items or through diaries in which respondents record all expenditures daily. But these methods do not always provide equivalent information, and depending on the approach used, consumption can be underestimated or overestimated. Different surveys use different recall or reference periods. Depending on the true flow of expenditures, the rate of spending reported is sensitive to the length of reporting period. The longer the reference period, the more likely respondents will fail to recall certain expenses—especially food items—thus resulting in underestimation of true expenditure.

Best-practice surveys administer detailed lists of specific consumption items. These individual items collected through the questionnaires are then aggregated afterwards. But many surveys use questionnaires in which respondents are asked to report expenditures for broad categories of goods. In other words, specific consumption items are implicitly aggregated by virtue of the questionnaire design. This shortens the interview, reducing the cost of the survey. A shorter questionnaire is also thought to reduce the likelihood of fatigue for both respondents and interviewers, which can lead to reporting errors. However, there is also evidence that less detailed coverage of specific items in the questionnaire can lead to underestimation of actual household consumption. The reuse of questionnaires may cause new consumption goods to be omitted, leading to further underreporting.

Invariably some sampled households do not participate in surveys because they refuse to do so or because nobody is at home. This is often referred to as "unit nonresponse" and is distinct from "item nonresponse," which occurs when some of the sampled respondents participate but refuse to answer certain questions, such as those pertaining

to consumption or income. To the extent that survey nonresponse is random, there is no concern regarding biases in survey-based inferences; the sample will still be representative of the population. However, households with different incomes are not equally likely to respond. Relatively rich households may be less likely to participate because of the high opportunity cost of their time or because of concerns about intrusion in their affairs. It is conceivable that the poorest can likewise be underrepresented; some are homeless and hard to reach in standard household survey designs, and some may be physically or socially isolated and thus less easily interviewed. If nonresponse systematically increases with income, surveys will tend to overestimate poverty. But if compliance tends to be lower for both the very poor and the very rich, there will be potentially offsetting effects on the measured incidence of poverty.

Consumption is the preferred welfare indicator for a number of reasons. Income is generally more difficult to measure accurately. For example, the poor who work in the informal sector may not receive or report monetary wages; self-employed workers often experience irregular income flows; and many people in rural areas depend on idiosyncratic, agricultural incomes. Moreover, consumption accords better with the idea of the standard of living than income, which can vary over time even if the actual standard of living does not. Thus, whenever possible, consumption-based welfare indicators are used to estimate the poverty measures reported here. But consumption data are not always available; for instance, in Latin America and the Caribbean the vast majority of countries collect primarily income data. In those cases there is little choice but to use income data.

Even if survey data were entirely accurate and comprehensive, the measure of poverty obtained could still fail to capture important aspects of individual welfare. For example, using household consumption measures ignores potential inequalities within households. Thus, consumption- or income-based poverty measures are informative but should not be interpreted as a sufficient statistic for assessing the quality of people's lives. The national poverty rate, a "headcount" measure, is one of the most commonly calculated measures of poverty. Yet it has the drawback that it does not capture income inequality among the poor or the depth of poverty. For instance, it fails to account for the fact that some people may be living just below the poverty line, while others experience far greater shortfalls. Policymakers seeking to make the largest possible impact on the headcount measure might be tempted to direct their poverty alleviation resources to those closest to the poverty line (and therefore least poor).

Lastly, this income/consumption based poverty indicator does not fully reflect the other dimensions of poverty such as inequality, vulnerability, and lack of voice and power of the poor.

- 1 This section draws from “Poverty data: A supplement to World Development Indicators 2008”, World Bank, forthcoming in December 2008.

### **Sources of discrepancies between global and national figures**

In principle, global and national poverty figures cannot be compared because they are based on different poverty lines.

### **Process of obtaining data**

Data for developing countries comes mainly from the World Bank’s Poverty Assessments. The World Bank periodically prepares poverty assessments of countries in which it has an active program, in close collaboration with national institutions, other development agencies, and civil society groups, including poor people’s organizations. Poverty assessments report the extent and causes of poverty and propose strategies to reduce it. The poverty assessments are the best available source of information on poverty estimates using national poverty lines. They often include separate assessments of urban and rural poverty. Data are derived from nationally representative household surveys conducted by national statistical offices or by private agencies under the supervision of government or international agencies and obtained from government statistical offices and World Bank Group country departments.

Data for developed countries are typically gathered from national poverty reports.

World Bank staff at the country offices and the headquarters are heavily involved in validation of poverty indicators through regular work programs including Poverty Assessment and Economic and Sector work.

As poverty indicators derived using national poverty lines are intended to reflect a specific country’s economic and social circumstances, the data are not adjusted for international comparability.

### **Treatment of missing values**

In principle, there is no adjustment for missing data, as the indicator is calculated only in year for which a suitable survey data are available.

### **Data availability**

Data availability depends on the availability of household surveys and frequency of the World Bank's Poverty Assessment for each country. Since 1992 the World Bank has conducted about 200 poverty assessments.<sup>1</sup>

Total poverty estimates are available for approximately 87 countries; rural poverty estimates are available for approximately 77 countries, and urban poverty estimates are available for approximately 72 countries.

Most developing countries where the World Bank has conducted a poverty assessment have data. Some high-income countries also report national poverty estimates.

The lag between the reference year and actual production of data series depends on the availability of household surveys and frequency of World Bank's poverty assessment for each country. Household budget or income surveys are undertaken at different intervals in different countries. In developing countries they typically take place every three to five years. World Bank poverty assessments typically coincide with the availability of these surveys.

Data are updated semi-annually in April and September of each year, but the availability of new estimate for a country will also depend on availability of new household surveys.

- 1 Summaries of poverty assessments are available at [www.worldbank.org/poverty.net](http://www.worldbank.org/poverty.net), by selecting "Poverty assessments" from the left side bar. Poverty assessment documents are available at [www-wds.worldbank.org](http://www-wds.worldbank.org), under "By topic," "Poverty reduction," "Poverty assessment."

## **Regional and Global estimates**

Regional and global estimates are not applicable for these indicators.

## **Expected time of release**

The World Bank's World Development Indicators (WDI) Online database which contains these series is updated semi-annually in April and September each year. However, availability of new estimate for a country will depend on availability of new household surveys and new poverty assessment.

## **Youth unemployment rate, aged 15-24, women**

### **Contact point in international agency**

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## Definition

The youth unemployment rate is the proportion of the youth labour force that is unemployed. Young people are defined as persons aged between 15 and 24.

The unemployed comprise all persons above a specified age who, during the reference period, were: (a) without work; (b) currently available for work; and (c) actively seeking work. The labour force is the sum of the number of persons employed and the number of persons unemployed.<sup>1</sup>

For further information see: <http://www.ilo.org/trends>

- 1 For additional details see the resolution concerning statistics of the economically active population, employment, unemployment and underemployment, adopted by the 13th International Conference of Labour Statisticians, Geneva, 1982, website: <http://http://www.ilo.org/public/english/bureau/stat/download/res/ecacpop.pdf>*

## Method of computation

The unemployment rate is calculated by dividing the total number of youth unemployed (for a country or a specific group of workers) by the corresponding labour force (in this case age group 15-24), which itself is the sum of the total persons employed and unemployed in the group.

## Comments and limitations

### Total unemployment and registered unemployment

If unemployment data from household surveys or population censuses are unavailable, administrative records might be an alternative. However, a national count of either unemployed persons or work applicants that are registered at employment offices is likely to be only a limited sub-set of the total persons seeking and available for work, especially in countries where the system of employment offices is not extensive. Unemployment registration often uses eligibility requirements that exclude those who have never worked or have not worked recently, or other discriminatory impediments that preclude going to register. On the other hand, administrative records can overstate registered unemployment because of double-counting, failure to remove people from the

registers when they are no longer looking for a job, or because it allows inclusion of persons who have some work. Registered unemployment data can serve as a useful proxy for the extent of persons without work in countries where data on total unemployment are not available and time-series of registered unemployment data by country can serve as a good indication of labour market performance over time, but due to mentioned issues the data should be used with care. Moreover, due the limitation in comparability to “total unemployment”, the two measures should not be used interchangeably.

### **Cross-country comparability issues**

The issue of comparability of unemployment rates is particularly complex when looking at indicators for a large number of countries throughout the world. In an effort to resolve this issue for its member countries – and building on work carried out by the United States Bureau of Labour Statistics in the 1960s – OECD publishes “standardized unemployment rates” adjusted to ILO concepts. The ILO has further extended the OECD series in country coverage and number of labour force measures. These unemployment rates are from national labour force survey estimates that have been adjusted to make them conceptually consistent with the strictest application of the ILO statistical standards. This implies that participating countries and territories have provided detailed information on the composite elements of their labour forces. The unemployment rates obtained are based on the total labour force including the armed forces, while OECD standardized rates are now civilian-based. The rates are calculated from annual average estimates (or the period considered most representative over the year), thereby avoiding the variances that would occur if different reference periods were used. These unemployment rates, based on official national information, should provide the best basis currently available for making reasonable international comparisons and assumptions.

A significant amount of research has been carried out over the years in the important area of producing unemployment rates that are fully consistent conceptually, in order to contrast unemployment rates of different countries for different hypotheses. There are a host of reasons why measured unemployment rates may not be comparable between countries. A few are provided below, to give users some indication of the range of potential issues that are relevant when attempting to determine the degree of comparability for unemployment rates between countries. Users with knowledge of particular countries or special circumstances should be able to expand on them:

#### **1. Different sources.**

To the extent that sources of information differ, so will the results. Comparability difficulties result firstly from the already mentioned difference between sources measuring registered unemployment and total unemployment. But even when this is taken into account, the labour force surveys, official estimates and population censuses can still pose issues of comparability in cross-country analyses. Official estimates are generally based on information from different sources and can be combined in many different ways. A population census generally cannot probe deeply into labour force activity status. The resulting unemployment estimates may, therefore, differ substantially (either upwards or downwards) from those obtained from household surveys where more questions are asked to determine respondents' labour market situation.

## **2. Measurement difference.**

Where the information is based on household surveys or population censuses, differences in the questionnaires can lead to different statistics even allowing for full adherence to ILO guidelines. In other words, differences in the measurement tool can affect the comparability of labour force results across countries.

## **3. Conceptual variation.**

National statistical offices even when basing themselves on the ILO conceptual guidelines may not follow the strictest measurement of employment and unemployment. They may differ in their choices concerning the conceptual basis for estimating unemployment, as in specific instances where the guidelines allow for a relaxed definition, thereby causing the labour force estimates (the base for the unemployment rate) to differ. They may also choose to derive the unemployment rate from the civilian labour force rather than the total labour force or economically active population. To the extent that such choices vary across countries, so too will the information.

## **4. Number of observations per year.**

Statistics for any given year can differ depending on the number of observations – monthly, quarterly, once or twice a year, and so on. Among other things, a considerable degree of seasonality can influence the results when the full year is not covered.

## **5. Geographic coverage.**

Survey coverage that is less than national coverage – urban areas, city, regional – has obvious limitations to comparability to the extent that coverage is not representative of the country as a whole. Unemployment in urban areas may tend to be higher than total unemployment because of the exclusion of the rural areas where workers are likely to

work, although they may be underemployed or unpaid family workers, rather than seek work in a nonexistent or small formal sector.

## **6. Collection methodology.**

Sample sizes, sample selection procedures, sampling frames, and coverage, as well as many other statistical issues associated with data collection, may make a significant difference. The better the sample size and coverage, the better the results. Use of well-trained interviewers, proper collection and processing techniques, adequate estimation procedures, etc. are crucial for accurate results. Wide variations in this regard can clearly affect the comparability of the unemployment statistics. When viewing the unemployment rate as a gauge for tracking cyclical developments within a country, one would be interested in looking at changes in the measure over time. In this context, the definition of unemployment used (whether a country-specific definition or one based on the internationally recommended standards) does not matter as much – so long as it remains unchanged – as the fact that the statistics are collected and disseminated with regularity, so that measures of change are available for study. Still, for users making cross-country comparisons it will be critical to know the source of the data and the conceptual basis for the estimates. It is also important to recognize that minor differences in the resulting statistics may not represent significant real differences.

## **7. Differences in age-groupings**

Although less important than other factors, mention should be made of differences in the age groups utilized, because the age limits applied for both youth and adults may vary across countries. In general, where a minimum school-leaving age exists, the lower age limit of youth will usually correspond to that age. This means that the lower age limit often varies between 14 and 16 years (and for some countries is even lower than 14, for example, Haiti at 10 years), according to the institutional arrangements in the country. This should not greatly affect most of the youth unemployment measures. However, the size of the age group may influence the measure of the young unemployed as a percentage of total unemployment. Other things being equal, the larger the age group the greater will be this percentage. In a few cases there is a larger discrepancy in the age limits applied. Six countries use 29 as the upper age limit: Colombia (1989-90), Costa Rica (1980-86), Honduras (1991-98), New Caledonia (1996), Panama (1983) and Suriname (1987). There are also differences in the operational definition of adults. In general, adults are defined as all individuals above the age of 25, but some countries apply an upper age limit. The upper age limit would obviously affect only the ratio of youth-to-adult unemployment rates and the effect is likely to be very small. Finally, mention should be made of the reference period of the information reported. Because

there will be a substantial group of school-leavers (either permanently or for the extended holiday break) in the reported figures, the level of youth unemployment is likely to vary significantly over the year as a result of different school opening and closing dates. Most of the information reported relates to annual averages. In other cases, however, the figures relate to a specific month of the year (as with census data). The implications of the particular month chosen will vary across countries, owing to differences in institutional arrangements.

### **Sources of discrepancies between global and national figures**

The labour force data are harmonized to account for differences in national data and scope of coverage, collection and tabulation methodologies as well as for other country specific factors such as military service requirements. Furthermore, nationally reported data are utilized only when these meet strict criteria in terms of international comparability and geographic coverage. Model estimates are used where national data are not available or satisfactory. See “Comments and Limitations” section for additional details of sources of discrepancies.

### **Process of obtaining data**

Household labour force surveys are generally the most comprehensive and comparable sources for youth unemployment statistics. Other possible sources include population censuses, official estimates and administrative records such as employment office records and social insurance statistics.

The ILO has made an intensive effort to assemble data on the indicators for as many countries, areas and territories as possible. Where there is no information for a country, it is usually because the country involved was not in a position to provide information for the indicator. Even when information for an indicator was available, it may not have been sufficiently current or may not have met other qualifications established for inclusion in the Key Indicators of the Labour Market, on which the information for youth unemployment is based.

In compiling the KILM, the ILO concentrates on bringing together information from international repositories. In other words, the KILM team rarely collects information directly from national sources, but rather takes advantage of existing compilations held by various organizations, such as the following:

International Labour Office (Bureau of Statistics)

United Nations Statistics Division

## Metadata for the MDGs

Organisation Organisation for Economic Co-operation and Development (OECD)

World Bank

United Nations Industrial Development Organization (UNIDO)

Statistical Office of the European Union (EUROSTAT)

United Nations Educational, Scientific and Cultural Organization (UNESCO)

United States Bureau of Labor Statistics (BLS)

Information maintained by these organizations has generally been obtained from national sources or is based on official national publications.

Whenever information was available from more than one repository, the information and background documentation from each repository was reviewed in order to select the information most suitable for inclusion, based on an assessment of the general reliability of the sources, the availability of methodological information and explanatory notes regarding the scope of coverage, the availability of information by sex and age, and the degree of historical coverage. Occasionally, two data repositories have been chosen and presented for a single country; any resulting breaks in the historical series are duly noted.

For countries with less-developed labour market information systems, such as those in the developing economies, information may not be easily available to policy-makers and the social partners, and even less so to international organizations seeking to compile global data sets. Many of these countries, however, do collect labour market information through household and establishment surveys, population censuses and administrative records, so that the main problem remains the communication of such information to the global community. In this situation, the ILO Labour Market Indicators Library (LMIL) programme can help. The LMIL is a system for sharing information between the ILO regional offices and headquarters. ILO regional offices are closer to the original micro-sources of data and have therefore been successful in filling in numerous gaps where data at headquarters – used in the production of the KILM – had not existed. It is an ongoing programme that continues to assist the KILM and other ILO publications and research programmes in the expansion of its country and yearly coverage of indicators.

### **Treatment of missing values**

See “Regional and Global Estimates”, below.

## Data availability

Data are available for 126 economies.

The lag between the reference year and actual production of data series is one year or more. Data are produced at least annually.

## Regional and Global estimates

The biggest challenge in the production of aggregate estimates is that of missing data. In an ideal world, producing world and regional estimates of labour market indicators, such as unemployment, for example, would simply require summing up the total number of unemployed persons across all countries in the world or within a given region. However, because not all countries report data in every year and, indeed, some countries do not report data for any years at all, it is not possible to derive aggregate estimates of labour market indicators by merely summing across countries.

To address the problem of missing data, the ILO Employment Trends Unit has designed and actively maintains three econometric models which are used to produce estimates of labour market indicators in the countries and years for which no real data exist. The Global Employment Trends Model (GET Model) is used to produce estimates – disaggregated by age and sex – of employment, unemployment and other aggregates. The world and regional labour force estimates are produced using the Trends Labour Force Model (TLF Model).

Each of these models uses multivariate regression techniques to impute missing values at the country level. The first step in each model is to assemble every known piece of real information (i.e. every real data point) for each indicator in question. It is important to note that only data that are national in coverage and comparable across countries and over time are used as inputs. This is an important selection criterion when the models are run, because they are designed to use the relationship between the various labour market indicators and their macroeconomic correlates (such as per-capita GDP, GDP growth rates, demographic trends, country membership in the Highly Indebted Poor Country (HIPC) Initiative, geographic indicators and country and time dummy variables) in order to produce estimates of the labour market indicators where no data exist. Thus, the comparability of the labour market data that are used as inputs in the imputation models is essential to ensure that the models accurately capture the relationship between the labour market indicators and the macroeconomic variables.

The last step of the estimation procedure occurs once the datasets containing both the real and imputed labour market data have been assembled. In this step, the ILO Trends Team aggregates the data across countries to produce the final world and regional

estimates. For further information on the world and regional econometric models, readers can consult the technical background papers available at the following website:

<http://www.ilo.org/public/english/employment/strat/wrest.htm>

### **Expected time of release**

Data are published every two years, usually in September, in the Key Indicators of the Labour Market report.

### **Please refer to series metadata**

## **Youth unemployment rate, aged 15-24, men**

### **Contact point in international agency**

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**Website:** <http://www.ilo.org/trends>

### **Definition**

The youth unemployment rate is the proportion of the youth labour force that is unemployed. Young people are defined as persons aged between 15 and 24.

The unemployed comprise all persons above a specified age who, during the reference period, were: (a) without work; (b) currently available for work; and (c) actively seeking work. The labour force is the sum of the number of persons employed and the number of persons unemployed. <sup>1</sup>

For further information see: <http://www.ilo.org/trends>

<sup>1</sup> *For additional details see the resolution concerning statistics of the economically active population, employment, unemployment and underemployment, adopted by the 13th International Conference of Labour Statisticians, Geneva, 1982, website: <http://http://www.ilo.org/public/english/bureau/stat/download/res/ecacpop.pdf>*

### **Method of computation**

The unemployment rate is calculated by dividing the total number of youth unemployed (for a country or a specific group of workers) by the corresponding labour force (in this

case age group 15-24), which itself is the sum of the total persons employed and unemployed in the group.

## **Comments and limitations**

### **Total unemployment and registered unemployment**

If unemployment data from household surveys or population censuses are unavailable, administrative records might be an alternative. However, a national count of either unemployed persons or work applicants that are registered at employment offices is likely to be only a limited sub-set of the total persons seeking and available for work, especially in countries where the system of employment offices is not extensive. Unemployment registration often uses eligibility requirements that exclude those who have never worked or have not worked recently, or other discriminatory impediments that preclude going to register. On the other hand, administrative records can overstate registered unemployment because of double-counting, failure to remove people from the registers when they are no longer looking for a job, or because it allows inclusion of persons who have some work. Registered unemployment data can serve as a useful proxy for the extent of persons without work in countries where data on total unemployment are not available and time-series of registered unemployment data by country can serve as a good indication of labour market performance over time, but due to mentioned issues the data should be used with care. Moreover, due the limitation in comparability to “total unemployment”, the two measures should not be used interchangeably.

### **Cross-country comparability issues**

The issue of comparability of unemployment rates is particularly complex when looking at indicators for a large number of countries throughout the world. In an effort to resolve this issue for its member countries – and building on work carried out by the United States Bureau of Labour Statistics in the 1960s – OECD publishes “standardized unemployment rates” adjusted to ILO concepts. The ILO has further extended the OECD series in country coverage and number of labour force measures. These unemployment rates are from national labour force survey estimates that have been adjusted to make them conceptually consistent with the strictest application of the ILO statistical standards. This implies that participating countries and territories have provided detailed information on the composite elements of their labour forces. The unemployment rates obtained are based on the total labour force including the armed forces, while OECD standardized rates are now civilian-based. The rates are calculated from annual average estimates (or the period considered most representative over the year), thereby avoiding

the variances that would occur if different reference periods were used. These unemployment rates, based on official national information, should provide the best basis currently available for making reasonable international comparisons and assumptions.

A significant amount of research has been carried out over the years in the important area of producing unemployment rates that are fully consistent conceptually, in order to contrast unemployment rates of different countries for different hypotheses. There are a host of reasons why measured unemployment rates may not be comparable between countries. A few are provided below, to give users some indication of the range of potential issues that are relevant when attempting to determine the degree of comparability for unemployment rates between countries. Users with knowledge of particular countries or special circumstances should be able to expand on them:

### **1. Different sources.**

To the extent that sources of information differ, so will the results. Comparability difficulties result firstly from the already mentioned difference between sources measuring registered unemployment and total unemployment. But even when this is taken into account, the labour force surveys, official estimates and population censuses can still pose issues of comparability in cross-country analyses. Official estimates are generally based on information from different sources and can be combined in many different ways. A population census generally cannot probe deeply into labour force activity status. The resulting unemployment estimates may, therefore, differ substantially (either upwards or downwards) from those obtained from household surveys where more questions are asked to determine respondents' labour market situation.

### **2. Measurement difference.**

Where the information is based on household surveys or population censuses, differences in the questionnaires can lead to different statistics even allowing for full adherence to ILO guidelines. In other words, differences in the measurement tool can affect the comparability of labour force results across countries.

### **3. Conceptual variation.**

National statistical offices even when basing themselves on the ILO conceptual guidelines may not follow the strictest measurement of employment and unemployment. They may differ in their choices concerning the conceptual basis for estimating unemployment, as in specific instances where the guidelines allow for a relaxed definition, thereby causing the labour force estimates (the base for the unemployment rate) to differ. They may also

choose to derive the unemployment rate from the civilian labour force rather than the total labour force or economically active population. To the extent that such choices vary across countries, so too will the information.

#### **4. Number of observations per year.**

Statistics for any given year can differ depending on the number of observations – monthly, quarterly, once or twice a year, and so on. Among other things, a considerable degree of seasonality can influence the results when the full year is not covered.

#### **5. Geographic coverage.**

Survey coverage that is less than national coverage – urban areas, city, regional – has obvious limitations to comparability to the extent that coverage is not representative of the country as a whole. Unemployment in urban areas may tend to be higher than total unemployment because of the exclusion of the rural areas where workers are likely to work, although they may be underemployed or unpaid family workers, rather than seek work in a nonexistent or small formal sector.

#### **6. Collection methodology.**

Sample sizes, sample selection procedures, sampling frames, and coverage, as well as many other statistical issues associated with data collection, may make a significant difference. The better the sample size and coverage, the better the results. Use of well-trained interviewers, proper collection and processing techniques, adequate estimation procedures, etc. are crucial for accurate results. Wide variations in this regard can clearly affect the comparability of the unemployment statistics. When viewing the unemployment rate as a gauge for tracking cyclical developments within a country, one would be interested in looking at changes in the measure over time. In this context, the definition of unemployment used (whether a country-specific definition or one based on the internationally recommended standards) does not matter as much – so long as it remains unchanged – as the fact that the statistics are collected and disseminated with regularity, so that measures of change are available for study. Still, for users making cross-country comparisons it will be critical to know the source of the data and the conceptual basis for the estimates. It is also important to recognize that minor differences in the resulting statistics may not represent significant real differences.

#### **7. Differences in age-groupings**

Although less important than other factors, mention should be made of differences in the age groups utilized, because the age limits applied for both youth and adults may vary

across countries. In general, where a minimum school-leaving age exists, the lower age limit of youth will usually correspond to that age. This means that the lower age limit often varies between 14 and 16 years (and for some countries is even lower than 14, for example, Haiti at 10 years), according to the institutional arrangements in the country. This should not greatly affect most of the youth unemployment measures. However, the size of the age group may influence the measure of the young unemployed as a percentage of total unemployment. Other things being equal, the larger the age group the greater will be this percentage. In a few cases there is a larger discrepancy in the age limits applied. Six countries use 29 as the upper age limit: Colombia (1989-90), Costa Rica (1980-86), Honduras (1991-98), New Caledonia (1996), Panama (1983) and Suriname (1987). There are also differences in the operational definition of adults. In general, adults are defined as all individuals above the age of 25, but some countries apply an upper age limit. The upper age limit would obviously affect only the ratio of youth-to-adult unemployment rates and the effect is likely to be very small. Finally, mention should be made of the reference period of the information reported. Because there will be a substantial group of school-leavers (either permanently or for the extended holiday break) in the reported figures, the level of youth unemployment is likely to vary significantly over the year as a result of different school opening and closing dates. Most of the information reported relates to annual averages. In other cases, however, the figures relate to a specific month of the year (as with census data). The implications of the particular month chosen will vary across countries, owing to differences in institutional arrangements.

### **Sources of discrepancies between global and national figures**

The labour force data are harmonized to account for differences in national data and scope of coverage, collection and tabulation methodologies as well as for other country specific factors such as military service requirements. Furthermore, nationally reported data are utilized only when these meet strict criteria in terms of international comparability and geographic coverage. Model estimates are used where national data are not available or satisfactory. See "Comments and Limitations" section for additional details of sources of discrepancies.

### **Process of obtaining data**

Household labour force surveys are generally the most comprehensive and comparable sources for youth unemployment statistics. Other possible sources include population censuses, official estimates and administrative records such as employment office records and social insurance statistics.

The ILO has made an intensive effort to assemble data on the indicators for as many countries, areas and territories as possible. Where there is no information for a country, it is usually because the country involved was not in a position to provide information for the indicator. Even when information for an indicator was available, it may not have been sufficiently current or may not have met other qualifications established for inclusion in the Key Indicators of the Labour Market, on which the information for youth unemployment is based.

In compiling the KILM, the ILO concentrates on bringing together information from international repositories. In other words, the KILM team rarely collects information directly from national sources, but rather takes advantage of existing compilations held by various organizations, such as the following:

International Labour Office (Bureau of Statistics)

United Nations Statistics Division

Organisation for Economic Co-operation and Development (OECD)

World Bank

United Nations Industrial Development Organization (UNIDO)

Statistical Office of the European Union (EUROSTAT)

United Nations Educational, Scientific and Cultural Organization (UNESCO)

United States Bureau of Labor Statistics (BLS)

Information maintained by these organizations has generally been obtained from national sources or is based on official national publications.

Whenever information was available from more than one repository, the information and background documentation from each repository was reviewed in order to select the information most suitable for inclusion, based on an assessment of the general reliability of the sources, the availability of methodological information and explanatory notes regarding the scope of coverage, the availability of information by sex and age, and the degree of historical coverage. Occasionally, two data repositories have been chosen and presented for a single country; any resulting breaks in the historical series are duly noted.

For countries with less-developed labour market information systems, such as those in the developing economies, information may not be easily available to policy-makers and the social partners, and even less so to international organizations seeking to compile global data sets. Many of these countries, however, do collect labour market information through household and establishment surveys, population censuses and administrative records, so that the main problem remains the communication of such information to the global community. In this situation, the ILO Labour Market Indicators Library (LMIL) programme can help. The LMIL is a system for sharing information between the ILO regional offices and headquarters. ILO regional offices are closer to the original micro-sources of data and have therefore been successful in filling in numerous gaps where data at headquarters – used in the production of the KILM – had not existed. It is an ongoing programme that continues to assist the KILM and other ILO publications and research programmes in the expansion of its country and yearly coverage of indicators.

### **Treatment of missing values**

See “Regional and Global Estimates”, below.

### **Data availability**

Data are available for 126 economies.

The lag between the reference year and actual production of data series is one year or more. Data are produced at least annually.

### **Regional and Global estimates**

The biggest challenge in the production of aggregate estimates is that of missing data. In an ideal world, producing world and regional estimates of labour market indicators, such as unemployment, for example, would simply require summing up the total number of unemployed persons across all countries in the world or within a given region. However, because not all countries report data in every year and, indeed, some countries do not report data for any years at all, it is not possible to derive aggregate estimates of labour market indicators by merely summing across countries.

To address the problem of missing data, the ILO Employment Trends Unit has designed and actively maintains three econometric models which are used to produce estimates of labour market indicators in the countries and years for which no real data exist. The Global Employment Trends Model (GET Model) is used to produce estimates – disaggregated by age and sex – of employment, unemployment and other aggregates. The world and regional labour force estimates are produced using the Trends Labour Force Model (TLF Model).

Each of these models uses multivariate regression techniques to impute missing values at the country level. The first step in each model is to assemble every known piece of real information (i.e. every real data point) for each indicator in question. It is important to note that only data that are national in coverage and comparable across countries and over time are used as inputs. This is an important selection criterion when the models are run, because they are designed to use the relationship between the various labour market indicators and their macroeconomic correlates (such as per-capita GDP, GDP growth rates, demographic trends, country membership in the Highly Indebted Poor Country (HIPC) Initiative, geographic indicators and country and time dummy variables) in order to produce estimates of the labour market indicators where no data exist. Thus, the comparability of the labour market data that are used as inputs in the imputation models is essential to ensure that the models accurately capture the relationship between the labour market indicators and the macroeconomic variables.

The last step of the estimation procedure occurs once the datasets containing both the real and imputed labour market data have been assembled. In this step, the ILO Trends Team aggregates the data across countries to produce the final world and regional estimates. For further information on the world and regional econometric models, readers can consult the technical background papers available at the following website:

<http://www.ilo.org/public/english/employment/strat/wrest.htm>

### **Expected time of release**

Data are published every two years, usually in September, in the Key Indicators of the Labour Market report.

### **Please refer to series metadata**

## **Personal computers**

### **Contact point in international agency**

Market, Information and Statistics Division (STAT)

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### **Definition**

The number of Personal Computers (PC) measures the number of computers installed in a country. The statistic includes PCs, laptops, notebooks etc, but excludes terminals

connected to mainframe and mini-computers that are primarily intended for shared use, and devices such as smart-phones that have only some, but not all, of the functions of a PC (e.g., they may lack a full-sized keyboard, a large screen, an Internet connection, drives etc).

### **Method of computation**

The number of personal computers is divided by the country's population and multiplied by 100.

### **Comments and limitations**

Data for the number of personal computers are provided by less than 30 percent of countries. Since there are major data gaps for the number of personal computers on the country level, ITU estimates many of the data. Estimates are based on industry sales data, shipment data and take into consideration the number of Internet users. Where available, estimates take into consideration the number of households with PCs, which is an indicator that is collected by an increasing number of countries, though household surveys. Given the lack of data for personal computers on the national level, the MDG Expert Group (during the 2007 revision of the list of indicators) decided to delete this indicator from the official group of MDG indicators. This decision was supported by the fact that one of the main reasons to track the number of computers was to track the number of Internet users, an indicator that remains part of target 18. The number of personal computers remains a background indicator.

### **Sources of discrepancies between global and national figures**

Discrepancies between global and national figures may arise when countries use a different definition than the one used by ITU.

Discrepancy may also arise in cases where the end of a fiscal year varies from that used by ITU, which is end of December of every year. A number of countries have fiscal years that end in March or June of every year.

### **Process of obtaining data**

ITU collects its data through an annual questionnaire that is sent to the government agency in charge of telecommunications/ICT, usually the Ministry or the regulatory agency. In some cases (especially in countries where there is still only one operator), the questionnaire is sent to the incumbent operator. Data are verified to ensure consistency with previous years' data. When countries do not reply to the questionnaire, ITU carries out research and collects missing values from government web sites, as well as from

Annual Reports by operators. Data on household access to, and use of ICTs are collected through an annual questionnaire that is sent to National Statistical Offices (NSOs).

### **Treatment of missing values**

Missing values are estimated by ITU.

### **Data availability**

Since there are major data gaps for this indicator at the country level, ITU estimates many of these data. Data for the number of personal computers are provided by less than 30 percent of countries. Since there are major data gaps for the number of personal computers on the country level, ITU estimates many of the data. Estimates are based on industry sales data, shipment data and take into consideration the number of Internet users. Where available, estimates take into consideration the number of households with a PC, which is an indicator that is collected by an increasing number of countries, through household surveys. Given the lack of data for personal computers on the national level, the MDG Expert Group (during the 2007 revision of the list of indicators) decided to delete this indicator from the official group of MDG indicators. This decision was supported by the fact that one of the main reasons to track the number of computers was to track the number of Internet users, an indicator that remains part of target 18. The number of personal computers remains a background indicator.

### **Regional and Global estimates**

Regional and global totals are calculated as unweighted sum of the country values. Regional and global penetration rates (per 100 inhabitants) are weighted averages of the country values. The population of the country is used as weight.

### **Expected time of release**

Year end data are usually released by June of the following year.

## **Personal computers per 100 population**

### **Contact point in international agency**

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## **Definition**

The number of Personal Computers (PC) measures the number of computers installed in a country. The statistic includes PCs, laptops, notebooks etc, but excludes terminals connected to mainframe and mini-computers that are primarily intended for shared use, and devices such as smart-phones that have only some, but not all, of the functions of a PC (e.g., they may lack a full-sized keyboard, a large screen, an Internet connection, drives etc).

## **Method of computation**

The number of personal computers is divided by the country's population and multiplied by 100.

## **Comments and limitations**

Given the lack of data for personal computers on the national level, the MDG Expert Group (during the 2007 revision of the list of indicators) decided to delete this indicator from the official group of MDG indicators. This decision was supported by the fact that one of the main reasons to track the number of computers was to track the number of Internet users, an indicator that remains part of target 18. The number of personal computers remains a background indicator.

## **Sources of discrepancies between global and national figures**

Discrepancies between global and national figures may arrive when countries use a different definition than the one used by ITU.

Discrepancies may also arise in cases where the end of a fiscal year differs from that used by ITU, which is end of December of every year. A number of countries have fiscal years that end in March or June of every year.

## **Process of obtaining data**

ITU collects its data through an annual questionnaire that is sent to the government agency in charge of telecommunications/ICT, usually the Ministry or the regulatory agency. In some cases (especially in countries where there is still only one operator), the questionnaire is sent to the incumbent operator. Data are verified to ensure consistency with previous years' data. When countries do not reply to the questionnaire, ITU carries out research and collects missing values from government web sites, as well as from Annual Reports by operators. Data on household access to, and use of ICTs are collected through an annual questionnaire that is sent to National Statistical Offices (NSOs).

## **Treatment of missing values**

Estimates are based on industry sales data, shipment data and take into consideration the number of Internet users. Where available, estimates take into consideration the number of households with a PC, which is an indicator that is collected by an increasing number of countries, through household surveys.

### **Data availability**

Data are available for less than 30 percent of countries. Depending on the country, there is usually a time lag of between 4-6 months, between the reference month (December of each year) and the production time. Data are produced annually.

### **Regional and Global estimates**

Regional and global totals are calculated as unweighted sums of the country values. Regional and global penetration rates (per 100 inhabitants) are weighted averages of the country values weighted by the population of the countries/regions.

### **Expected time of release**

Year end data are usually released by June of the following year through the World Telecommunication/ICT Indicators Database. Data are also available at no cost through the ITU's ICT Eye, see: <http://www.itu.int/ITU-D/ict/>

## **Gender Parity Index in primary level enrolment**

### **Contact point in international agency**

Said Belkachla

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Monitoring international goals

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### **Definition**

Ratio of girls to boys (gender parity index) in primary, secondary and tertiary education is the ratio of the number of female students enrolled at primary, secondary and tertiary levels of education to the number of male students in each level. To standardise the effects of the population structure of the appropriate age groups, the Gender Parity Index (GPI) of the Gross Enrolment Ratio (GER) for each level of education is used.

The GER is the number of pupils 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.

### **Method of computation**

To calculate the Gross Enrolment Ratio one must first determine the population of official school age for each level of education by reference to the theoretical starting ages and durations of the International Standard Classification of Education (ISCED97) Level 1 (primary education) and Levels 2 and 3 (secondary education) as reported by the country. The population of the official age for tertiary education is the 5-year age group immediately following the end of secondary education.

Then, the number of pupils or students enrolled in each level of education is divided by the population of official school age for that level of education, and the result is multiplied by 100. The Gross Enrolment Ratios for males and females are calculated separately.

The Gender Parity Index (GPI) is then calculated by dividing the female Gross Enrolment Ratio by the male Gross Enrolment Ratio for the given level of education.

This method requires information on the structure of education (i.e. theoretical entrance age and duration of ISCED97 Level 1 and Levels 2 and 3), enrolments in each level of education and the populations of the age-groups corresponding to the given levels of education. Separate figures for males and females are required.

### **Comments and limitations**

A GPI of 1 indicates parity between the sexes; a GPI that varies between 0 and 1 typically means a disparity in favour of males; whereas a GPI greater than 1 indicates a disparity in favour of females.

The indicator is an imperfect measure of the accessibility of schooling for girls because it does not allow a determination of whether improvements in the ratio reflect increases in girls' school enrolment (desirable) or decreases in boys' enrolment (undesirable). It also does not show whether the overall level of participation in education is low or high.

### **Sources of discrepancies between global and national figures**

Country figures may differ from the international ones because of differences between national education systems and ISCED97; or differences in coverage (i.e. the extent to which different types of education – e.g. private or special education – or different types

of programmes e.g. adult education or early childhood care and education - are included in one rather than the other) and/or between national and UNPD population data.

### **Process of obtaining data**

The UNESCO Institute for Statistics (UIS) produces time series based on enrolments reported by education ministries or national statistical offices and UN population estimates. These data are gathered through questionnaires sent annually to countries which are typically completed by ministries of education and/or national statistical offices. Countries are asked to report data according to the levels of education defined in ISCED97 to ensure international comparability of resulting indicators.

The data received by UIS are validated using electronic error detection systems that check for arithmetic errors & inconsistencies and trend analysis for implausible results. Queries are taken up with the country representatives reporting the data in order that corrections can be made (of errors) or explanations given (of implausible but correct results).

In addition, countries also have an opportunity to see and comment on the main indicators the UIS produces in our annual "country review" of indicators.

The UIS also, if necessary, adjusts nationally reported data in order to take account either of under-reporting (i.e. data gaps) or over-reporting (i.e. inclusion of education programmes not covered by its surveys) before calculating indicators. In such cases, the results – if published – will normally be designated as UIS estimates (denoted by \*\* in UIS publications).

### **Treatment of missing values**

The UIS estimates certain key items of data that may be missing or incomplete. Where data for a country are entirely missing or where an estimate is not based on evidence from or about the country directly, the UIS does not publish the resulting country-level estimates. They are used only for the purposes of calculating regional or global aggregates or averages.

For the purposes of calculating the primary Gross Parity Index, the UIS may need to make one or more of the following types of estimate:

- An adjustment to account for over- or under-reporting, for example:
  - To exclude enrolments in other programmes which have been reported together with enrolments at the primary level (very rare and does not usually result in a country level publishable estimate);

- To include enrolments in a type of education – such as private education or special education – not reported by the country; and/or
- To include enrolments in a part of the country not reported by the country.
- An estimate of the number of enrolments by sex
- An estimate of the population in the official age group for primary education (if neither UNPD nor the country itself can provide estimates of their own)

In all cases, in the first instance, estimates are based on evidence from the country itself (e.g. information from the data provider on the size of the missing component, via correspondence, publications or data on the ministry's or National Statistical Office's (NSO's) Webpage, or via surveys conducted by other organisations). These figures may be published: as observed data (if the missing items are found in national source or the country submits them); as national estimates (if the country is persuaded to produce estimates and submit them in place of missing data); as UIS estimates (if the estimates are made by the UIS); or, occasionally, as inputs for regional and global aggregates and averages (if the evidence on which the estimates are based is weak or unsubstantiated).

Where no evidence is available for the reporting year from the country, estimates may be based on data already reported by the country in a previous year or on another data item which is available (e.g. total enrolments in primary education) and clearly linked to the missing item. These figures may be published as UIS estimates or, if the data reported are very old or the links with other available data are weak, they may only be used for the construction of regional or global aggregates and averages.

Where there is neither evidence from the country, nor data available in previous years, estimates are based on a similar country. Such figures will only be used for regional or global aggregates and averages.

Over- and under-reporting are typically adjusted by adding or subtracting a given percentage of enrolments thus assuming the same sex distribution as for the reported enrolments.

Over- and under-reporting are typically adjusted by adding or subtracting a given percentage of enrolments thus assuming the same age, grade and sex distribution as for the reported enrolments. (If more detailed evidence is available this will be used but that is typically not the case).

Population estimates – produced only where there are no other suitable estimates available either from UNPD or from the country itself – are produced only for countries which have reported education data to the UIS and for which population estimates from a reliable source are available in some years.

## Data availability

The GPI of the Gross Enrolment Ratio is available for around 180 countries for primary education, 160 for secondary education and 135 for tertiary education. It should be noted that there is no tertiary education provision in about twenty countries worldwide and hence, no tertiary GER.

Data are published 15 months after the end of the school reference year for countries with calendar school year, and 21 months for countries with split school year. A few countries, mainly from the second group, report more up-to-date data to the Institute and these are published more quickly (9 months after the end of the school year).

Gender parity indices of the Gross enrolment ratios produced by UNESCO Institute for Statistics are available on an annual basis. The United Nations Population Division estimates population by individual years of age biennially, although estimates may be based on population censuses conducted every 10 years in most countries.

## Regional and Global estimates

Regional and global averages are calculated on the basis of the data published by the UIS and using the best possible non-publishable estimates where no publishable data exist. Averages are produced using the appropriate school-age populations as weights. At the tertiary level this is the five-year age group immediately following the theoretical end of secondary education.

## Expected time of release

The UIS Education data is disseminated twice a year: country data and regional averages are released in April, and country data (only) are updated with new countries' submissions in September.

## Terrestrial and marine areas protected, sq. km.

### Contact point in international agency

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Websites: <http://www.wdpa.org> and [www.wdpa-marine.org](http://www.wdpa-marine.org)

## Definition

The units of measure in this indicator are terrestrial protected areas as well as marine protected areas in territorial waters (up to 12 nautical miles from the coast). The International Union for Conservation of Nature (IUCN) defines a protected area as “a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values”.<sup>1</sup>

2 DUDLEY, N. (EDITOR) (2008). *Guidelines for Applying Protected Area Management Categories*. IUCN, Gland, Switzerland

## Method of computation

This indicator is calculated using all the nationally designated protected areas recorded in the World Database on Protected Areas (WDPA) whose location and extent is known. The WDPA is held within a Geographic Information System (GIS) that stores information about protected areas such as their name, type and date of designation, documented area, geographic location (point) and/or boundary (polygon).

A GIS analysis is used to calculate terrestrial and marine protection. For this a global protected area layer is created by combining the polygons and points recorded in the WDPA. Circular buffers are created around points based on the known extent of protected areas for which no polygon is available. Annual protected area layers are created by dissolving the global protected area layer by the known year of establishment of protected areas recorded in the WDPA. The annual protected area layers are overlaid with country/territory boundaries, coastlines and buffered coastlines (delineating the territorial waters) to obtain the absolute coverage (in square kilometers) of protected areas by country/territory per year from 1990 to present. The total area of a country's/territory's terrestrial protected areas and marine protected areas in territorial waters is divided by the total area of its land areas (including inland waters) and territorial waters to obtain the relative coverage (percentage) of protected areas.

## Comments and limitations

The extent to which the land areas, including inland waters, and territorial waters of a country/territory are protected is a useful indicator of Government's will to protect biodiversity. However, it is neither an indication of how well managed the terrestrial and marine protected areas are, nor confirmation that protection measures are effectively enforced. Further, the indicator does not provide information on non-designated or internationally designated protected areas that may also be important for conserving biodiversity.

There are known data and knowledge gaps for some countries/regions due to difficulties in reporting national protected area data to the WDPA and/or determining whether a site conforms to the IUCN definition of a protected area.

### **Sources of discrepancies between global and national figures**

UNEP-WCMC aggregates the global and regional figures for this indicator from the national figures calculated through GIS analysis. The global, regional and national figures provided by UNEP-WCMC are therefore consistent. Gaps and/or time lags in reporting national protected area data to the WDPA can however result in discrepancies between the national figures provided by UNEP-WCMC and national figures available from national agencies.

### **Process of obtaining data**

The data source for this indicator is the WDPA, the most comprehensive global dataset on marine and terrestrial protected areas available. The WDPA is a joint product of UNEP and IUCN, prepared by UNEP-WCMC and the IUCN World Commission on Protected Areas working with Governments, the Secretariats of Multilateral Environmental Agreements, and collaborating Non-Governmental Organizations (NGOs).

The process followed to produce the UN List of Protected Areas, which takes place every 5 years or so, is a major source of information on the world's protected areas. As part of this process, UNEP-WCMC requests national agencies to review the data in the WDPA for their country/territory as well as to provide new data. In the intervening period between UN Lists, UNEP-WCMC works closely with national agencies and NGOs, continually updating the WDPA as new data become available.

Quality control criteria are applied to ensure consistency and comparability of the data in the WDPA. New data are validated at UNEP-WCMC through a number of tools and translated into the standard data structure of the WDPA. Discrepancies between the data in the WDPA and new data are resolved in communication with data providers. Processed data is fully integrated into the published WDPA.

### **Treatment of missing values**

Protected areas with unknown location and/or extent are excluded from the GIS analysis and statistics. Protected areas with unknown year of establishment are included in the GIS analysis and statistics for every year from 1990 to present. This is the only way to avoid double counting spatial overlaps between dated and undated protected areas. Where no new data is received for a country/territory during a year, protected area coverage is assumed to be equal to the previous year.

## Data availability

Data availability, both in terms of quantity and quality, is improving but not even across the globe. Data on terrestrial protected area coverage are available for over 220 countries/territories and data on marine protected area coverage are available for 170 countries/territories with marine areas. Both terrestrial and marine data can be aggregated in many ways (e.g. by MDG regions).

## Regional and Global estimates

UNEP-WCMC aggregates the global and regional figures for this indicator from the national figures calculated through GIS analysis. Countries/territories that do not fall into the MDG regions are added to the global figures.

## Expected time of release

The WDPA is published annually in January or February. The data in the WDPA is freely available for non-commercial use from <http://www.wdpa.org> or [www.wdpa-marine.org](http://www.wdpa-marine.org). The MDG statistics are compiled based on the annual publication of the WDPA and submitted to the UN Statistics Division. The time lag between reception of new data and production of the MDG statistics is up to one year. UNEP-WCMC makes available a summary of its MDG statistics at: <http://www.unep-wcmc.org/wdpa/mdgs/index.cfm>

## Terrestrial and marine areas protected to total territorial area, percentage

### Contact point in international agency

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### Definition

The indicator is expressed as percentage protected of the total territorial area of a country.

According to the International Union for Conservation of Nature (IUCN), a protected area is *“an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means”*.<sup>1</sup> A Marine Protected Areas (MPA) is defined as *“as any area of intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment”*.<sup>2</sup>

Only protected areas that are “nationally designated” are included in this indicator. The status “designated” is attributed to a protected area: when the authority that corresponds, according to national legislation or common practice (e.g. by means of an executive decree or the like), officially endorses a document of designation. The designation must be for conservation of biodiversity, not single species and not fortuitous *de facto* protection arising because of some other activity (e.g. military). Hence, a number of United States Marine Managed Areas and permanent fisheries closures are excluded.

- 1 IUCN 1994. *Guidelines for Protected Areas Management Categories*. IUCN; Gland; Switzerland and Cambridge; UK.
- 2 IUCN 1988. *Resolution 17.38 of the 17th General Assembly of the IUCN*. IUCN; Gland; Switzerland and Cambridge; UK.

### **Method of computation**

The total protected area extent by country/territory is divided by total territorial area of the country/territory (includes total land area, inland waters, and territorial waters up to 12 nautical miles) Protected areas increase with time and are not deleted from subsequent years.

The size of the protected area (its “extent”) is the officially documented total and/or marine area provided by the national authority, unless otherwise stated. Many protected areas can contain proportions of both the marine and terrestrial environment, and the size of the protected area extent that falls into each environment is not always available.

The data source for this indicator is the World Database on Protected Areas (WDPA). The WDPA is held within a Geographical Information System (GIS), which can store information about a protected area such as its name, designation, total documented area, geographic location and/or delineated spatial boundary.

### **Comments and limitations**

The ratio of total territorial area protected is a useful indicator of a Government's will to protect biodiversity. However, it is neither an indication of how well managed the area is, nor confirmation that protection measures are actually enforced. Further, the indicator does not provide information on non-designated protected areas that may also be important for conserving biodiversity.

There are known data and knowledge gaps that exist in some countries/regions due to difficulties in: reporting capacities; measuring the proportion of a protected area within the terrestrial and/or marine environment; and determining whether a site conforms to the IUCN definition of a protected area/MPA.

### **Sources of discrepancies between global and national figures**

The national figures are aggregated to produce the global statistics for this indicator. For global statistics the Antarctic land mass is added to ensure the global protection levels are not inflated. For global marine protection the figures are calculated using both total territorial waters and total ocean area to take account of where marine protected areas extend beyond a country's territorial waters (12 nautical mile limit).

### **Process of obtaining data**

The World Database on Protected Areas (WDPA) is compiled from multiple sources and is the most comprehensive global dataset on marine and terrestrial protected areas available. It is a joint project of UNEP-WCMC and the IUCN World Commission on Protected Areas working with governments and collaborating non-governmental organizations (NGOs).

A major source of information is through the UN List process, which takes place every 4-5 years. As part of this process, key stakeholders review and provide information to assist in the compilation of the UN List of Protected areas. In the intervening period between UN Lists, UNEP-WCMC works closely with national authorities and NGOs to continually update the WDPA, as new information becomes available.

Partnerships such as the one between UNEP-WCMC and the European Environment Agency have aided the collection of information on a regional scale. Collaborative projects such as the 'MPA Global' project, undertaken through the Sea Around Us Project and the University of British Columbia, with the support of WWF and UNEP-WCMC, have enhanced the amount and quality of marine protected areas data for the WDPA. Early 2008 will see a transition of MPA Global back into the WDPA, which includes the data and

the mechanisms for data collection, ready for the re-launch of the redeveloped online WDPA system in 2008.

Through the UN List process, every 4 – 5 years, UNEP-WCMC requests national agencies to review current lists (including GIS) of protected areas for their country as well as to provide updated information. In addition to this process UNEP-WCMC works closely with national agencies, NGOs and protected areas experts (through the IUCN WCPA) around the world to review, update and acquire new protected areas data. Once at UNEP-WCMC the data is processed and validated through a number of spatial (GIS) and database tools, developed by UNEP-WCMC, to project and translate the data into the standard WDPA data structure to enable integration into the database. Once the data has been converted it is also compared to the existing information within the WDPA. Where discrepancies or gaps in the dataset exist UNEP-WCMC staff communicate with the data provider and external data reviewers to resolve any issue. Once the review process is complete the data is fully integrated into the published WDPA.

The data is adjusted accordingly to account for transboundary protected areas (protected areas that transcend international boundaries) to ensure that the appropriate area / extent from the total area for that site is attributed to the country in which it is contained. Similar adjustments have been made where a protected area transcends both marine and terrestrial environments.

### **Treatment of missing values**

Where the documented total area is unavailable the following rules have been applied:

1. Where the documented total area of the site is unavailable but the spatial (GIS) boundary is present in the WDPA, the total area calculated from the GIS will be used; and
2. Where spatial (GIS) boundaries and the documented area from national sources are unavailable UNEP-WCMC works with the collaborating NGOs to help source this information. Where no additional information, either from national sources or NGOs, can be found then the site is excluded from the statistics.

Additionally, sites with missing establishment/designation dates are included in country level time series and in world and regional totals, but are excluded from regional and world time series.

Where no update is received for the following year, the total number and size of the protected area is assumed to be equal to the previous year's values. Countries/territories (e.g. Antarctica) that do not fall into MDG regions have been added to the world total.

## Data availability

Data are available for 233 countries and territories, including marine and coastal areas and can be aggregated and presented in many ways (e.g. by country or region). Explicit quality control criteria are applied to ensure consistency and comparability between national datasets.

The lag between the reference year and actual production of data series is up to one year.

All these data are stored and managed in the World Database on Protected Areas (WDPA), and made available online for users to view and download through the UNEP-WCMC website (<http://www.unep-wcmc.org/wdpa>) once the integration and review process is complete. The GIS data is freely available to download (for non-commercial use only) on an annual basis. Information to support the UN MDG Indicator 7.6 is also available on the UNEP-WCMC website on an annual basis.

## Regional and Global estimates

Regional estimates of protected area ratios are calculated by UNEP-WCMC. Estimates are based on the following 4 assumptions:

1. Once a protected area has been designated as protected it is not removed from the list of protected areas. New areas can be added and therefore data have been accumulated over time.
2. Sites with no establishment date are excluded for regional and world time series but are included in world and regional totals.
3. When gaps appear in a time series, data for those years are assumed equal to previous years and filled accordingly.
4. MDG regions are used in the aggregation process. Any countries or areas (e.g. Antarctica) not falling into one of these regions are only added to the total aggregate of the world.

## Expected time of release

Estimates are published annually, in January, and are available through the online World Database on Protected Areas. Information in the WDPA is freely available for non-commercial use and available for download from <http://www.unep-wcmc.org/wdpa/> . Data formatted specifically for the Millennium Development Goals can be found at: <http://www.unep-wcmc.org/wdpa/mdgs/index.cfm>

## **Tuberculosis prevalence rate per 100,000 population**

### **Contact point in international agency**

Stop TB

World Health Organization

**Postal Address:** 20 avenue Appia, 1211 Geneva 27, witzerland

**Website:** [www.who.int/tb/country/global\\_tb\\_database](http://www.who.int/tb/country/global_tb_database)

### **Definition**

Tuberculosis prevalence refers to the number of cases of TB (all forms) in a population at a given point in time (sometimes referred to as "point prevalence"). It is expressed as the number of cases per 100,000 population. Estimates include cases of TB in people with HIV. TB is an infectious bacterial disease caused by *Mycobacterium tuberculosis*, which most commonly affects the lungs. It is transmitted from person to person via droplets from the throat and lungs of people with the active respiratory disease. In healthy people, infection with *Mycobacterium tuberculosis* often causes no symptoms, since the person's immune system acts to "wall off" the bacteria. The symptoms of active TB of the lung are coughing, sometimes with sputum or blood, chest pains, weakness, weight loss, fever and night sweats. Tuberculosis is treatable with a six-month course of antibiotics.

Human Immunodeficiency Virus (HIV) is a virus that weakens the immune system, ultimately leading to AIDS, the acquired immunodeficiency syndrome. HIV destroys the body's ability to fight off infection and disease, which can ultimately lead to death.

### **Method of computation**

Estimates of TB prevalence are based on a consultative and analytical process led by WHO and are published annually. Details of the methods used to estimate TB prevalence are provided in the references, listed below.

Country-specific estimates of prevalence are, in most instances, derived from estimates of incidence (for additional details, please refer to the TB incidence indicator metadata) combined with assumptions about the duration of disease. The prevalence of TB is calculated from the product of incidence and duration of disease:

Prevalence = incidence x duration of the condition.

The duration of disease is assumed to vary according to whether the disease is smear-positive or not; whether the individual receives treatment in a DOTS programme, a non-

DOTS programme, or is not treated at all; and whether the individual is infected with HIV. For more information please see the following:

#### References

1. *The Stop TB Strategy: building on and enhancing DOTS to meet the TB-related Millennium Development Goals*. Geneva, World Health Organization, 2006 (WHO/HTM/STB/2006.37).
2. *The Global Plan to Stop TB, 2006–2015*. Geneva, World Health Organization, 2006 (WHO/HTM/STB/2006.35).
3. Dye C et al. Global burden of tuberculosis: estimated incidence, prevalence and mortality by country. *Journal of the American Medical Association* 1999, **282**:677–686.
4. Corbett EL et al. The growing burden of tuberculosis: global trends and interactions with the HIV epidemic. *Archives of Internal Medicine* 2003, **163**:1009–1021.
5. *Global tuberculosis control: surveillance, planning, financing. WHO report 2008*. Geneva, World Health Organization (WHO/HTM/TB/2008.393). Annex 4: Surveys of tuberculosis infection and disease, and death registrations, by country and year.

#### Database

Global TB database: [www.who.int/tb/country/global\\_tb\\_database](http://www.who.int/tb/country/global_tb_database)

### **Comments and limitations**

Prevalence of disease surveys are costly and logistically complex, but they do provide a direct measure of bacteriologically confirmed, prevalent TB disease, and can serve as a platform for other investigations, e.g., the interactions between patients and the health system. Surveys are particularly useful where routine surveillance data are poor.

Direct measures of tuberculosis prevalence, which come from vital registration, are uncommon. Reliable figures require that death registration be nearly universal and that the cause of death be reported routinely on the death records and determined by a qualified observer according to the International Classification of Diseases. Such information is generally not available in developing countries. Vital statistics registration systems tend to underestimate tuberculosis deaths, although time series data from some countries in Asia and America give a useful indication of trends.

In the absence of direct measures of prevalence and death rates, a variety of techniques can be used to estimate these values. Administrative data are derived from the administration of health services. Data can also be obtained from household surveys such as the Multiple Indicator Cluster Surveys (MICS) or the Demographic Health Surveys, although they usually refer only to children under five or provide death rates.

## Sources of discrepancies between global and national figures

Where population sizes are needed to calculate TB indicators, the latest United Nations Population Division estimates are used. These estimates sometimes differ from those made by the countries themselves, some of which are based on more recent census data. The estimates of some TB indicators, such as the case detection rate, are derived from data and calculations that use only rates per capita, and discrepancies in population sizes do not affect these indicators. Where rates per capita are used as a basis for calculating numbers of TB cases, these discrepancies sometimes make a difference.

## Process of obtaining data

A standardized data collection form is distributed to all countries on an annual basis. Estimates are made using these data as well as country-specific analyses of TB epidemiology based on the published literature and consultation with national and international experts.

Every year, WHO requests information from the National Tuberculosis Control Programmes (NTPs) or relevant public health authorities. NTPs that respond to WHO are also asked to update information for earlier years where possible. As a result of such revisions, the data (case notifications, treatment outcomes, etc.) presented for a given year may differ from those published previously.

Completed forms are collected and reviewed at all levels of WHO, by country offices, regional offices and at headquarters. An acknowledgement form that tabulates all submitted data is sent back to the NTP correspondent in order to complete any missing responses and to resolve any inconsistencies. Then, using the complete set of data for each country, a profile is constructed that tabulates all key indicators, including epidemiological and financial data and estimates, and this too is returned to each NTP for review. In the WHO European Region only, data collection and verification are performed jointly by the regional office and a WHO collaborating centre, EuroTB (Paris). EuroTB subsequently publishes an annual report with additional analyses, using more detailed data for the European Region [www.eurotb.org](http://www.eurotb.org)

The details of estimation are described in publications in peer-reviewed journals<sup>1,2,3</sup>. Because accurate measurement is crucial in the evaluation of epidemic trends, a recent paper provides methodological guidance<sup>4</sup>, based on a review by the WHO Task Force on TB Impact Measurement. This paper can be read in conjunction with the list of countries that have done, or are planning, infection (tuberculin) and disease prevalence surveys, and with the set of countries that now register deaths by cause and provide these data to WHO (including TB).

- 1 Dye C et al. Global burden of tuberculosis: estimated incidence, prevalence and mortality by country. *Journal of the American Medical Association*, 1999, 282:677-686.
- 2 Corbett EL et al. The growing burden of tuberculosis: global trends and interactions with the HIV epidemic. *Archives of Internal Medicine*, 2003, 163:1009-1021.
- 3 Dye C et al. Evolution of tuberculosis control and prospects for reducing tuberculosis incidence, prevalence, and deaths globally. *Journal of the American Medical Association*, 2005, 293:2767-2775.
- 4 Dye et al. Measuring tuberculosis burden, trends and the impact of control programmes. *Lancet Infectious Diseases* (published online 16 January 2008).

### **Treatment of missing values**

Estimates made for all indicators and for all countries. See "Process of Obtaining Data", above, for details.

### **Data availability**

Data are available for 212 countries and territories. Estimates of TB incidence, prevalence and deaths are based on a consultative and analytical process. They are revised annually to reflect new information gathered through surveillance (case notifications and death registrations) and from special studies (including surveys of the prevalence of infection and disease).

For most countries the TB prevalence is measured indirectly from TB incidence. For some countries, the TB prevalence is measured directly by TB prevalence surveys (see reference 3, 4 and 5-Annex 4, listed in "Method of Computation").

WHO publishes data on case notifications two years after diagnosis and three years after completion of treatment of TB cases.

### **Regional and Global estimates**

Regional and global estimates are produced by aggregating national estimates (e.g. to calculate the global prevalence rate of TB per 100,000 population for a given year, the sum of the estimate of TB prevalence for individual countries is divided by the sum of the population of all countries multiplied by 100,000).

The WHO regions are the African Region, the Region of the Americas, the Eastern Mediterranean Region, the European Region, the South-East Asia Region and the Western Pacific Region. All essential statistics are summarized for each of these regions and globally. However, to make clear the differences in epidemiological trends within regions, the African Region is divided into countries with low and high rates of HIV infection ("high" is an infection rate of =4%, as estimated by UNAIDS in 2007). Central

Europe is divided from Eastern Europe (countries of the former Soviet states plus Bulgaria and Romania), and Western European countries are combined with the other high-income countries.

### **Expected time of release**

Estimates are published annually, in March, are available in WHO's Global TB Database at [http://www.who.int/tb/country/global\\_tb\\_database/en](http://www.who.int/tb/country/global_tb_database/en)

### **Please refer to series metadata**

## **Tuberculosis treatment success rate under DOTS, percentage**

### **Contact point in international agency**

Stop TB

World Health Organization

Postal Address: 20 avenue Appia, 1211 Geneva 27, witzerland

Website: [www.who.int/tb/country/global\\_tb\\_database](http://www.who.int/tb/country/global_tb_database)

### **Definition**

The proportion of new smear-positive TB cases registered under DOTS in a given year that successfully completed treatment, whether with bacteriologic evidence of success ("cured") or without ("treatment completed").

At the end of treatment, each patient is assigned one of the following six mutually exclusive treatment outcomes: cured; completed; died; failed; defaulted; and transferred out with outcome unknown. The proportions of cases assigned to these outcomes, plus any additional cases registered for treatment but not assigned to an outcome, add up to 100% of cases registered.

Tuberculosis, or TB, is an infectious bacterial disease caused by *Mycobacterium tuberculosis*, which most commonly affects the lungs. It is transmitted from person to person via droplets from the throat and lungs of people with the active respiratory disease. In healthy people, infection with *Mycobacterium tuberculosis* often causes no symptoms, since the person's immune system acts to "wall off" the bacteria. The symptoms of active TB of the lung are coughing, sometimes with sputum or blood, chest pains, weakness, weight loss, fever and night sweats. Tuberculosis is treatable with a six-month course of antibiotics.

Smear-positive is defined as a case of TB where *Mycobacterium tuberculosis* bacilli are visible in the patient's sputum when examined under the microscope. A new case of TB is defined as a patient who has never received treatment for TB, or who has taken anti-TB drugs for less than 1 month.

DOTS is the internationally recommended approach to TB control, which forms the core of the Stop TB Strategy (WHO, 2006b). The five components of DOTS are:

- Political commitment with increased and sustained financing;
- Case detection through quality-assured bacteriology;
- Standardized treatment with supervision and patient support;
- An effective drug supply and management system; and
- A monitoring and evaluation system, and impact measurement.

In countries that have adopted the DOTS strategy, it may be implemented in all or some parts of the country, and by all or some health-care providers. Only those TB patients notified by health-care facilities providing DOTS services are included in this indicator.

### **Method of computation**

Treatment success rates are calculated from cohort data (outcomes in registered patients) as the proportion of new smear-positive TB cases registered under DOTS in a given year that successfully completed treatment, whether with ("cured") or without ("treatment completed") bacteriologic evidence of success.

### **Comments and limitations**

Global targets for TB control refer to treatment success for new smear-positive cases treated under DOTS, the indicator included in this database. WHO also reports treatment success rates from non-DOTS programmes, and treatment success rates for patients who have been previously treated. Both sets of treatment success rates tend to be lower than those for new cases treated under DOTS.

It is also useful, where possible, to analyse treatment success rates disaggregated by drug resistance and HIV status.

Treatment success rates can be low for a number of reasons. Several factors affect the likelihood of treatment success, including the severity of disease (often related to the delay between onset of disease and the start of treatment), HIV infection, drug resistance, malnutrition and the support provided to the patient to ensure that he or she completes treatment.

Even where treatment is of high quality, reported treatment success rates will only be high when the routine information system is also functioning well. The treatment success rate will be affected if the outcome of treatment is not recorded for all patients (including those who transfer from one treatment facility to another).

Where treatment success rates are low, the cause of the problem can only be identified by determining which of the unfavourable treatment outcomes is most common.

### **Sources of discrepancies between global and national figures**

In principle, there is no discrepancy between global and national figures as national data are not modified.

### **Process of obtaining data**

The treatment outcomes of TB cases registered for treatment are reported to WHO using a standardized data collection form, which is distributed to all countries on an annual basis. The treatment outcomes of TB cases reported by countries follow the WHO recommendations on definitions of outcomes, therefore, they are internationally comparable and there is no need for any adjustment.

### **Treatment of missing values**

No adjustments are made for missing values. Treatment success rate under DOTS is available only for countries that implement the DOTS strategy and report this data to WHO.

### **Data availability**

Data on treatment outcomes were reported to WHO from 202 countries or territories (see reference 5; Annex 3 in "Method of Computation"). The treatment outcomes of new smear-positive cases are systematically recorded and can be reported to WHO by all TB programmes.

Because treatment for TB lasts 6–8 months, there is a delay in assessing treatment outcomes. Each year national TB control programmes report to WHO the number of cases of TB diagnosed in the preceding year, and the outcomes of treatment for the cohort of patients who commenced treatment during the year prior to that. Data are produced annually.

### **Regional and Global estimates**

Regional and global estimates are produced by aggregating national estimates (e.g. to calculate the global treatment success rate of new smear-positive cases, the sum of

number of new smear-positive cases cured and/or completed in individual countries is divided by total number of smear-positive cases registered for treatment in a given year).

### **Expected time of release**

The data are published annually, in March, are available in WHO's Global TB Database at [http://www.who.int/tb/country/global\\_tb\\_database/en](http://www.who.int/tb/country/global_tb_database/en)

### **Please refer to series metadata**

## **AIDS orphans (one or both parents)**

### **Contact point in international agency**

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Website: <http://www.unaids.org>

### **Definition**

AIDS orphans are defined as the estimated number of currently living orphaned children aged 0-17 years who have lost one or both parents to AIDS. AIDS, the acquired immunodeficiency syndrome, is caused by Human Immunodeficiency Virus (HIV), a virus that weakens the immune system and destroys the body's ability to fight off infection and disease, which can ultimately lead to death.

### **Method of computation**

Estimates of AIDS orphans are extracted from estimation software, based on data provided by countries.

### **Comments and limitations**

Where insufficient data are available for a country, UNAIDS does not generate data for this country.

### **Sources of discrepancies between global and national figures**

The global estimates are representative of the national estimates for a given year.

### **Process of obtaining data**

The DHS (Demographic and Health Surveys) and similar national household surveys are the source for the majority of orphan data. However these sources do not allow one to distinguish orphanhood that is due to AIDS from orphanhood that is not related AIDS. Estimates of orphanhood due to AIDS are derived from applying epidemiology estimation methodologies to data from surveillance and national household surveys, in combination with certain assumptions. AIDS orphan data are typically only published for countries with generalised epidemics, given uncertainty regarding the fertility of groups with high risk behaviour, which are central in the epidemiology of HIV in countries with concentrated epidemics.

In the past several years, for example, UNAIDS and World Health Organization (WHO), along with their technical partners (including East-West Center, Family Health International, The Futures Group, the US Census Bureau and the US Centers for Disease Control and Prevention), carried out a series of regional training workshops in which epidemiologists from over 150 countries were trained in the HIV estimation process. Such efforts have led to much greater involvement by national programmes, national statistics offices and other government and academic organizations in the production of estimates. The result has been better quality estimates, due to the use of additional data and the application of local knowledge. UNAIDS and WHO continue to work with countries, partner organizations and experts to improve data collection. These efforts will ensure that the best possible estimates are available to assist governments, non-governmental organizations and others in gauging the status of the epidemic and monitoring the effectiveness of prevention and care efforts.

### **Treatment of missing values**

There is no treatment of missing values. When the information needed to calculate the indicator is not available, the indicator is not estimated.

### **Data availability**

Data are available for approximately 44 countries.

Country-specific data are usually only published for countries in sub-Saharan Africa. The lag between the reference year and actual production is from the period of regional workshops conducted every 2 years to publication of regional estimates in December, followed by publication of country estimates in the Global Report the following July.

### **Regional and Global estimates**

Regional and global estimates are estimated using the epidemiological tools described in [http://www.unaids.org/en/KnowledgeCentre/HIVData/Epidemiology/epi\\_software2007.asp](http://www.unaids.org/en/KnowledgeCentre/HIVData/Epidemiology/epi_software2007.asp)

### **Expected time of release**

Regional estimates are released annually in the Epidemic Update in December. National estimates are released in the Global Report every 2 years in July.

## **Youth unemployment rate, aged 15-24, both sexes**

### **Contact point in international agency**

Theo Sparreboom

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International Labour Organization (ILO)

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### **Definition**

The youth unemployment rate is the proportion of the youth labour force that is unemployed. Young people are defined as persons aged between 15 and 24.

The unemployed comprise all persons above a specified age who, during the reference period, were: (a) without work; (b) currently available for work; and (c) actively seeking work. The labour force is the sum of the number of persons employed and the number of persons unemployed.<sup>1</sup>

For further information see: <http://www.ilo.org/trends>

1 *For additional details see the resolution concerning statistics of the economically active population, employment, unemployment and underemployment, adopted by the 13th International Conference of Labour Statisticians, Geneva, 1982, website: <http://www.ilo.org/public/english/bureau/stat/download/res/ecacpop.pdf>*

### **Method of computation**

The unemployment rate is calculated by dividing the total number of youth unemployed (for a country or a specific group of workers) by the corresponding labour force (in this case age group 15-24), which itself is the sum of the total persons employed and unemployed in the group.

## Comments and limitations

### Total unemployment and registered unemployment

If unemployment data from household surveys or population censuses are unavailable, administrative records might be an alternative. However, a national count of either unemployed persons or work applicants that are registered at employment offices is likely to be only a limited sub-set of the total persons seeking and available for work, especially in countries where the system of employment offices is not extensive. Unemployment registration often uses eligibility requirements that exclude those who have never worked or have not worked recently, or other discriminatory impediments that preclude going to register. On the other hand, administrative records can overstate registered unemployment because of double-counting, failure to remove people from the registers when they are no longer looking for a job, or because it allows inclusion of persons who have some work. Registered unemployment data can serve as a useful proxy for the extent of persons without work in countries where data on total unemployment are not available and time-series of registered unemployment data by country can serve as a good indication of labour market performance over time, but due to mentioned issues the data should be used with care. Moreover, due the limitation in comparability to “total unemployment”, the two measures should not be used interchangeably.

### Cross-country comparability issues

The issue of comparability of unemployment rates is particularly complex when looking at indicators for a large number of countries throughout the world. In an effort to resolve this issue for its member countries – and building on work carried out by the United States Bureau of Labour Statistics in the 1960s – OECD publishes “standardized unemployment rates” adjusted to ILO concepts. The ILO has further extended the OECD series in country coverage and number of labour force measures. These unemployment rates are from national labour force survey estimates that have been adjusted to make them conceptually consistent with the strictest application of the ILO statistical standards. This implies that participating countries and territories have provided detailed information on the composite elements of their labour forces. The unemployment rates obtained are based on the total labour force including the armed forces, while OECD standardized rates are now civilian-based. The rates are calculated from annual average estimates (or the period considered most representative over the year), thereby avoiding the variances that would occur if different reference periods were used. These unemployment rates, based on official national information, should provide the best basis currently available for making reasonable international comparisons and assumptions.

A significant amount of research has been carried out over the years in the important area of producing unemployment rates that are fully consistent conceptually, in order to contrast unemployment rates of different countries for different hypotheses. There are a host of reasons why measured unemployment rates may not be comparable between countries. A few are provided below, to give users some indication of the range of potential issues that are relevant when attempting to determine the degree of comparability for unemployment rates between countries. Users with knowledge of particular countries or special circumstances should be able to expand on them:

### **1. Different sources.**

To the extent that sources of information differ, so will the results. Comparability difficulties result firstly from the already mentioned difference between sources measuring registered unemployment and total unemployment. But even when this is taken into account, the labour force surveys, official estimates and population censuses can still pose issues of comparability in cross-country analyses. Official estimates are generally based on information from different sources and can be combined in many different ways. A population census generally cannot probe deeply into labour force activity status. The resulting unemployment estimates may, therefore, differ substantially (either upwards or downwards) from those obtained from household surveys where more questions are asked to determine respondents' labour market situation.

### **2. Measurement difference.**

Where the information is based on household surveys or population censuses, differences in the questionnaires can lead to different statistics even allowing for full adherence to ILO guidelines. In other words, differences in the measurement tool can affect the comparability of labour force results across countries.

### **3. Conceptual variation.**

National statistical offices even when basing themselves on the ILO conceptual guidelines may not follow the strictest measurement of employment and unemployment. They may differ in their choices concerning the conceptual basis for estimating unemployment, as in specific instances where the guidelines allow for a relaxed definition, thereby causing the labour force estimates (the base for the unemployment rate) to differ. They may also choose to derive the unemployment rate from the civilian labour force rather than the total labour force or economically active population. To the extent that such choices vary across countries, so too will the information.

#### **4. Number of observations per year.**

Statistics for any given year can differ depending on the number of observations – monthly, quarterly, once or twice a year, and so on. Among other things, a considerable degree of seasonality can influence the results when the full year is not covered.

#### **5. Geographic coverage.**

Survey coverage that is less than national coverage – urban areas, city, regional – has obvious limitations to comparability to the extent that coverage is not representative of the country as a whole. Unemployment in urban areas may tend to be higher than total unemployment because of the exclusion of the rural areas where workers are likely to work, although they may be underemployed or unpaid family workers, rather than seek work in a nonexistent or small formal sector.

#### **6. Collection methodology.**

Sample sizes, sample selection procedures, sampling frames, and coverage, as well as many other statistical issues associated with data collection, may make a significant difference. The better the sample size and coverage, the better the results. Use of well-trained interviewers, proper collection and processing techniques, adequate estimation procedures, etc. are crucial for accurate results. Wide variations in this regard can clearly affect the comparability of the unemployment statistics. When viewing the unemployment rate as a gauge for tracking cyclical developments within a country, one would be interested in looking at changes in the measure over time. In this context, the definition of unemployment used (whether a country-specific definition or one based on the internationally recommended standards) does not matter as much – so long as it remains unchanged – as the fact that the statistics are collected and disseminated with regularity, so that measures of change are available for study. Still, for users making cross-country comparisons it will be critical to know the source of the data and the conceptual basis for the estimates. It is also important to recognize that minor differences in the resulting statistics may not represent significant real differences.

#### **7. Differences in age-groupings**

Although less important than other factors, mention should be made of differences in the age groups utilized, because the age limits applied for both youth and adults may vary across countries. In general, where a minimum school-leaving age exists, the lower age limit of youth will usually correspond to that age. This means that the lower age limit often varies between 14 and 16 years (and for some countries is even lower than 14, for

example, Haiti at 10 years), according to the institutional arrangements in the country. This should not greatly affect most of the youth unemployment measures. However, the size of the age group may influence the measure of the young unemployed as a percentage of total unemployment. Other things being equal, the larger the age group the greater will be this percentage. In a few cases there is a larger discrepancy in the age limits applied. Six countries use 29 as the upper age limit: Colombia (1989-90), Costa Rica (1980-86), Honduras (1991-98), New Caledonia (1996), Panama (1983) and Suriname (1987). There are also differences in the operational definition of adults. In general, adults are defined as all individuals above the age of 25, but some countries apply an upper age limit. The upper age limit would obviously affect only the ratio of youth-to-adult unemployment rates and the effect is likely to be very small. Finally, mention should be made of the reference period of the information reported. Because there will be a substantial group of school-leavers (either permanently or for the extended holiday break) in the reported figures, the level of youth unemployment is likely to vary significantly over the year as a result of different school opening and closing dates. Most of the information reported relates to annual averages. In other cases, however, the figures relate to a specific month of the year (as with census data). The implications of the particular month chosen will vary across countries, owing to differences in institutional arrangements.

### **Sources of discrepancies between global and national figures**

The labour force data are harmonized to account for differences in national data and scope of coverage, collection and tabulation methodologies as well as for other country specific factors such as military service requirements. Furthermore, nationally reported data are utilized only when these meet strict criteria in terms of international comparability and geographic coverage. Model estimates are used where national data are not available or satisfactory. See "Comments and Limitations" section for additional details of sources of discrepancies.

### **Process of obtaining data**

Household labour force surveys are generally the most comprehensive and comparable sources for youth unemployment statistics. Other possible sources include population censuses, official estimates and administrative records such as employment office records and social insurance statistics.

The ILO has made an intensive effort to assemble data on the indicators for as many countries, areas and territories as possible. Where there is no information for a country, it is usually because the country involved was not in a position to provide information for the indicator. Even when information for an indicator was available, it may not have been

sufficiently current or may not have met other qualifications established for inclusion in the Key Indicators of the Labour Market, on which the information for youth unemployment is based.

In compiling the KILM, the ILO concentrates on bringing together information from international repositories. In other words, the KILM team rarely collects information directly from national sources, but rather takes advantage of existing compilations held by various organizations, such as the following:

International Labour Office (Bureau of Statistics)

United Nations Statistics Division

Organisation for Economic Co-operation and Development (OECD)

World Bank

United Nations Industrial Development Organization (UNIDO)

Statistical Office of the European Union (EUROSTAT)

United Nations Educational, Scientific and Cultural Organization (UNESCO)

United States Bureau of Labor Statistics (BLS)

Information maintained by these organizations has generally been obtained from national sources or is based on official national publications.

Whenever information was available from more than one repository, the information and background documentation from each repository was reviewed in order to select the information most suitable for inclusion, based on an assessment of the general reliability of the sources, the availability of methodological information and explanatory notes regarding the scope of coverage, the availability of information by sex and age, and the degree of historical coverage. Occasionally, two data repositories have been chosen and presented for a single country; any resulting breaks in the historical series are duly noted.

For countries with less-developed labour market information systems, such as those in the developing economies, information may not be easily available to policy-makers and the social partners, and even less so to international organizations seeking to compile global data sets. Many of these countries, however, do collect labour market information

through household and establishment surveys, population censuses and administrative records, so that the main problem remains the communication of such information to the global community. In this situation, the ILO Labour Market Indicators Library (LMIL) programme can help. The LMIL is a system for sharing information between the ILO regional offices and headquarters. ILO regional offices are closer to the original micro-sources of data and have therefore been successful in filling in numerous gaps where data at headquarters – used in the production of the KILM – had not existed. It is an ongoing programme that continues to assist the KILM and other ILO publications and research programmes in the expansion of its country and yearly coverage of indicators.

### **Treatment of missing values**

See “Regional and Global Estimates”, below.

### **Data availability**

Data are available for 126 economies.

The lag between the reference year and actual production of data series is one year or more. Data are produced at least annually.

### **Regional and Global estimates**

The biggest challenge in the production of aggregate estimates is that of missing data. In an ideal world, producing world and regional estimates of labour market indicators, such as unemployment, for example, would simply require summing up the total number of unemployed persons across all countries in the world or within a given region. However, because not all countries report data in every year and, indeed, some countries do not report data for any years at all, it is not possible to derive aggregate estimates of labour market indicators by merely summing across countries.

To address the problem of missing data, the ILO Employment Trends Unit has designed and actively maintains three econometric models which are used to produce estimates of labour market indicators in the countries and years for which no real data exist. The Global Employment Trends Model (GET Model) is used to produce estimates – disaggregated by age and sex – of employment, unemployment and other aggregates. The world and regional labour force estimates are produced using the Trends Labour Force Model (TLF Model).

Each of these models uses multivariate regression techniques to impute missing values at the country level. The first step in each model is to assemble every known piece of real information (i.e. every real data point) for each indicator in question. It is important to note that only data that are national in coverage and comparable across countries and

over time are used as inputs. This is an important selection criterion when the models are run, because they are designed to use the relationship between the various labour market indicators and their macroeconomic correlates (such as per-capita GDP, GDP growth rates, demographic trends, country membership in the Highly Indebted Poor Country (HIPC) Initiative, geographic indicators and country and time dummy variables) in order to produce estimates of the labour market indicators where no data exist. Thus, the comparability of the labour market data that are used as inputs in the imputation models is essential to ensure that the models accurately capture the relationship between the labour market indicators and the macroeconomic variables.

The last step of the estimation procedure occurs once the datasets containing both the real and imputed labour market data have been assembled. In this step, the ILO Trends Team aggregates the data across countries to produce the final world and regional estimates. For further information on the world and regional econometric models, readers can consult the technical background papers available at the following website:

<http://www.ilo.org/public/english/employment/strat/wrest.htm>

### **Expected time of release**

Data are published every two years, usually in September, in the Key Indicators of the Labour Market report.

### **Please refer to series metadata**

## **Women to men parity index, as ratio of literacy rates, 15-24 years old**

### **Contact point in international agency**

José Pessoa

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Literacy and Adult Education Statistics Programme

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### **Definition**

The ratio of literate women to men aged 15–24 years (Literacy Gender Parity Index) is the ratio of the female literacy rate to the male literacy rate for the age group 15–24.

Literacy is defined as the ability to both read and write with understanding a short simple statement on everyday life. The definition of literacy sometimes extends to basic arithmetic and other life skills.

### **Method of computation**

The indicator is derived by dividing the literacy rate of women aged 15–24 years by the literacy rate of men aged 15–24 years.

### **Comments and limitations**

This indicator measures progress towards equity in literacy and learning opportunities for women in relation to those for men. It also measures a presumed outcome of attending school and is a key indicator of empowerment of women in society. Literacy is a fundamental skill that empowers women to take control of their lives, to engage directly with authority, and to gain access to the wider world of learning.

The literacy rate for this analysis is simply the complement of the illiteracy rate. It is not a measure of the quality and adequacy of the literacy level needed for individuals to function in a society. Reasons for failing to achieve the literacy standard may include low quality of schooling, difficulties in attending school or dropping out before reaching grade 5.

Measurements of literacy can vary from simply asking “Are you literate or not?” to testing to assess literacy skills. These data are not strictly comparable due to the limitations of the source data and different definitions used across the world. Although the UIS improves the comparability of these data through the use of data criteria, these data should be used and interpreted in conjunction with the Table of Literacy Metadata Information.

The latest revision of the Principles and Recommendations for the Population and Housing Censuses advises countries against adopting a proxy measurement based on educational attainment. It recommends that literacy questions be administered as part of national census and household surveys, or as part of post-census sample enumeration.

Shortcomings in the definitions of literacy, measurement problems and infrequency of censuses and literacy surveys weaken this indicator as a means of monitoring annual education outcomes related to the goal of achieving universal primary education.

### **Sources of discrepancies between global and national figures**

Literacy rates published by the UNESCO Institute of Statistics (UIS) are based on national level population censuses and household surveys. Discrepancies may arise when countries derive projected figures using methods that differ from those used by the UIS.

### Process of obtaining data

The UNESCO Institute for Statistics (UIS) collects global literacy data on an annual basis and updates its statistics twice a year, in April and September. These data are based on observed data reported by countries and territories.

Countries and territories are asked to respond to a questionnaire that collects information and data on literacy. The survey package typically consists of the literacy questionnaire and supporting documentation. The primary respondent is the National or Territorial Statistical Office (or equivalent agency) within each respective country and territory.

**Data collected:** these consist of the counts of the literacy status (total, literate, illiterate and not specified) for the population 10 years of age and older by geography (national, urban, and rural), age group (five-year age groups and age unknown) and sex (total, male and female). The questionnaire also includes a set of metadata questions that are asked in order for the UIS and data users to better understand and interpret the literacy data provided as well as forming part of the basis for the selection criteria. In order for the UIS to evaluate the quality and format of the data for inclusion in the UIS database, it is necessary for countries to provide metadata information corresponding to the data set. In addition, much of this information is made available to data users in order to facilitate its interpretation and use.

Population and housing censuses are the primary source of basic literacy data. These data are usually collected together with other household characteristics concerning an individual's educational, demographic and socio-economic status. These literacy data are generally based on self-declaration (i.e. one person, usually the head of the household, indicates whether each member of the household is literate or not). The literacy definition may vary from one country to another. National sample surveys are a second source of literacy data and involve the use of a literacy variable in a household or individual sample survey. These surveys are often designed to meet immediate data needs and do not always include systematic strategies for future repeats. So even though they may provide timely data, they may not always be a consistently reliable source over time.

International sample surveys, such as UNICEF's Multiple Indicator Cluster Surveys (MICS) are a third source and involve the use of a literacy variable in a household or individual sample survey. These surveys are designed to meet commonly agreed upon international

data needs while also providing data for national policy purposes. These surveys are implemented on a regular basis in selected countries globally. They aim to assure cross-national comparability although they often integrate national modules to suite specific country data needs. Modules from international surveys are sometimes added to other on-going national sample surveys.

In its efforts to improve the international comparability of literacy data, the UIS has developed the following to help determine the suitability of national data for reporting at the international level:

1. It must incorporate a “direct question” to assess literacy as part of its methodology. In many instances, the question(s) take the form “Can [Name] read and write a simple sentence in [Language(s)]”.
2. It must receive a satisfactory evaluation by the UIS that is based on the responses to the questionnaire’s metadata section.
3. It must be able to provide data in the format required by the UIS. At the minimum, the source must be able to provide literacy counts according to the following characteristics:
  - Geography: National, Urban and Rural if available.
  - Age group: five-year age cohorts for the population aged 10 years and over (10-14, 15-19... 80-84, 85+).
  - Sex (Total, Male and Female).
4. Educational attainment or other data will not be used as a proxy for literacy.
5. Data based solely on literacy projection and estimate models will not be used.

Internal consistency checks are conducted in order to ensure the accuracy of the data provided. When counts of the population are reported by literacy status as age unknown, these data will be removed during the processing of the questionnaire and not included in the calculation of literacy and illiteracy rates.

When counts of the population by age group are reported by literacy status as not specified, these data will be removed during the processing of the questionnaire and not included in the calculation of literacy and illiteracy rates.

The international comparability of literacy statistics has been improved in two ways by the UIS. First, the fact that the data being reported are from data sources that have a similar methodology improves comparability. Second, UN population estimates are used to calculate the number of literates and illiterates. These estimates are used because they are produced by UNPD using the same methodology and assumptions across countries. When UN population estimates are not available, national population estimates are used.

UNPD provides population estimates by single years of age for countries and territories with populations of 80,000 persons and greater. For countries or territories having a population of less than 80,000 persons, national country population data, when available, are used. UIS makes available country level observed literacy data from the year 1975 to the present. These data are supplemented by UIS estimates when available.

### **Treatment of missing values**

The UIS publishes national observed literacy rates as provided by countries to UIS. The counts of literates and illiterates however are based on UN Population estimates. Countries for which no observed literacy data are available are indicated as "data not available". The UIS uses a new Global Age-specific Literacy Projections Model methodology to produce estimates and forecasts of literacy/illiteracy rates. Reference should be made to the UIS website for further information regarding this methodology.

The UIS produces estimates, both publishable and non-publishable, in order to improve its regional estimates. In many cases, data for an individual country or territory have not been available for many years, yet to simply ignore representation of the country in the calculation of the regional average may produce a figure that is not representative of the region. UIS develops appropriate methodologies as necessary in order to provide representative regional average figures. Although research indicates that primary education is not always a reliable predictor of literacy levels, educational attainment data is sometimes used as a proxy to impute literacy rates for countries for which the regular "dichotomous" literacy data are not available. These data are typically available from censuses and most household surveys. In many countries, the Labour Force Survey (LFS) is the most frequently used source for educational attainment data. The UIS defines "illiterates" as those persons who reported their educational attainment level as having "no schooling", "some primary school" or having "not completed primary school". Data that are based on a proxy of educational attainment are used only for estimating purposes and are not disseminated at the individual country or territory level.

### **Data availability**

Youth literacy rates are available for around 130 countries.

Since population censuses normally occur only every 10 years input from more frequently administered labour force and household surveys are used for annual estimates. Household surveys are generally conducted every three to five years in most developing countries.

Estimates produced by UIS are available on an annual basis. The United Nations Population Division estimates population by individual years of age biennially, although

estimates may be based on population censuses conducted every 10 years in most countries.

All literacy data available from UIS beginning from 1975 to the most recent year are available and published. Data and estimates are updated annually.

### Regional and Global estimates

Youth literacy rates are available for around 130 countries.

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$$\text{Regional average literacy rate } \tau_t = \frac{\sum_{i=1}^n LTR_{i,t} * \text{Pop}_{i,t}^p}{\sum_{i=1}^n \text{Pop}_{i,t}^p}$$

Where:

$LTR_{i,t}$  = Literacy rate for country "i" for year "t"

$\text{Pop}_{i,t}^p$  = Total population aged "p" for country i for year "t"

p = population of age cohort

n = number of countries in the region

t = year of data

The UIS literacy projection model can provide some estimates of literacy/illiteracy rates and counts of literates/illiterates for years for which data are not available if an older observed data point is projected for any given country. Estimates produced from this model are still based on observed data that has been projected from a reference year in the past. For more information about GALP, please refer to the UIS document "Global Age-Specific Literacy Projection Model: Rationale, Method and Software" UIS: Montreal, 2006.

### **Expected time of release**

The UIS Literacy data is disseminated twice a year: country data and regional averages are released in April and September each year. UIS Literacy data are disseminated in April of each year. An update of the data is also released in September if new data are received by UIS.

## **Children under 5 with fever being treated with anti-malarial drugs, percentage**

### **Contact point in international agency**

Tessa Wardlaw and Emily White Johansson

Strategic Information Section

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**Website:** [www.childinfo.org](http://www.childinfo.org)

### **Definition**

Percentage of children aged 0-59 months with fever in the two weeks prior to the survey who received any anti-malarial medicine.

### **Method of computation**

The number of children aged 0-59 months with fever in the 2 weeks prior to the survey who received any anti-malarial medicine is expressed as a percentage of the total number of children aged 0-59 months reported to have fever in the two weeks prior to the survey.

### **Comments and limitations**

The indicator reports on receiving any anti-malarial medicine and includes anti-malarial medicines, such as chloroquine, that may be less effective due to widespread resistance and treatment failures.

### **Sources of discrepancies between global and national figures**

Because all nationally representative data on anti-malarial treatment are collected only through large-scale household surveys, and these figures are not modified, there would normally be no discrepancies between global and national figures. However, there could be discrepancies if national figures are calculated based on only those geographic areas with malaria transmission.

### **Process of obtaining data**

Data from national-level household surveys, including Multiple Indicator Cluster Surveys (MICS), Demographic Health Surveys (DHS) and Malaria Indicator Surveys (MIS), are compiled in the UNICEF global databases.

The data are reviewed in collaboration with Roll Back Malaria (RBM) partnership, launched in 1998 by the World Health Organization (WHO), the United Nations Children's Fund (UNICEF), the United Nations Development Programme (UNDP) and the World Bank. The RBM Partnership has expanded exponentially since its launch and is now made up of a wide range of partners — including malaria-endemic countries, their bilateral and multilateral development partners, the private sector, nongovernmental and community-based organizations, foundations, and research and academic institutions — who bring a formidable assembly of expertise, infrastructure and funds into the fight against the disease.

No adjustments are made to the data compiled from DHS, MICS and other surveys that are statistically sound and nationally representative.

### **Treatment of missing values**

There is no treatment of missing values. When the information needed to calculate the indicator is not available, the indicator is not estimated.

### **Data availability**

Data are available for nearly all malaria-endemic countries, for children under five years of age.

The lag between the reference year and actual production of data series differs between surveys. Household surveys, such as DHS and MICS, are in general implemented every 3-5 years with results published within a year of field data collection.

Data from national-level household surveys are compiled in the UNICEF global databases, in collaboration with Roll Back Malaria partners. Latest available estimates of these malaria prevention and treatment indicators are published annually by UNICEF in *The State of the World's Children* report, and are available at <http://www.childinfo.org>

### **Regional and Global estimates**

Regional and global estimates are based on population-weighted averages weighted by the total number of children under five years of age. These estimates are presented only if available data cover at least 50% of total children under five years of age in the regional or global groupings.

### **Expected time of release**

Latest available estimates are published annually, in December, by UNICEF in *The State of the World's Children* report, and are available at: [www.childinfo.org](http://www.childinfo.org)

## **Tuberculosis death rate per year per 100,000 population**

### **Contact point in international agency**

Stop TB

World Health Organization

**Postal Address:** 20 avenue Appia, 1211 Geneva 27, Switzerland

**Website:** [www.who.int/tb/country/global\\_tb\\_database](http://www.who.int/tb/country/global_tb_database)

### **Definition**

The tuberculosis death rate indicator refers to the estimated number of deaths due to tuberculosis (TB) in a given time period. In this database, the indicator reflects the number of deaths per 100,000 population per year. Deaths from all forms of TB are included. However, deaths in HIV positive people with TB as a contributory cause are coded under HIV chapters of ICD10 and therefore, not included in this indicator.

TB is an infectious bacterial disease caused by *Mycobacterium tuberculosis*, which most commonly affects the lungs. It is transmitted from person to person via droplets from the throat and lungs of people with the active respiratory disease. In healthy people, infection with *Mycobacterium tuberculosis* often causes no symptoms, since the person's immune system acts to "wall off" the bacteria. The symptoms of active TB of the lung are coughing, sometimes with sputum or blood, chest pains, weakness, weight loss, fever and night sweats. Tuberculosis is treatable with a six-month course of antibiotics.

Human Immunodeficiency Virus (HIV) is a virus that weakens the immune system, ultimately leading to AIDS, the acquired immunodeficiency syndrome. HIV destroys the body's ability to fight off infection and disease, which can ultimately lead to death.

### Method of computation

Vital registration data are used where available (however, few countries with a high burden of TB have complete vital registration systems with good coverage). Elsewhere, mortality is estimated from incidence.

Estimates of TB mortality are based on a consultative and analytical process led by WHO and are published annually. Details of the methods used to estimate TB mortality are provided in the references, listed below.

Country-specific estimates of TB mortality are, in most instances, derived from estimates of incidence (for additional details, please refer to the TB incidence indicator metadata), combined with assumptions about the case fatality rate. The case fatality rate is assumed to vary according to whether the individual receives treatment in a DOTS programme or not, and whether the individual is infected with HIV.

The TB mortality rate is calculated from the product of incidence and case fatality (proportion of incident cases that ever die from TB).

Mortality = incidence x proportion of incident cases that die.

For more information please see the following:

#### References

- 1 The Stop TB Strategy: building on and enhancing DOTS to meet the TB-related Millennium Development Goals. Geneva, World Health Organization, 2006 (WHO/HTM/STB/2006.37).
- 2 The Global Plan to Stop TB, 2006–2015. Geneva, World Health Organization, 2006 (WHO/HTM/STB/2006.35).
- 3 Dye C et al. Global burden of tuberculosis: estimated incidence, prevalence and mortality by country. *Journal of the American Medical Association* 1999, 282:677–686.
- 4 Corbett EL et al. The growing burden of tuberculosis: global trends and interactions with the HIV epidemic. *Archives of Internal Medicine* 2003, 163:1009–1021.
- 5 Global tuberculosis control: surveillance, planning, financing. WHO report 2008. Geneva, World Health Organization (WHO/HTM/TB/2008.393).

Annex 4: Surveys of tuberculosis infection and disease, and death registrations, by country and year.

Global TB database: [www.who.int/tb/country/global\\_tb\\_database](http://www.who.int/tb/country/global_tb_database)

### **Comments and limitations**

TB mortality can be measured directly only where there is a good vital registration system, with accurate coding of cause-of-death. The number of patients dying while on TB treatment (as reported in routine follow-up of cohorts of TB patients) is not an indication of true TB mortality, as it includes deaths from causes other than TB, excludes deaths from TB among people not on treatment, and excludes deaths among people that are treated for TB but who are not registered in routine TB surveillance systems.

Reliable figures require that death registration be nearly universal and that the cause of death be reported routinely on the death records and determined by a qualified observer according to the International Classification of Diseases. Such information is generally not available in developing countries. Vital statistics registration systems tend to underestimate tuberculosis deaths, although time series data from some countries in Asia and America give a useful indication of trends.

In the absence of direct measures of prevalence and death rates, a variety of techniques can be used to estimate these values. Administrative data are derived from the administration of health services. Data can also be obtained from household surveys such as the Multiple Indicator Cluster Surveys (MICS) or the Demographic Health Surveys, although they usually refer only to children under five or provide death rates.

Mortality surveys and demographic surveillance systems that use verbal autopsy to determine cause of death are a potential source of improved estimates of TB mortality.

### **Sources of discrepancies between global and national figures**

Where population sizes are needed to calculate TB indicators, the latest United Nations Population Division estimates are used. These estimates sometimes differ from those made by the countries themselves, some of which are based on more recent census data. The estimates of some TB indicators, such as the case detection rate, are derived from data and calculations that use only rates per capita, and discrepancies in population sizes do not affect these indicators. Where rates per capita are used as a basis for calculating numbers of TB cases, these discrepancies sometimes make a difference.

### **Process of obtaining data**

A standardized data collection form is distributed to all countries on an annual basis. Estimates are made using these data as well as country-specific analyses of TB epidemiology based on the published literature and consultation with national and international experts.

Every year, WHO requests information from the National Tuberculosis Control Programmes (NTPs) or relevant public health authorities. NTPs that respond to WHO are also asked to update information for earlier years where possible. As a result of such revisions, the data (case notifications, treatment outcomes, etc.) presented for a given year may differ from those published previously.

Completed forms are collected and reviewed at all levels of WHO, by country offices, regional offices and at headquarters. An acknowledgement form that tabulates all submitted data is sent back to the NTP correspondent in order to complete any missing responses and to resolve any inconsistencies. Then, using the complete set of data for each country, a profile is constructed that tabulates all key indicators, including epidemiological and financial data and estimates, and this too is returned to each NTP for review. In the WHO European Region only, data collection and verification are performed jointly by the regional office and a WHO collaborating centre, EuroTB (Paris). EuroTB subsequently publishes an annual report with additional analyses, using more detailed data for the European Region [www.eurotb.org](http://www.eurotb.org)

The details of estimation are described in publications in peer-reviewed journals <sup>1,2,3</sup>. Because accurate measurement is crucial in the evaluation of epidemic trends, a recent paper provides methodological guidance<sup>4</sup>, based on a review by the WHO Task Force on TB Impact Measurement. This paper can be read in conjunction with the list of countries that have done, or are planning, infection (tuberculin) and disease prevalence surveys, and with the set of countries that now register deaths by cause and provide these data to WHO (including TB).

- 1 Dye C et al. Global burden of tuberculosis: estimated incidence, prevalence and mortality by country. *Journal of the American Medical Association*, 1999, 282:677-686.
- 2 Corbett EL et al. The growing burden of tuberculosis: global trends and interactions with the HIV epidemic. *Archives of Internal Medicine*, 2003, 163:1009-1021.
- 3 Dye C et al. Evolution of tuberculosis control and prospects for reducing tuberculosis incidence, prevalence, and deaths globally. *Journal of the American Medical Association*, 2005, 293:2767-2775.
- 4 Dye et al. Measuring tuberculosis burden, trends and the impact of control programmes. *Lancet Infectious Diseases* (published online 16 January 2008).

### **Treatment of missing values**

Estimates are made for all indicators and for all countries. See "Process of Obtaining Data", above, for details.

## Data availability

Data are available for 212 countries and territories.

Estimates of TB incidence, prevalence and deaths are based on a consultative and analytical process. They are revised annually to reflect new information gathered through surveillance (case notifications and death registrations) and from special studies (including surveys of the prevalence of infection and disease).

For most countries the TB death is measured indirectly from TB incidence. For some countries, the TB death is measured directly from the data of the vital registration system (see reference 5; Annex 4).

Data on case notifications are published by WHO two years after diagnosis and three years after completion of treatment of TB cases.

## Regional and Global estimates

Regional and global estimates are produced by aggregating national estimates, e.g. to calculate the global death rate of TB per year per 100,000 population for a given year, the sum of estimate of TB death for individual countries is divided by the sum of population of all countries multiplied by 100,000.

The WHO regions are the African Region, the Region of the Americas, the Eastern Mediterranean Region, the European Region, the South-East Asia Region and the Western Pacific Region. All essential statistics are summarized for each of these regions and globally. However, to make clear the differences in epidemiological trends within regions, the African Region is divided into countries with low and high rates of HIV infection ("high" is an infection rate of =4%, as estimated by UNAIDS in 2007). Central Europe is divided from Eastern Europe (countries of the former Soviet states plus Bulgaria and Romania), and Western European countries are combined with the other high-income countries.

## Expected time of release

Estimates are published annually and are available in WHO's Global TB Database at [http://www.who.int/tb/country/global\\_tb\\_database/en/](http://www.who.int/tb/country/global_tb_database/en/)

## Please refer to series metadata

## Energy use (kg oil equivalent) per \$1,000 GDP (Constant 2005 PPP \$)

### Contact point in international agency

Data Help Desk

Development Data Group

The World Bank

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### Definition

Energy use per GDP (Constant 2005 PPP \$) is the kilogram of oil equivalent of energy use per gross domestic product converted to 2005 constant international dollars using purchasing power parity rates. Energy use refers to use of primary energy before transformation to other end-use fuels, which is equal to indigenous production plus imports and stock changes, minus exports and fuels supplied to ships and aircraft engaged in international transport.

Gross Domestic Product (GDP) is the sum of gross value added by all resident producers in the economy plus any product taxes (less subsidies) not included in the valuation of output. Value added is the net output of an industry after adding up all outputs and subtracting intermediate inputs. The purchasing power parity (PPP) conversion factor is the number of units of a country's currency required to buy the same amounts of goods and services in the domestic market as the United States (U.S.) dollar would buy in the United States. An international dollar has the same purchasing power over GDP as a U.S. dollar has in the United States.

### Method of computation

The indicator is computed as below:

$$= [\text{Indigenous production} + \text{imports} - \text{exports} - \text{international marine bunkers} +/\text{- stock changes}] / [\text{GDP (Constant 2005 PPP $)} / 1,000]$$

Indigenous Production is the production of primary energy, i.e. hard coal, lignite, peat, crude oil, NGLs, natural gas, nuclear, hydro, geothermal, solar and the heat from heat pumps that is extracted from the ambient environment. Production is calculated after

removal of impurities (e.g. sulphur from natural gas). Calculation of production of hydro, geothermal, etc. and nuclear electricity is explained in Section III, Units and Conversions of Energy Balances of OECD Countries of the International Energy Agency (IEA) Statistics publications.

Imports and exports comprise amounts having crossed the national territorial boundaries of the country, whether or not customs clearance has taken place.

International marine bunkers cover those quantities delivered to sea-going ships of all flags, including warships. Consumption by ships engaged in transport in inland and coastal waters is not included.

Stock changes reflect the difference between opening stock levels at the first day of the year and closing levels on the last day of the year of stocks on national territory held by producers, importers, energy transformation industries and large consumers. A stock build is shown as a negative number, and a stock draw as a positive number.

For additional information on the methodology of the energy use indicator, refer to the IEA's website: <http://iea.org/Textbase/stats/>.

Constant 2005 PPP gross domestic product (GDP) is GDP measured in constant local currency converted to constant 2005 U.S. dollars using PPP rates.

### **Comments and limitations**

Energy use per GDP (Constant 2005 PPP \$) intends to measure energy efficiency of countries relative to its production. Care should be taken when comparing values across time, because the GDP (Constant 2005 PPP \$) estimates are extrapolated from a single benchmark year, and the extrapolated values can be very different from those obtained from the base year survey. The difference is larger for countries that have experienced larger shifts in relative prices from one benchmark to another. For other limitations of the GDP (Constant 2005 PPP \$) estimates, please refer to the metadata for PPP conversion factors.

### **Sources of discrepancies between global and national figures**

National estimates are not available for this indicator.

### **Process of obtaining data**

Energy use data are collected and disseminated by the IEA. The Energy Statistics Division (ESD) of the IEA collects, processes, and publishes data and information on energy production, trade, stocks, transformation, consumption, prices and taxes as well as on

greenhouse gas emissions. The geographical coverage of the IEA's statistics includes the 30 Organization for Economic Co-operation and Development (OECD) Member countries and over 100 non-OECD countries worldwide. The data are originally collected by official bodies (often national statistical offices) in OECD Member countries from firms, government agencies and industry organisations, etc... to meet national needs and are then reported to the IEA using special questionnaires to ensure international comparability. Data are also collected for non-OECD countries directly from government and industry contacts and from national publications. The World Bank obtains data on energy use from the IEA electronically, and computes the energy use per GDP (constant 2005 PPP \$) series.

The GDP (constant 2005 PPP \$) data are based on country reported GDP data adjusted by the World Bank, to allow for international comparisons. Conversion to international dollars is done using PPP estimates produced by the World Bank and International Comparison Program (ICP).

Further details regarding estimation methods are available in the metadata for PPP conversion factors, or in *Global Purchasing Power Parities and Real Expenditures: 2005 International Comparison Program*, available at <http://www.worldbank.org/data/icp>.

### **Treatment of missing values**

The World Bank does not make any estimation for missing values of energy use data. GDP PPP estimates for countries that did not participate in the 2005 ICP round are estimated through regression techniques, described in the metadata for PPP conversion factors. Time series GDP PPP are extrapolated by multiplying the 2005 GDP PPP value by the relative rate of inflation (GDP deflator or CPI) in the country and US between 2005 and the year of concern.

### **Data availability**

The IEA collects, processes, and publishes energy use data for the 30 OECD Member countries and over 100 non-OECD countries worldwide. There is usually lag of 2-3 years between the reference year of the latest extrapolated estimates and the year of actual production.

The World Bank's most recent PPP estimates are derived from the 2005 ICP round of surveys in which 146 countries participated. GDP PPP estimates for an additional 41 countries are estimated through regression methods. Time series estimates are computed annually by extrapolating on the benchmark year data. There is usually lag of 1-2 years between the reference year of the latest extrapolated estimates and the year of actual production.

## Regional and Global estimates

Regional and global aggregates are computed by taking weighted means of the country level values using the denominator as the weight, when weights of countries with available data represent at least 66 percent of the weights for all countries in the region/group.

## Expected time of release

Energy use per GDP (Constant 2005 PPP \$) estimates are published annually, in April, in the World Bank's *World Development Indicators (WDI)* publication and online database. The WDI Online database is updated in April and September of each year.

## Please refer to series metadata

# Ratio of youth unemployment rate to adult unemployment rate, both sexes

## Contact point in international agency

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## Definition

This indicator is the ratio of the youth to adult unemployment rates. The youth unemployment rate is the proportion of the youth labour force that is unemployed; the adult unemployment rate is the proportion of the adult labour force that is unemployed. Young people are defined as persons aged between 15 and 24; adults are those aged 25 and above.

Unemployed comprise all persons above a specified age who, during the reference period, were: (a) without work; (b) currently available for work; and (c) actively seeking work<sup>1</sup>. The labour force is the sum of the number of persons employed and the number of persons unemployed.

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- 1 *For additional details see the resolution concerning statistics of the economically active population, employment, unemployment and underemployment, adopted by the 13th International Conference of Labour Statisticians, Geneva, 1982, available at: <http://http://www.ilo.org/public/english/bureau/stat/download/res/ecacpop.pdf>*

## **Method of computation**

The unemployment rates of youth and adults are calculated by dividing the total number of unemployed youth and unemployed adults (for a country or a specific group of workers) by the corresponding labour force, which itself is the sum of the total number of persons employed and unemployed. The ratio of youth unemployment rate to the adult unemployment rate is calculated by dividing the former by the latter.

## **Comments and limitations**

### **Total unemployment and registered unemployment**

If unemployment data from household surveys or population censuses are unavailable, administrative records might be an alternative. However, a national count of either unemployed persons or work applicants that are registered at employment offices is likely to be only a limited sub-set of the total persons seeking and available for work, especially in countries where the system of employment offices is not extensive. Unemployment registration often uses eligibility requirements that exclude those who have never worked or have not worked recently, or other discriminatory impediments that preclude going to register. On the other hand, administrative records can overstate registered unemployment because of double-counting, failure to remove people from the registers when they are no longer looking for a job, or because it allows inclusion of persons who have some work. Registered unemployment data can serve as a useful proxy for the extent of persons without work in countries where data on total unemployment are not available and time-series of registered unemployment data by country can serve as a good indication of labour market performance over time, but due to mentioned issues the data should be used with care. Moreover, due the limitation in comparability to “total unemployment”, the two measures should not be used interchangeably.

### **Cross-country comparability issues**

The issue of comparability of unemployment rates is particularly complex when looking at indicators for a large number of countries throughout the world. In an effort to resolve this issue for its member countries – and building on work carried out by the United States Bureau of Labour Statistics in the 1960s – OECD publishes “standardized unemployment rates” adjusted to ILO concepts. The ILO has further extended the OECD

series in country coverage and number of labour force measures. These unemployment rates are from national labour force survey estimates that have been adjusted to make them conceptually consistent with the *strictest* application of the ILO statistical standards. This implies that participating countries and territories have provided detailed information on the composite elements of their labour forces. The unemployment rates obtained are based on the total labour force including the armed forces, while OECD standardized rates are now civilian-based. The rates are calculated from annual average estimates (or the period considered most representative over the year), thereby avoiding the variances that would occur if different reference periods were used. These unemployment rates, based on official national information, should provide the best basis currently available for making reasonable international comparisons and assumptions.

A significant amount of research has been carried out over the years in the important area of producing unemployment rates that are fully consistent conceptually, in order to contrast unemployment rates of different countries for different hypotheses. There are a host of reasons why measured unemployment rates may not be comparable between countries. A few are provided below, to give users some indication of the range of potential issues that are relevant when attempting to determine the degree of comparability for unemployment rates between countries. Users with knowledge of particular countries or special circumstances should be able to expand on them:

### **1. Different sources.**

To the extent that sources of information differ, so will the results. Comparability difficulties result firstly from the already mentioned difference between sources measuring registered unemployment and total unemployment. But even when this is taken into account, the labour force surveys, official estimates and population censuses can still pose issues of comparability in cross-country analyses. Official estimates are generally based on information from different sources and can be combined in many different ways. A population census generally cannot probe deeply into labour force activity status. The resulting unemployment estimates may, therefore, differ substantially (either upwards or downwards) from those obtained from household surveys where more questions are asked to determine respondents' labour market situation.

### **2. Measurement difference.**

Where the information is based on household surveys or population censuses, differences in the questionnaires can lead to different statistics – even allowing for full adherence to ILO guidelines. In other words, differences in the measurement tool can affect the comparability of labour force results across countries.

### **3. Conceptual variation.**

National statistical offices even when basing themselves on the ILO conceptual guidelines may not follow the strictest measurement of employment and unemployment. They may differ in their choices concerning the conceptual basis for estimating unemployment, as in specific instances where the guidelines allow for a relaxed definition, thereby causing the labour force estimates (the base for the unemployment rate) to differ. They may also choose to derive the unemployment rate from the civilian labour force rather than the total labour force or economically active population. To the extent that such choices vary across countries, so too will the information.

### **4. Number of observations per year.**

Statistics for any given year can differ depending on the number of observations – monthly, quarterly, once or twice a year, and so on. Among other things, a considerable degree of seasonality can influence the results when the full year is not covered.

### **5. Geographic coverage.**

Survey coverage that is less than national coverage – urban areas, city, regional – has obvious limitations to comparability to the extent that coverage is not representative of the country as a whole. Unemployment in urban areas may tend to be higher than total unemployment because of the exclusion of the rural areas where workers are likely to work, although they may be underemployed or unpaid family workers, rather than seek work in a nonexistent or small formal sector.

### **6. Collection methodology.**

Sample sizes, sample selection procedures, sampling frames, and coverage, as well as many other statistical issues associated with data collection, may make a significant difference. The better the sample size and coverage, the better the results. Use of well-trained interviewers, proper collection and processing techniques, adequate estimation procedures, etc. are crucial for accurate results. Wide variations in this regard can clearly affect the comparability of the unemployment statistics. When viewing the unemployment rate as a gauge for tracking cyclical developments within a country, one would be interested in looking at changes in the measure over time. In this context, the definition of unemployment used (whether a country-specific definition or one based on the internationally recommended standards) does not matter as much – so long as it remains unchanged – as the fact that the statistics are collected and disseminated with regularity, so that measures of change are available for study. Still, for users making

cross-country comparisons it will be critical to know the source of the data and the conceptual basis for the estimates. It is also important to recognize that minor differences in the resulting statistics may not represent significant real differences.

## **7. Differences in age-groupings**

Although less important than other factors, mention should be made of differences in the age groups utilized, because the age limits applied for both youth and adults may vary across countries. In general, where a minimum school-leaving age exists, the lower age limit of youth will usually correspond to that age. This means that the lower age limit often varies between 14 and 16 years (and for some countries is even lower than 14, for example, Haiti at 10 years), according to the institutional arrangements in the country. This should not greatly affect most of the youth unemployment measures. However, the size of the age group may influence the measure of the young unemployed as a percentage of total unemployment. Other things being equal, the larger the age group the greater will be this percentage. In a few cases there is a larger discrepancy in the age limits applied. Six countries use 29 as the upper age limit: Colombia (1989-90), Costa Rica (1980-86), Honduras (1991-98), New Caledonia (1996), Panama (1983) and Suriname (1987). There are also differences in the operational definition of adults. In general, adults are defined as all individuals above the age of 25, but some countries apply an upper age limit. The upper age limit would obviously affect only the ratio of youth-to-adult unemployment rates and the effect is likely to be very small. Finally, mention should be made of the reference period of the information reported. Because there will be a substantial group of school-leavers (either permanently or for the extended holiday break) in the reported figures, the level of youth unemployment is likely to vary significantly over the year as a result of different school opening and closing dates. Most of the information reported relates to annual averages. In other cases, however, the figures relate to a specific month of the year (as with census data). The implications of the particular month chosen will vary across countries, owing to differences in institutional arrangements.

## **Sources of discrepancies between global and national figures**

The labour force data are harmonized to account for differences in national data and scope of coverage, collection and tabulation methodologies as well as for other country specific factors such as military service requirements. Furthermore, nationally reported data are utilized only when these meet strict criteria in terms of international comparability and geographic coverage. Model estimates are used where national data are not available or satisfactory.

## **Process of obtaining data**

Household labour force surveys are generally the most comprehensive and comparable sources for youth and adult unemployment statistics. Other possible sources include population censuses, official estimates and administrative records such as employment office records and social insurance statistics.

The ILO has made an intensive effort to assemble data on the indicators for as many countries, areas and territories as possible. Where there is no information for a country, it is usually because the country involved was not in a position to provide information for the indicator. Even when information for an indicator was available, it may not have been sufficiently current or may not have met other qualifications established for inclusion in the Key Indicators of the Labour Market, on which the information for youth unemployment is based.

In compiling the KILM, the ILO concentrates on bringing together information from international repositories. In other words, the KILM team rarely collects information directly from national sources, but rather takes advantage of existing compilations held by various organizations, such as the following:

International Labour Office (Bureau of Statistics)

United Nations Statistics Division

Organisation for Economic Co-operation and Development (OECD)

World Bank

United Nations Industrial Development Organization (UNIDO)

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United Nations Educational, Scientific and Cultural Organization (UNESCO)

United States Bureau of Labor Statistics (BLS)

Information maintained by these organizations has generally been obtained from national sources or is based on official national publications.

Whenever information was available from more than one repository, the information and background documentation from each repository was reviewed in order to select the information most suitable for inclusion, based on an assessment of the general reliability of the sources, the availability of methodological information and explanatory notes

regarding the scope of coverage, the availability of information by sex and age, and the degree of historical coverage. Occasionally, two data repositories have been chosen and presented for a single country; any resulting breaks in the historical series are duly noted.

For countries with less-developed labour market information systems, such as those in the developing economies, information may not be easily available to policy-makers and the social partners, and even less so to international organizations seeking to compile global data sets. Many of these countries, however, do collect labour market information through household and establishment surveys, population censuses and administrative records, so that the main problem remains the communication of such information to the global community. In this situation, the ILO Labour Market Indicators Library (LMIL) programme can help. The LMIL is a system for sharing information between the ILO regional offices and headquarters. ILO regional offices are closer to the original micro-sources of data and have therefore been successful in filling in numerous gaps where data at headquarters – used in the production of the KILM – had not existed. It is an ongoing programme that continues to assist the KILM and other ILO publications and research programmes in the expansion of its country and yearly coverage of indicators.

### **Treatment of missing values**

See “Regional and Global Estimates”, below.

### **Data availability**

Data are available for 135 economies.

The lag between the reference year and actual production of data series is one year or more. Data are produced at least annually.

### **Regional and Global estimates**

The biggest challenge in the production of aggregate estimates is that of missing data. In an ideal world, producing world and regional estimates of labour market indicators, such as unemployment, for example, would simply require summing up the total number of unemployed persons across all countries in the world or within a given region. However, because not all countries report data in every year and, indeed, some countries do not report data for any years at all, it is not possible to derive aggregate estimates of labour market indicators by merely summing across countries.

To address the problem of missing data, the ILO Employment Trends Unit has designed and actively maintains three econometric models which are used to produce estimates of labour market indicators in the countries and years for which no real data exist. The

Global Employment Trends Model (GET Model) is used to produce estimates – disaggregated by age and sex – of employment, unemployment and other aggregates. The world and regional labour force estimates are produced using the Trends Labour Force Model (TLF Model).

Each of these models uses multivariate regression techniques to impute missing values at the country level. The first step in each model is to assemble every known piece of real information (i.e. every real data point) for each indicator in question. It is important to note that only data that are national in coverage and comparable across countries and over time are used as inputs. This is an important selection criterion when the models are run, because they are designed to use the relationship between the various labour market indicators and their macroeconomic correlates (such as per-capita GDP, GDP growth rates, demographic trends, country membership in the Highly Indebted Poor Country (HIPC) Initiative, geographic indicators and country and time dummy variables) in order to produce estimates of the labour market indicators where no data exist. Thus, the comparability of the labour market data that are used as inputs in the imputation models is essential to ensure that the models accurately capture the relationship between the labour market indicators and the macroeconomic variables.

The last step of the estimation procedure occurs once the datasets containing both the real and imputed labour market data have been assembled. In this step, the ILO Trends Team aggregates the data across countries to produce the final world and regional estimates. For further information on the world and regional econometric models, readers can consult the technical background papers available at the following website:

<http://www.ilo.org/public/english/employment/strat/wrest.htm>

### **Expected time of release**

Data are published every two years, usually in September, in the Key Indicators of the Labour Market report.

### **Please refer to series metadata**

## **Ratio of youth unemployment rate to adult unemployment rate, men**

### **Contact point in international agency**

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## Definition

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## Method of computation

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## Comments and limitations

### Total unemployment and registered unemployment

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See “Regional and Global Estimates”, below.

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### **Expected time of release**

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### **Please refer to series metadata**

## **Ratio of youth unemployment rate to adult unemployment rate, women**

### **Contact point in international agency**

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### **Definition**

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## **Method of computation**

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## **Comments and limitations**

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The issue of comparability of unemployment rates is particularly complex when looking at indicators for a large number of countries throughout the world. In an effort to resolve this issue for its member countries – and building on work carried out by the United States Bureau of Labour Statistics in the 1960s – OECD publishes “standardized unemployment rates” adjusted to ILO concepts. The ILO has further extended the OECD series in country coverage and number of labour force measures. These unemployment rates are from national labour force survey estimates that have been adjusted to make them conceptually consistent with the strictest application of the ILO statistical standards. This implies that participating countries and territories have provided detailed

information on the composite elements of their labour forces. The unemployment rates obtained are based on the total labour force including the armed forces, while OECD standardized rates are now civilian-based. The rates are calculated from annual average estimates (or the period considered most representative over the year), thereby avoiding the variances that would occur if different reference periods were used. These unemployment rates, based on official national information, should provide the best basis currently available for making reasonable international comparisons and assumptions.

A significant amount of research has been carried out over the years in the important area of producing unemployment rates that are fully consistent conceptually, in order to contrast unemployment rates of different countries for different hypotheses. There are a host of reasons why measured unemployment rates may not be comparable between countries. A few are provided below, to give users some indication of the range of potential issues that are relevant when attempting to determine the degree of comparability for unemployment rates between countries. Users with knowledge of particular countries or special circumstances should be able to expand on them:

### **1. Different sources.**

To the extent that sources of information differ, so will the results. Comparability difficulties result firstly from the already mentioned difference between sources measuring registered unemployment and total unemployment. But even when this is taken into account, the labour force surveys, official estimates and population censuses can still pose issues of comparability in cross-country analyses. Official estimates are generally based on information from different sources and can be combined in many different ways. A population census generally cannot probe deeply into labour force activity status. The resulting unemployment estimates may, therefore, differ substantially (either upwards or downwards) from those obtained from household surveys where more questions are asked to determine respondents' labour market situation.

### **2. Measurement difference.**

Where the information is based on household surveys or population censuses, differences in the questionnaires can lead to different statistics – even allowing for full adherence to ILO guidelines. In other words, differences in the measurement tool can affect the comparability of labour force results across countries.

### **3. Conceptual variation.**

National statistical offices even when basing themselves on the ILO conceptual guidelines may not follow the strictest measurement of employment and unemployment. They may differ in their choices concerning the conceptual basis for estimating unemployment, as in specific instances where the guidelines allow for a relaxed definition, thereby causing the labour force estimates (the base for the unemployment rate) to differ. They may also choose to derive the unemployment rate from the civilian labour force rather than the total labour force or economically active population. To the extent that such choices vary across countries, so too will the information.

#### **4. Number of observations per year.**

Statistics for any given year can differ depending on the number of observations – monthly, quarterly, once or twice a year, and so on. Among other things, a considerable degree of seasonality can influence the results when the full year is not covered.

#### **5. Geographic coverage.**

Survey coverage that is less than national coverage – urban areas, city, regional – has obvious limitations to comparability to the extent that coverage is not representative of the country as a whole. Unemployment in urban areas may tend to be higher than total unemployment because of the exclusion of the rural areas where workers are likely to work, although they may be underemployed or unpaid family workers, rather than seek work in a nonexistent or small formal sector.

#### **6. Collection methodology.**

Sample sizes, sample selection procedures, sampling frames, and coverage, as well as many other statistical issues associated with data collection, may make a significant difference. The better the sample size and coverage, the better the results. Use of well-trained interviewers, proper collection and processing techniques, adequate estimation procedures, etc. are crucial for accurate results. Wide variations in this regard can clearly affect the comparability of the unemployment statistics. When viewing the unemployment rate as a gauge for tracking cyclical developments within a country, one would be interested in looking at changes in the measure over time. In this context, the definition of unemployment used (whether a country-specific definition or one based on the internationally recommended standards) does not matter as much – so long as it remains unchanged – as the fact that the statistics are collected and disseminated with regularity, so that measures of change are available for study. Still, for users making cross-country comparisons it will be critical to know the source of the data and the

conceptual basis for the estimates. It is also important to recognize that minor differences in the resulting statistics may not represent significant real differences.

## **7. Differences in age-groupings**

Although less important than other factors, mention should be made of differences in the age groups utilized, because the age limits applied for both youth and adults may vary across countries. In general, where a minimum school-leaving age exists, the lower age limit of youth will usually correspond to that age. This means that the lower age limit often varies between 14 and 16 years (and for some countries is even lower than 14, for example, Haiti at 10 years), according to the institutional arrangements in the country. This should not greatly affect most of the youth unemployment measures. However, the size of the age group may influence the measure of the young unemployed as a percentage of total unemployment. Other things being equal, the larger the age group the greater will be this percentage. In a few cases there is a larger discrepancy in the age limits applied. Six countries use 29 as the upper age limit: Colombia (1989-90), Costa Rica (1980-86), Honduras (1991-98), New Caledonia (1996), Panama (1983) and Suriname (1987). There are also differences in the operational definition of adults. In general, adults are defined as all individuals above the age of 25, but some countries apply an upper age limit. The upper age limit would obviously affect only the ratio of youth-to-adult unemployment rates and the effect is likely to be very small. Finally, mention should be made of the reference period of the information reported. Because there will be a substantial group of school-leavers (either permanently or for the extended holiday break) in the reported figures, the level of youth unemployment is likely to vary significantly over the year as a result of different school opening and closing dates. Most of the information reported relates to annual averages. In other cases, however, the figures relate to a specific month of the year (as with census data). The implications of the particular month chosen will vary across countries, owing to differences in institutional arrangements.

## **Sources of discrepancies between global and national figures**

The labour force data are harmonized to account for differences in national data and scope of coverage, collection and tabulation methodologies as well as for other country specific factors such as military service requirements. Furthermore, nationally reported data are utilized only when these meet strict criteria in terms of international comparability and geographic coverage. Model estimates are used where national data are not available or satisfactory.

## Process of obtaining data

Household labour force surveys are generally the most comprehensive and comparable sources for youth and adult unemployment statistics. Other possible sources include population censuses, official estimates and administrative records such as employment office records and social insurance statistics.

The ILO has made an intensive effort to assemble data on the indicators for as many countries, areas and territories as possible. Where there is no information for a country, it is usually because the country involved was not in a position to provide information for the indicator. Even when information for an indicator was available, it may not have been sufficiently current or may not have met other qualifications established for inclusion in the Key Indicators of the Labour Market, on which the information for youth unemployment is based.

In compiling the KILM, the ILO concentrates on bringing together information from international repositories. In other words, the KILM team rarely collects information directly from national sources, but rather takes advantage of existing compilations held by various organizations, such as the following:

International Labour Office (Bureau of Statistics)

United Nations Statistics Division

Organisation for Economic Co-operation and Development (OECD)

World Bank

United Nations Industrial Development Organization (UNIDO)

Statistical Office of the European Union (EUROSTAT)

United Nations Educational, Scientific and Cultural Organization (UNESCO)

United States Bureau of Labor Statistics (BLS)

Information maintained by these organizations has generally been obtained from national sources or is based on official national publications.

Whenever information was available from more than one repository, the information and background documentation from each repository was reviewed in order to select the information most suitable for inclusion, based on an assessment of the general reliability

of the sources, the availability of methodological information and explanatory notes regarding the scope of coverage, the availability of information by sex and age, and the degree of historical coverage. Occasionally, two data repositories have been chosen and presented for a single country; any resulting breaks in the historical series are duly noted.

For countries with less-developed labour market information systems, such as those in the developing economies, information may not be easily available to policy-makers and the social partners, and even less so to international organizations seeking to compile global data sets. Many of these countries, however, do collect labour market information through household and establishment surveys, population censuses and administrative records, so that the main problem remains the communication of such information to the global community. In this situation, the ILO Labour Market Indicators Library (LMIL) programme can help. The LMIL is a system for sharing information between the ILO regional offices and headquarters. ILO regional offices are closer to the original micro-sources of data and have therefore been successful in filling in numerous gaps where data at headquarters – used in the production of the KILM – had not existed. It is an ongoing programme that continues to assist the KILM and other ILO publications and research programmes in the expansion of its country and yearly coverage of indicators.

### **Treatment of missing values**

See “Regional and Global Estimates”, below.

### **Data availability**

Data are available for 135 economies.

The lag between the reference year and actual production of data series is one year or more. Data are produced at least annually.

### **Regional and Global estimates**

The biggest challenge in the production of aggregate estimates is that of missing data. In an ideal world, producing world and regional estimates of labour market indicators, such as unemployment, for example, would simply require summing up the total number of unemployed persons across all countries in the world or within a given region. However, because not all countries report data in every year and, indeed, some countries do not report data for any years at all, it is not possible to derive aggregate estimates of labour market indicators by merely summing across countries.

To address the problem of missing data, the ILO Employment Trends Unit has designed and actively maintains three econometric models which are used to produce estimates of

labour market indicators in the countries and years for which no real data exist. The Global Employment Trends Model (GET Model) is used to produce estimates – disaggregated by age and sex – of employment, unemployment and other aggregates. The world and regional labour force estimates are produced using the Trends Labour Force Model (TLF Model).

Each of these models uses multivariate regression techniques to impute missing values at the country level. The first step in each model is to assemble every known piece of real information (i.e. every real data point) for each indicator in question. It is important to note that only data that are national in coverage and comparable across countries and over time are used as inputs. This is an important selection criterion when the models are run, because they are designed to use the relationship between the various labour market indicators and their macroeconomic correlates (such as per-capita GDP, GDP growth rates, demographic trends, country membership in the Highly Indebted Poor Country (HIPC) Initiative, geographic indicators and country and time dummy variables) in order to produce estimates of the labour market indicators where no data exist. Thus, the comparability of the labour market data that are used as inputs in the imputation models is essential to ensure that the models accurately capture the relationship between the labour market indicators and the macroeconomic variables.

The last step of the estimation procedure occurs once the datasets containing both the real and imputed labour market data have been assembled. In this step, the ILO Trends Team aggregates the data across countries to produce the final world and regional estimates. For further information on the world and regional econometric models, readers can consult the technical background papers available at the following website:

<http://www.ilo.org/public/english/employment/strat/wrest.htm>

### **Expected time of release**

Data are published every two years, usually in September, in the Key Indicators of the Labour Market report.

### **Please refer to series metadata**

## **Share of youth unemployed to total unemployed, both sexes**

### **Contact point in international agency**

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## Definition

Youth unemployment as a proportion of total unemployment is defined as the proportion of the total unemployed population that is young (persons aged between 15 and 24).

Unemployed comprise all persons above a specified age who, during the reference period, were: (a) without work; (b) currently available for work; and (c) actively seeking work<sup>1</sup>. The labour force is the sum of the number of persons employed and the number of persons unemployed.

For further information see: <http://www.ilo.org/trends>

- 1 For additional details see the resolution concerning statistics of the economically active population, employment, unemployment and underemployment, adopted by the 13th International Conference of Labour Statisticians, Geneva, 1982, available at: <http://http://www.ilo.org/public/english/bureau/stat/download/res/ecacpop.pdf>*

## Method of computation

Youth unemployment as a proportion of total unemployment (for a country or a specific group of workers) is calculated by dividing the total number of young unemployed persons, age group 15-24, by the total number of unemployed persons, aged 15 and above.

## Comments and limitations

### Total unemployment and registered unemployment

If unemployment data from household surveys or population censuses are unavailable, administrative records might be an alternative. However, a national count of either unemployed persons or work applicants that are registered at employment offices is likely to be only a limited sub-set of the total persons seeking and available for work, especially in countries where the system of employment offices is not extensive. Unemployment registration often uses eligibility requirements that exclude those who have never worked or have not worked recently, or other discriminatory impediments that preclude going to register. On the other hand, administrative records can overstate registered unemployment because of double-counting, failure to remove people from the registers when they are no longer looking for a job, or because it allows inclusion of

persons who have some work. Registered unemployment data can serve as a useful proxy for the extent of persons without work in countries where data on total unemployment are not available and time-series of registered unemployment data by country can serve as a good indication of labour market performance over time, but due to mentioned issues the data should be used with care. Moreover, due the limitation in comparability to “total unemployment”, the two measures should not be used interchangeably.

### **Cross-country comparability issues**

The issue of comparability of unemployment rates is particularly complex when looking at indicators for a large number of countries throughout the world. In an effort to resolve this issue for its member countries – and building on work carried out by the United States Bureau of Labour Statistics in the 1960s – OECD publishes “standardized unemployment rates” adjusted to ILO concepts. The ILO has further extended the OECD series in country coverage and number of labour force measures. These unemployment rates are from national labour force survey estimates that have been adjusted to make them conceptually consistent with the *strictest application* of the ILO statistical standards. This implies that participating countries and territories have provided detailed information on the composite elements of their labour forces. The unemployment rates obtained are based on the total labour force including the armed forces, while OECD standardized rates are now civilian-based. The rates are calculated from annual average estimates (or the period considered most representative over the year), thereby avoiding the variances that would occur if different reference periods were used. These unemployment rates, based on official national information, should provide the best basis currently available for making reasonable international comparisons and assumptions.

A significant amount of research has been carried out over the years in the important area of producing unemployment rates that are fully consistent conceptually, in order to contrast unemployment rates of different countries for different hypotheses. There are a host of reasons why measured unemployment rates may not be comparable between countries. A few are provided below, to give users some indication of the range of potential issues that are relevant when attempting to determine the degree of comparability for unemployment rates between countries. Users with knowledge of particular countries or special circumstances should be able to expand on them:

#### **1. Different sources.**

To the extent that sources of information differ, so will the results. Comparability difficulties result firstly from the already mentioned difference between sources

measuring registered unemployment and total unemployment. But even when this is taken into account, the labour force surveys, official estimates and population censuses can still pose issues of comparability in cross-country analyses. Official estimates are generally based on information from different sources and can be combined in many different ways. A population census generally cannot probe deeply into labour force activity status. The resulting unemployment estimates may, therefore, differ substantially (either upwards or downwards) from those obtained from household surveys where more questions are asked to determine respondents' labour market situation.

## **2. Measurement difference.**

Where the information is based on household surveys or population censuses, differences in the questionnaires can lead to different statistics - even allowing for full adherence to ILO guidelines. In other words, differences in the measurement tool can affect the comparability of labour force results across countries.

## **3. Conceptual variation.**

National statistical offices even when basing themselves on the ILO conceptual guidelines may not follow the strictest measurement of employment and unemployment. They may differ in their choices concerning the conceptual basis for estimating unemployment, as in specific instances where the guidelines allow for a relaxed definition, thereby causing the labour force estimates (the base for the unemployment rate) to differ. They may also choose to derive the unemployment rate from the civilian labour force rather than the total labour force or economically active population. To the extent that such choices vary across countries, so too will the information.

## **4. Number of observations per year.**

Statistics for any given year can differ depending on the number of observations - monthly, quarterly, once or twice a year, and so on. Among other things, a considerable degree of seasonality can influence the results when the full year is not covered.

## **5. Geographic coverage.**

Survey coverage that is less than national coverage - urban areas, city, regional - has obvious limitations to comparability to the extent that coverage is not representative of the country as a whole. Unemployment in urban areas may tend to be higher than total unemployment because of the exclusion of the rural areas where workers are likely to work, although they may be underemployed or unpaid family workers, rather than seek work in a nonexistent or small formal sector.

## **6. Collection methodology.**

Sample sizes, sample selection procedures, sampling frames, and coverage, as well as many other statistical issues associated with data collection, may make a significant difference. The better the sample size and coverage, the better the results. Use of well-trained interviewers, proper collection and processing techniques, adequate estimation procedures, etc. are crucial for accurate results. Wide variations in this regard can clearly affect the comparability of the unemployment statistics. When viewing the unemployment rate as a gauge for tracking cyclical developments within a country, one would be interested in looking at changes in the measure over time. In this context, the definition of unemployment used (whether a country-specific definition or one based on the internationally recommended standards) does not matter as much – so long as it remains unchanged – as the fact that the statistics are collected and disseminated with regularity, so that measures of change are available for study. Still, for users making cross-country comparisons it will be critical to know the source of the data and the conceptual basis for the estimates. It is also important to recognize that minor differences in the resulting statistics may not represent significant real differences.

## **7. Differences in age-groupings**

Although less important than other factors, mention should be made of differences in the age groups utilized, because the age limits applied for both youth and adults may vary across countries. In general, where a minimum school-leaving age exists, the lower age limit of youth will usually correspond to that age. This means that the lower age limit often varies between 14 and 16 years (and for some countries is even lower than 14, for example, Haiti at 10 years), according to the institutional arrangements in the country. This should not greatly affect most of the youth unemployment measures. However, the size of the age group may influence the measure of the young unemployed as a percentage of total unemployment. Other things being equal, the larger the age group the greater will be this percentage. In a few cases there is a larger discrepancy in the age limits applied. Six countries use 29 as the upper age limit: Colombia (1989-90), Costa Rica (1980-86), Honduras (1991-98), New Caledonia (1996), Panama (1983) and Suriname (1987). There are also differences in the operational definition of adults. In general, adults are defined as all individuals above the age of 25, but some countries apply an upper age limit. The upper age limit would obviously affect only the ratio of youth-to-adult unemployment rates and the effect is likely to be very small. Finally, mention should be made of the reference period of the information reported. Because there will be a substantial group of school-leavers (either permanently or for the extended holiday break) in the reported figures, the level of youth unemployment is likely

to vary significantly over the year as a result of different school opening and closing dates. Most of the information reported relates to annual averages. In other cases, however, the figures relate to a specific month of the year (as with census data). The implications of the particular month chosen will vary across countries, owing to differences in institutional arrangements.

### **Sources of discrepancies between global and national figures**

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### **Process of obtaining data**

Household labour force surveys are generally the most comprehensive and comparable sources for youth unemployment statistics. Other possible sources include population censuses, official estimates and administrative records such as employment office records and social insurance statistics.

The ILO has made an intensive effort to assemble data on the indicators for as many countries, areas and territories as possible. Where there is no information for a country, it is usually because the country involved was not in a position to provide information for the indicator. Even when information for an indicator was available, it may not have been sufficiently current or may not have met other qualifications established for inclusion in the Key Indicators of the Labour Market, on which the information for youth unemployment is based.

In compiling the KILM, the ILO concentrates on bringing together information from international repositories. In other words, the KILM team rarely collects information directly from national sources, but rather takes advantage of existing compilations held by various organizations, such as the following:

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United States Bureau of Labor Statistics (BLS)

Information maintained by these organizations has generally been obtained from national sources or is based on official national publications.

Whenever information was available from more than one repository, the information and background documentation from each repository was reviewed in order to select the information most suitable for inclusion, based on an assessment of the general reliability of the sources, the availability of methodological information and explanatory notes regarding the scope of coverage, the availability of information by sex and age, and the degree of historical coverage. Occasionally, two data repositories have been chosen and presented for a single country; any resulting breaks in the historical series are duly noted.

For countries with less-developed labour market information systems, such as those in the developing economies, information may not be easily available to policy-makers and the social partners, and even less so to international organizations seeking to compile global data sets. Many of these countries, however, do collect labour market information through household and establishment surveys, population censuses and administrative records, so that the main problem remains the communication of such information to the global community. In this situation, the ILO Labour Market Indicators Library (LMIL) programme can help. The LMIL is a system for sharing information between the ILO regional offices and headquarters. ILO regional offices are closer to the original micro-sources of data and have therefore been successful in filling in numerous gaps where data at headquarters – used in the production of the KILM – had not existed. It is an ongoing programme that continues to assist the KILM and other ILO publications and research programmes in the expansion of its country and yearly coverage of indicators.

### **Treatment of missing values**

See “Regional and Global Estimates”, below.

### **Data availability**

Data are available 135 economies.

The lag between the reference year and actual production of data series is one year or more. Data are produced at least annually.

### **Regional and Global estimates**

The biggest challenge in the production of aggregate estimates is that of missing data. In an ideal world, producing world and regional estimates of labour market indicators, such as unemployment, for example, would simply require summing up the total number of unemployed persons across all countries in the world or within a given region. However, because not all countries report data in every year and, indeed, some countries do not report data for any years at all, it is not possible to derive aggregate estimates of labour market indicators by merely summing across countries.

To address the problem of missing data, the ILO Employment Trends Unit has designed and actively maintains three econometric models which are used to produce estimates of labour market indicators in the countries and years for which no real data exist. The Global Employment Trends Model (GET Model) is used to produce estimates – disaggregated by age and sex – of employment, unemployment and other aggregates. The world and regional labour force estimates are produced using the Trends Labour Force Model (TLF Model).

Each of these models uses multivariate regression techniques to impute missing values at the country level. The first step in each model is to assemble every known piece of real information (i.e. every real data point) for each indicator in question. It is important to note that only data that are national in coverage and comparable across countries and over time are used as inputs. This is an important selection criterion when the models are run, because they are designed to use the relationship between the various labour market indicators and their macroeconomic correlates (such as per-capita GDP, GDP growth rates, demographic trends, country membership in the Highly Indebted Poor Country (HIPC) Initiative, geographic indicators and country and time dummy variables) in order to produce estimates of the labour market indicators where no data exist. Thus, the comparability of the labour market data that are used as inputs in the imputation models is essential to ensure that the models accurately capture the relationship between the labour market indicators and the macroeconomic variables.

The last step of the estimation procedure occurs once the datasets containing both the real and imputed labour market data have been assembled. In this step, the ILO Trends Team aggregates the data across countries to produce the final world and regional estimates. For further information on the world and regional econometric models, readers can consult the technical background papers available at the following website:

<http://www.ilo.org/public/english/employment/strat/wrest.htm>

### **Expected time of release**

Data are published every two years, usually in September, in the Key Indicators of the Labour Market report.

### **Please refer to series metadata**

## **Share of youth unemployed to total unemployed, men**

### **Contact point in international agency**

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Website: <http://www.ilo.org/trends>

### **Definition**

Youth unemployment as a proportion of total unemployment is defined as the proportion of the total unemployed population that is young (persons aged between 15 and 24).

Unemployed comprise all persons above a specified age who, during the reference period, were: (a) without work; (b) currently available for work; and (c) actively seeking work<sup>1</sup>. The labour force is the sum of the number of persons employed and the number of persons unemployed.

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1 *For additional details see the resolution concerning statistics of the economically active population, employment, unemployment and underemployment, adopted by the 13th International Conference of Labour Statisticians, Geneva, 1982, available at: <http://http://www.ilo.org/public/english/bureau/stat/download/res/ecacpop.pdf>*

### **Method of computation**

Youth unemployment as a proportion of total unemployment (for a country or a specific group of workers) is calculated by dividing the total number of young unemployed persons, age group 15-24, by the total number of unemployed persons, aged 15 and above.

## Comments and limitations

### Total unemployment and registered unemployment

If unemployment data from household surveys or population censuses are unavailable, administrative records might be an alternative. However, a national count of either unemployed persons or work applicants that are registered at employment offices is likely to be only a limited sub-set of the total persons seeking and available for work, especially in countries where the system of employment offices is not extensive. Unemployment registration often uses eligibility requirements that exclude those who have never worked or have not worked recently, or other discriminatory impediments that preclude going to register. On the other hand, administrative records can overstate registered unemployment because of double-counting, failure to remove people from the registers when they are no longer looking for a job, or because it allows inclusion of persons who have some work. Registered unemployment data can serve as a useful proxy for the extent of persons without work in countries where data on total unemployment are not available and time-series of registered unemployment data by country can serve as a good indication of labour market performance over time, but due to mentioned issues the data should be used with care. Moreover, due the limitation in comparability to “total unemployment”, the two measures should not be used interchangeably.

### Cross-country comparability issues

The issue of comparability of unemployment rates is particularly complex when looking at indicators for a large number of countries throughout the world. In an effort to resolve this issue for its member countries – and building on work carried out by the United States Bureau of Labour Statistics in the 1960s – OECD publishes “standardized unemployment rates” adjusted to ILO concepts. The ILO has further extended the OECD series in country coverage and number of labour force measures. These unemployment rates are from national labour force survey estimates that have been adjusted to make them conceptually consistent with the *strictest application* of the ILO statistical standards. This implies that participating countries and territories have provided detailed information on the composite elements of their labour forces. The unemployment rates obtained are based on the total labour force including the armed forces, while OECD standardized rates are now civilian-based. The rates are calculated from annual average estimates (or the period considered most representative over the year), thereby avoiding the variances that would occur if different reference periods were used. These unemployment rates, based on official national information, should provide the best basis currently available for making reasonable international comparisons and assumptions.

A significant amount of research has been carried out over the years in the important area of producing unemployment rates that are fully consistent conceptually, in order to contrast unemployment rates of different countries for different hypotheses. There are a host of reasons why measured unemployment rates may not be comparable between countries. A few are provided below, to give users some indication of the range of potential issues that are relevant when attempting to determine the degree of comparability for unemployment rates between countries. Users with knowledge of particular countries or special circumstances should be able to expand on them:

### **1. Different sources.**

To the extent that sources of information differ, so will the results. Comparability difficulties result firstly from the already mentioned difference between sources measuring registered unemployment and total unemployment. But even when this is taken into account, the labour force surveys, official estimates and population censuses can still pose issues of comparability in cross-country analyses. Official estimates are generally based on information from different sources and can be combined in many different ways. A population census generally cannot probe deeply into labour force activity status. The resulting unemployment estimates may, therefore, differ substantially (either upwards or downwards) from those obtained from household surveys where more questions are asked to determine respondents' labour market situation.

### **2. Measurement difference.**

Where the information is based on household surveys or population censuses, differences in the questionnaires can lead to different statistics - even allowing for full adherence to ILO guidelines. In other words, differences in the measurement tool can affect the comparability of labour force results across countries.

### **3. Conceptual variation.**

National statistical offices even when basing themselves on the ILO conceptual guidelines may not follow the strictest measurement of employment and unemployment. They may differ in their choices concerning the conceptual basis for estimating unemployment, as in specific instances where the guidelines allow for a relaxed definition, thereby causing the labour force estimates (the base for the unemployment rate) to differ. They may also choose to derive the unemployment rate from the civilian labour force rather than the total labour force or economically active population. To the extent that such choices vary across countries, so too will the information.

#### **4. Number of observations per year.**

Statistics for any given year can differ depending on the number of observations - monthly, quarterly, once or twice a year, and so on. Among other things, a considerable degree of seasonality can influence the results when the full year is not covered.

#### **5. Geographic coverage.**

Survey coverage that is less than national coverage – urban areas, city, regional – has obvious limitations to comparability to the extent that coverage is not representative of the country as a whole. Unemployment in urban areas may tend to be higher than total unemployment because of the exclusion of the rural areas where workers are likely to work, although they may be underemployed or unpaid family workers, rather than seek work in a nonexistent or small formal sector.

#### **6. Collection methodology.**

Sample sizes, sample selection procedures, sampling frames, and coverage, as well as many other statistical issues associated with data collection, may make a significant difference. The better the sample size and coverage, the better the results. Use of well-trained interviewers, proper collection and processing techniques, adequate estimation procedures, etc. are crucial for accurate results. Wide variations in this regard can clearly affect the comparability of the unemployment statistics. When viewing the unemployment rate as a gauge for tracking cyclical developments within a country, one would be interested in looking at changes in the measure over time. In this context, the definition of unemployment used (whether a country-specific definition or one based on the internationally recommended standards) does not matter as much – so long as it remains unchanged – as the fact that the statistics are collected and disseminated with regularity, so that measures of change are available for study. Still, for users making cross-country comparisons it will be critical to know the source of the data and the conceptual basis for the estimates. It is also important to recognize that minor differences in the resulting statistics may not represent significant real differences.

#### **7. Differences in age-groupings**

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the Key Indicators of the Labour Market, on which the information for youth unemployment is based.

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### **Treatment of missing values**

See “Regional and Global Estimates”, below.

### **Data availability**

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### **Regional and Global estimates**

The biggest challenge in the production of aggregate estimates is that of missing data. In an ideal world, producing world and regional estimates of labour market indicators, such as unemployment, for example, would simply require summing up the total number of unemployed persons across all countries in the world or within a given region. However, because not all countries report data in every year and, indeed, some countries do not report data for any years at all, it is not possible to derive aggregate estimates of labour market indicators by merely summing across countries.

To address the problem of missing data, the ILO Employment Trends Unit has designed and actively maintains three econometric models which are used to produce estimates of labour market indicators in the countries and years for which no real data exist. The Global Employment Trends Model (GET Model) is used to produce estimates – disaggregated by age and sex – of employment, unemployment and other aggregates. The world and regional labour force estimates are produced using the Trends Labour Force Model (TLF Model).

Each of these models uses multivariate regression techniques to impute missing values at the country level. The first step in each model is to assemble every known piece of real information (i.e. every real data point) for each indicator in question. It is important to note that only data that are national in coverage and comparable across countries and over time are used as inputs. This is an important selection criterion when the models

are run, because they are designed to use the relationship between the various labour market indicators and their macroeconomic correlates (such as per-capita GDP, GDP growth rates, demographic trends, country membership in the Highly Indebted Poor Country (HIPC) Initiative, geographic indicators and country and time dummy variables) in order to produce estimates of the labour market indicators where no data exist. Thus, the comparability of the labour market data that are used as inputs in the imputation models is essential to ensure that the models accurately capture the relationship between the labour market indicators and the macroeconomic variables.

The last step of the estimation procedure occurs once the datasets containing both the real and imputed labour market data have been assembled. In this step, the ILO Trends Team aggregates the data across countries to produce the final world and regional estimates. For further information on the world and regional econometric models, readers can consult the technical background papers available at the following website:

<http://www.ilo.org/public/english/employment/strat/wrest.htm>

### **Expected time of release**

Data are published every two years, usually in September, in the Key Indicators of the Labour Market report.

### **Please refer to series metadata**

## **Share of youth unemployed to total unemployed, women**

### **Contact point in international agency**

Theo Sparreboom

Labour Economist

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Website: <http://www.ilo.org/trends>

### **Definition**

Youth unemployment as a proportion of total unemployment is defined as the proportion of the total unemployed population that is young (persons aged between 15 and 24).

Unemployed comprise all persons above a specified age who, during the reference period, were: (a) without work; (b) currently available for work; and (c) actively seeking work<sup>1</sup>. The labour force is the sum of the number of persons employed and the number of persons unemployed.

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1 *For additional details see the resolution concerning statistics of the economically active population, employment, unemployment and underemployment, adopted by the 13th International Conference of Labour Statisticians, Geneva, 1982, available at: <http://http://www.ilo.org/public/english/bureau/stat/download/res/ecacpop.pdf>*

## Method of computation

Youth unemployment as a proportion of total unemployment (for a country or a specific group of workers) is calculated by dividing the total number of young unemployed persons, age group 15-24, by the total number of unemployed persons, aged 15 and above.

## Comments and limitations

### Total unemployment and registered unemployment

If unemployment data from household surveys or population censuses are unavailable, administrative records might be an alternative. However, a national count of either unemployed persons or work applicants that are registered at employment offices is likely to be only a limited sub-set of the total persons seeking and available for work, especially in countries where the system of employment offices is not extensive. Unemployment registration often uses eligibility requirements that exclude those who have never worked or have not worked recently, or other discriminatory impediments that preclude going to register. On the other hand, administrative records can overstate registered unemployment because of double-counting, failure to remove people from the registers when they are no longer looking for a job, or because it allows inclusion of persons who have some work. Registered unemployment data can serve as a useful proxy for the extent of persons without work in countries where data on total unemployment are not available and time-series of registered unemployment data by country can serve as a good indication of labour market performance over time, but due to mentioned issues the data should be used with care. Moreover, due the limitation in comparability to "total unemployment", the two measures should not be used interchangeably.

### Cross-country comparability issues

The issue of comparability of unemployment rates is particularly complex when looking at indicators for a large number of countries throughout the world. In an effort to resolve this issue for its member countries – and building on work carried out by the United States Bureau of Labour Statistics in the 1960s – OECD publishes “standardized unemployment rates” adjusted to ILO concepts. The ILO has further extended the OECD series in country coverage and number of labour force measures. These unemployment rates are from national labour force survey estimates that have been adjusted to make them conceptually consistent with the *strictest application* of the ILO statistical standards. This implies that participating countries and territories have provided detailed information on the composite elements of their labour forces. The unemployment rates obtained are based on the total labour force including the armed forces, while OECD standardized rates are now civilian-based. The rates are calculated from annual average estimates (or the period considered most representative over the year), thereby avoiding the variances that would occur if different reference periods were used. These unemployment rates, based on official national information, should provide the best basis currently available for making reasonable international comparisons and assumptions.

A significant amount of research has been carried out over the years in the important area of producing unemployment rates that are fully consistent conceptually, in order to contrast unemployment rates of different countries for different hypotheses. There are a host of reasons why measured unemployment rates may not be comparable between countries. A few are provided below, to give users some indication of the range of potential issues that are relevant when attempting to determine the degree of comparability for unemployment rates between countries. Users with knowledge of particular countries or special circumstances should be able to expand on them:

### **1. Different sources.**

To the extent that sources of information differ, so will the results. Comparability difficulties result firstly from the already mentioned difference between sources measuring registered unemployment and total unemployment. But even when this is taken into account, the labour force surveys, official estimates and population censuses can still pose issues of comparability in cross-country analyses. Official estimates are generally based on information from different sources and can be combined in many different ways. A population census generally cannot probe deeply into labour force activity status. The resulting unemployment estimates may, therefore, differ substantially (either upwards or downwards) from those obtained from household surveys where more questions are asked to determine respondents’ labour market situation.

### **2. Measurement difference.**

Where the information is based on household surveys or population censuses, differences in the questionnaires can lead to different statistics - even allowing for full adherence to ILO guidelines. In other words, differences in the measurement tool can affect the comparability of labour force results across countries.

### **3. Conceptual variation.**

National statistical offices even when basing themselves on the ILO conceptual guidelines may not follow the strictest measurement of employment and unemployment. They may differ in their choices concerning the conceptual basis for estimating unemployment, as in specific instances where the guidelines allow for a relaxed definition, thereby causing the labour force estimates (the base for the unemployment rate) to differ. They may also choose to derive the unemployment rate from the civilian labour force rather than the total labour force or economically active population. To the extent that such choices vary across countries, so too will the information.

### **4. Number of observations per year.**

Statistics for any given year can differ depending on the number of observations - monthly, quarterly, once or twice a year, and so on. Among other things, a considerable degree of seasonality can influence the results when the full year is not covered.

### **5. Geographic coverage.**

Survey coverage that is less than national coverage – urban areas, city, regional – has obvious limitations to comparability to the extent that coverage is not representative of the country as a whole. Unemployment in urban areas may tend to be higher than total unemployment because of the exclusion of the rural areas where workers are likely to work, although they may be underemployed or unpaid family workers, rather than seek work in a nonexistent or small formal sector.

### **6. Collection methodology.**

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See “Regional and Global Estimates”, below.

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### **Expected time of release**

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### **Please refer to series metadata**

## Share of youth unemployed to youth population, both sexes

### Contact point in international agency

Theo Sparreboom

Labour Economist

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Telephone: +41 22 799 7142

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### Definition

Youth unemployment as a proportion of the youth population is defined as the proportion of the total youth population that is unemployed. Young people are defined as persons aged between 15 and 24.

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### Method of computation

Youth unemployment as a proportion of the youth population is calculated by dividing the total number of young unemployed persons by the total number of young persons. Both are defined as aged 15-24.

### Comments and limitations

Total unemployment and registered unemployment

If unemployment data from household surveys or population censuses are unavailable, administrative records might be an alternative. However, a national count of either

unemployed persons or work applicants that are registered at employment offices is likely to be only a limited sub-set of the total persons seeking and available for work, especially in countries where the system of employment offices is not extensive. Unemployment registration often uses eligibility requirements that exclude those who have never worked or have not worked recently, or other discriminatory impediments that preclude going to register. On the other hand, administrative records can overstate registered unemployment because of double-counting, failure to remove people from the registers when they are no longer looking for a job, or because it allows inclusion of persons who have some work. Registered unemployment data can serve as a useful proxy for the extent of persons without work in countries where data on total unemployment are not available and time-series of registered unemployment data by country can serve as a good indication of labour market performance over time, but due to mentioned issues the data should be used with care. Moreover, due the limitation in comparability to "total unemployment", the two measures should not be used interchangeably.

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Information maintained by these organizations has generally been obtained from national sources or is based on official national publications.

Whenever information was available from more than one repository, the information and background documentation from each repository was reviewed in order to select the information most suitable for inclusion, based on an assessment of the general reliability of the sources, the availability of methodological information and explanatory notes regarding the scope of coverage, the availability of information by sex and age, and the degree of historical coverage. Occasionally, two data repositories have been chosen and presented for a single country; any resulting breaks in the historical series are duly noted.

For countries with less-developed labour market information systems, such as those in the developing economies, information may not be easily available to policy-makers and the social partners, and even less so to international organizations seeking to compile global data sets. Many of these countries, however, do collect labour market information through household and establishment surveys, population censuses and administrative records, so that the main problem remains the communication of such information to the global community. In this situation, the ILO Labour Market Indicators Library (LMIL) programme can help. The LMIL is a system for sharing information between the ILO regional offices and headquarters. ILO regional offices are closer to the original micro-sources of data and have therefore been successful in filling in numerous gaps where data at headquarters – used in the production of the KILM – had not existed. It is an ongoing programme that continues to assist the KILM and other ILO publications and research programmes in the expansion of its country and yearly coverage of indicators.

### **Treatment of missing values**

See “Regional and Global Estimates”, below.

## Data availability

Data are available for 135 economies.

The lag between the reference year and actual production of data series is one year or more. Data are produced at least annually.

## Regional and Global estimates

The biggest challenge in the production of aggregate estimates is that of missing data. In an ideal world, producing world and regional estimates of labour market indicators, such as unemployment, for example, would simply require summing up the total number of unemployed persons across all countries in the world or within a given region. However, because not all countries report data in every year and, indeed, some countries do not report data for any years at all, it is not possible to derive aggregate estimates of labour market indicators by merely summing across countries.

To address the problem of missing data, the ILO Employment Trends Unit has designed and actively maintains three econometric models which are used to produce estimates of labour market indicators in the countries and years for which no real data exist. The Global Employment Trends Model (GET Model) is used to produce estimates – disaggregated by age and sex – of employment, unemployment and other aggregates. The world and regional labour force estimates are produced using the Trends Labour Force Model (TLF Model).

Each of these models uses multivariate regression techniques to impute missing values at the country level. The first step in each model is to assemble every known piece of real information (i.e. every real data point) for each indicator in question. It is important to note that only data that are national in coverage and comparable across countries and over time are used as inputs. This is an important selection criterion when the models are run, because they are designed to use the relationship between the various labour market indicators and their macroeconomic correlates (such as per-capita GDP, GDP growth rates, demographic trends, country membership in the Highly Indebted Poor Country (HIPC) Initiative, geographic indicators and country and time dummy variables) in order to produce estimates of the labour market indicators where no data exist. Thus, the comparability of the labour market data that are used as inputs in the imputation models is essential to ensure that the models accurately capture the relationship between the labour market indicators and the macroeconomic variables.

The last step of the estimation procedure occurs once the datasets containing both the real and imputed labour market data have been assembled. In this step, the ILO Trends Team aggregates the data across countries to produce the final world and regional

estimates. For further information on the world and regional econometric models, readers can consult the technical background papers available at the following website:

<http://www.ilo.org/public/english/employment/strat/wrest.htm>

### **Expected time of release**

Data are published every two years, usually in September, in the Key Indicators of the Labour Market report.

### **Please refer to series metadata**

## **Share of youth unemployed to youth population, men**

### **Contact point in international agency**

Theo Sparreboom

Labour Economist

International Labour Organization (ILO)

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Website: <http://www.ilo.org/trends>

### **Definition**

Youth unemployment as a proportion of the youth population is defined as the proportion of the total youth population that is unemployed. Young people are defined as persons aged between 15 and 24.

Unemployed comprise all persons above a specified age who, during the reference period, were: (a) without work; (b) currently available for work; and (c) actively seeking work. The labour force is the sum of the number of persons employed and the number of persons unemployed<sup>1</sup>.

For further information see: <http://www.ilo.org/trends>

1 *For additional details see the resolution concerning statistics of the economically active population, employment, unemployment and underemployment, adopted by the 13th International Conference of Labour Statisticians, Geneva, 1982, available at: <http://www.ilo.org/public/english/bureau/stat/download/res/ecacpop.pdf>*

## Method of computation

Youth unemployment as a proportion of the youth population is calculated by dividing the total number of young unemployed persons by the total number of young persons. Both are defined as aged 15-24.

## Comments and limitations

Total unemployment and registered unemployment

If unemployment data from household surveys or population censuses are unavailable, administrative records might be an alternative. However, a national count of either unemployed persons or work applicants that are registered at employment offices is likely to be only a limited sub-set of the total persons seeking and available for work, especially in countries where the system of employment offices is not extensive. Unemployment registration often uses eligibility requirements that exclude those who have never worked or have not worked recently, or other discriminatory impediments that preclude going to register. On the other hand, administrative records can overstate registered unemployment because of double-counting, failure to remove people from the registers when they are no longer looking for a job, or because it allows inclusion of persons who have some work. Registered unemployment data can serve as a useful proxy for the extent of persons without work in countries where data on total unemployment are not available and time-series of registered unemployment data by country can serve as a good indication of labour market performance over time, but due to mentioned issues the data should be used with care. Moreover, due the limitation in comparability to “total unemployment”, the two measures should not be used interchangeably.

Cross-country comparability issues

The issue of comparability of unemployment rates is particularly complex when looking at indicators for a large number of countries throughout the world. In an effort to resolve this issue for its member countries – and building on work carried out by the United States Bureau of Labour Statistics in the 1960s – OECD publishes “standardized unemployment rates” adjusted to ILO concepts. The ILO has further extended the OECD series in country coverage and number of labour force measures. These unemployment rates are from national labour force survey estimates that have been adjusted to make them conceptually consistent with the strictest application of the ILO statistical standards. This implies that participating countries and territories have provided detailed information on the composite elements of their labour forces. The unemployment rates obtained are based on the total labour force including the armed forces, while OECD

standardized rates are now civilian-based. The rates are calculated from annual average estimates (or the period considered most representative over the year), thereby avoiding the variances that would occur if different reference periods were used. These unemployment rates, based on official national information, should provide the best basis currently available for making reasonable international comparisons and assumptions.

A significant amount of research has been carried out over the years in the important area of producing unemployment rates that are fully consistent conceptually, in order to contrast unemployment rates of different countries for different hypotheses. There are a host of reasons why measured unemployment rates may not be comparable between countries. A few are provided below, to give users some indication of the range of potential issues that are relevant when attempting to determine the degree of comparability for unemployment rates between countries. Users with knowledge of particular countries or special circumstances should be able to expand on them:

1. Different sources.

To the extent that sources of information differ, so will the results. Comparability difficulties result firstly from the already mentioned difference between sources measuring registered unemployment and total unemployment. But even when this is taken into account, the labour force surveys, official estimates and population censuses can still pose issues of comparability in cross-country analyses. Official estimates are generally based on information from different sources and can be combined in many different ways. A population census generally cannot probe deeply into labour force activity status. The resulting unemployment estimates may, therefore, differ substantially (either upwards or downwards) from those obtained from household surveys where more questions are asked to determine respondents' labour market situation.

2. Measurement difference.

Where the information is based on household surveys or population censuses, differences in the questionnaires can lead to different statistics – even allowing for full adherence to ILO guidelines. In other words, differences in the measurement tool can affect the comparability of labour force results across countries.

3. Conceptual variation.

National statistical offices even when basing themselves on the ILO conceptual guidelines may not follow the strictest measurement of employment and unemployment. They may differ in their choices concerning the conceptual basis for estimating unemployment, as

in specific instances where the guidelines allow for a relaxed definition, thereby causing the labour force estimates (the base for the unemployment rate) to differ. They may also choose to derive the unemployment rate from the civilian labour force rather than the total labour force or economically active population. To the extent that such choices vary across countries, so too will the information.

4. Number of observations per year.

Statistics for any given year can differ depending on the number of observations – monthly, quarterly, once or twice a year, and so on. Among other things, a considerable degree of seasonality can influence the results when the full year is not covered.

5. Geographic coverage.

Survey coverage that is less than national coverage – urban areas, city, regional – has obvious limitations to comparability to the extent that coverage is not representative of the country as a whole. Unemployment in urban areas may tend to be higher than total unemployment because of the exclusion of the rural areas where workers are likely to work, although they may be underemployed or unpaid family workers, rather than seek work in a nonexistent or small formal sector.

6. Collection methodology.

Sample sizes, sample selection procedures, sampling frames, and coverage, as well as many other statistical issues associated with data collection, may make a significant difference. The better the sample size and coverage, the better the results. Use of well-trained interviewers, proper collection and processing techniques, adequate estimation procedures, etc. are crucial for accurate results. Wide variations in this regard can clearly affect the comparability of the unemployment statistics. When viewing the unemployment rate as a gauge for tracking cyclical developments within a country, one would be interested in looking at changes in the measure over time. In this context, the definition of unemployment used (whether a country-specific definition or one based on the internationally recommended standards) does not matter as much – so long as it remains unchanged – as the fact that the statistics are collected and disseminated with regularity, so that measures of change are available for study. Still, for users making cross-country comparisons it will be critical to know the source of the data and the conceptual basis for the estimates. It is also important to recognize that minor differences in the resulting statistics may not represent significant real differences.

7. Differences in age-groupings

Although less important than other factors, mention should be made of differences in the age groups utilized, because the age limits applied for both youth and adults may vary across countries. In general, where a minimum school-leaving age exists, the lower age limit of youth will usually correspond to that age. This means that the lower age limit often varies between 14 and 16 years (and for some countries is even lower than 14, for example, Haiti at 10 years), according to the institutional arrangements in the country. This should not greatly affect most of the youth unemployment measures. However, the size of the age group may influence the measure of the young unemployed as a percentage of total unemployment. Other things being equal, the larger the age group the greater will be this percentage. In a few cases there is a larger discrepancy in the age limits applied. Six countries use 29 as the upper age limit: Colombia (1989-90), Costa Rica (1980-86), Honduras (1991-98), New Caledonia (1996), Panama (1983) and Suriname (1987). There are also differences in the operational definition of adults. In general, adults are defined as all individuals above the age of 25, but some countries apply an upper age limit. The upper age limit would obviously affect only the ratio of youth-to-adult unemployment rates and the effect is likely to be very small. Finally, mention should be made of the reference period of the information reported. Because there will be a substantial group of school-leavers (either permanently or for the extended holiday break) in the reported figures, the level of youth unemployment is likely to vary significantly over the year as a result of different school opening and closing dates. Most of the information reported relates to annual averages. In other cases, however, the figures relate to a specific month of the year (as with census data). The implications of the particular month chosen will vary across countries, owing to differences in institutional arrangements.

### **Sources of discrepancies between global and national figures**

The labour force data are harmonized to account for differences in national data and scope of coverage, collection and tabulation methodologies as well as for other country specific factors such as military service requirements. Furthermore, nationally reported data are utilized only when these meet strict criteria in terms of international comparability and geographic coverage. Model estimates are used where national data are not available or satisfactory.

### **Process of obtaining data**

Household labour force surveys are generally the most comprehensive and comparable sources for youth unemployment statistics. Other possible sources include population censuses, official estimates and administrative records such as employment office records and social insurance statistics.

The ILO has made an intensive effort to assemble data on the indicators for as many countries, areas and territories as possible. Where there is no information for a country, it is usually because the country involved was not in a position to provide information for the indicator. Even when information for an indicator was available, it may not have been sufficiently current or may not have met other qualifications established for inclusion in the Key Indicators of the Labour Market, on which the information for youth unemployment is based.

In compiling the KILM, the ILO concentrates on bringing together information from international repositories. In other words, the KILM team rarely collects information directly from national sources, but rather takes advantage of existing compilations held by various organizations, such as the following:

- International Labour Office (Bureau of Statistics)
- United Nations Statistics Division
- Organisation for Economic Co-operation and Development (OECD)
- World Bank
- United Nations Industrial Development Organization (UNIDO)
- Statistical Office of the European Union (EUROSTAT)
- United Nations Educational, Scientific and Cultural Organization (UNESCO)
- United States Bureau of Labor Statistics (BLS)

Information maintained by these organizations has generally been obtained from national sources or is based on official national publications.

Whenever information was available from more than one repository, the information and background documentation from each repository was reviewed in order to select the information most suitable for inclusion, based on an assessment of the general reliability of the sources, the availability of methodological information and explanatory notes regarding the scope of coverage, the availability of information by sex and age, and the degree of historical coverage. Occasionally, two data repositories have been chosen and presented for a single country; any resulting breaks in the historical series are duly noted.

For countries with less-developed labour market information systems, such as those in the developing economies, information may not be easily available to policy-makers and the social partners, and even less so to international organizations seeking to compile global data sets. Many of these countries, however, do collect labour market information through household and establishment surveys, population censuses and administrative records, so that the main problem remains the communication of such information to the

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### **Treatment of missing values**

See “Regional and Global Estimates”, below.

### **Data availability**

Data are available for 135 economies.

The lag between the reference year and actual production of data series is one year or more. Data are produced at least annually.

### **Regional and Global estimates**

The biggest challenge in the production of aggregate estimates is that of missing data. In an ideal world, producing world and regional estimates of labour market indicators, such as unemployment, for example, would simply require summing up the total number of unemployed persons across all countries in the world or within a given region. However, because not all countries report data in every year and, indeed, some countries do not report data for any years at all, it is not possible to derive aggregate estimates of labour market indicators by merely summing across countries.

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Each of these models uses multivariate regression techniques to impute missing values at the country level. The first step in each model is to assemble every known piece of real information (i.e. every real data point) for each indicator in question. It is important to note that only data that are national in coverage and comparable across countries and over time are used as inputs. This is an important selection criterion when the models are run, because they are designed to use the relationship between the various labour

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### **Expected time of release**

Data are published every two years, usually in September, in the Key Indicators of the Labour Market report.

### **Please refer to series metadata**

## **Share of youth unemployed to youth population, women**

### **Contact point in international agency**

Theo Sparreboom

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International Labour Organization (ILO)

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Website: <http://www.ilo.org/trends>

### **Definition**

Youth unemployment as a proportion of the youth population is defined as the proportion of the total youth population that is unemployed. Young people are defined as persons aged between 15 and 24.

Unemployed comprise all persons above a specified age who, during the reference period, were: (a) without work; (b) currently available for work; and (c) actively seeking work. The labour force is the sum of the number of persons employed and the number of persons unemployed<sup>1</sup>.

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### **Method of computation**

Youth unemployment as a proportion of the youth population is calculated by dividing the total number of young unemployed persons by the total number of young persons. Both are defined as aged 15-24.

### **Comments and limitations**

Total unemployment and registered unemployment

If unemployment data from household surveys or population censuses are unavailable, administrative records might be an alternative. However, a national count of either unemployed persons or work applicants that are registered at employment offices is likely to be only a limited sub-set of the total persons seeking and available for work, especially in countries where the system of employment offices is not extensive. Unemployment registration often uses eligibility requirements that exclude those who have never worked or have not worked recently, or other discriminatory impediments that preclude going to register. On the other hand, administrative records can overstate registered unemployment because of double-counting, failure to remove people from the registers when they are no longer looking for a job, or because it allows inclusion of persons who have some work. Registered unemployment data can serve as a useful proxy for the extent of persons without work in countries where data on total unemployment are not available and time-series of registered unemployment data by country can serve as a good indication of labour market performance over time, but due to mentioned issues the data should be used with care. Moreover, due the limitation in comparability to "total unemployment", the two measures should not be used interchangeably.

Cross-country comparability issues

The issue of comparability of unemployment rates is particularly complex when looking at indicators for a large number of countries throughout the world. In an effort to resolve this issue for its member countries – and building on work carried out by the United States Bureau of Labour Statistics in the 1960s – OECD publishes “standardized unemployment rates” adjusted to ILO concepts. The ILO has further extended the OECD series in country coverage and number of labour force measures. These unemployment rates are from national labour force survey estimates that have been adjusted to make them conceptually consistent with the strictest application of the ILO statistical standards. This implies that participating countries and territories have provided detailed information on the composite elements of their labour forces. The unemployment rates obtained are based on the total labour force including the armed forces, while OECD standardized rates are now civilian-based. The rates are calculated from annual average estimates (or the period considered most representative over the year), thereby avoiding the variances that would occur if different reference periods were used. These unemployment rates, based on official national information, should provide the best basis currently available for making reasonable international comparisons and assumptions.

A significant amount of research has been carried out over the years in the important area of producing unemployment rates that are fully consistent conceptually, in order to contrast unemployment rates of different countries for different hypotheses. There are a host of reasons why measured unemployment rates may not be comparable between countries. A few are provided below, to give users some indication of the range of potential issues that are relevant when attempting to determine the degree of comparability for unemployment rates between countries. Users with knowledge of particular countries or special circumstances should be able to expand on them:

1. Different sources.

To the extent that sources of information differ, so will the results. Comparability difficulties result firstly from the already mentioned difference between sources measuring registered unemployment and total unemployment. But even when this is taken into account, the labour force surveys, official estimates and population censuses can still pose issues of comparability in cross-country analyses. Official estimates are generally based on information from different sources and can be combined in many different ways. A population census generally cannot probe deeply into labour force activity status. The resulting unemployment estimates may, therefore, differ substantially (either upwards or downwards) from those obtained from household surveys where more questions are asked to determine respondents’ labour market situation.

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3. Conceptual variation.

National statistical offices even when basing themselves on the ILO conceptual guidelines may not follow the strictest measurement of employment and unemployment. They may differ in their choices concerning the conceptual basis for estimating unemployment, as in specific instances where the guidelines allow for a relaxed definition, thereby causing the labour force estimates (the base for the unemployment rate) to differ. They may also choose to derive the unemployment rate from the civilian labour force rather than the total labour force or economically active population. To the extent that such choices vary across countries, so too will the information.

4. Number of observations per year.

Statistics for any given year can differ depending on the number of observations – monthly, quarterly, once or twice a year, and so on. Among other things, a considerable degree of seasonality can influence the results when the full year is not covered.

5. Geographic coverage.

Survey coverage that is less than national coverage – urban areas, city, regional – has obvious limitations to comparability to the extent that coverage is not representative of the country as a whole. Unemployment in urban areas may tend to be higher than total unemployment because of the exclusion of the rural areas where workers are likely to work, although they may be underemployed or unpaid family workers, rather than seek work in a nonexistent or small formal sector.

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definition of unemployment used (whether a country-specific definition or one based on the internationally recommended standards) does not matter as much – so long as it remains unchanged – as the fact that the statistics are collected and disseminated with regularity, so that measures of change are available for study. Still, for users making cross-country comparisons it will be critical to know the source of the data and the conceptual basis for the estimates. It is also important to recognize that minor differences in the resulting statistics may not represent significant real differences.

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Although less important than other factors, mention should be made of differences in the age groups utilized, because the age limits applied for both youth and adults may vary across countries. In general, where a minimum school-leaving age exists, the lower age limit of youth will usually correspond to that age. This means that the lower age limit often varies between 14 and 16 years (and for some countries is even lower than 14, for example, Haiti at 10 years), according to the institutional arrangements in the country. This should not greatly affect most of the youth unemployment measures. However, the size of the age group may influence the measure of the young unemployed as a percentage of total unemployment. Other things being equal, the larger the age group the greater will be this percentage. In a few cases there is a larger discrepancy in the age limits applied. Six countries use 29 as the upper age limit: Colombia (1989-90), Costa Rica (1980-86), Honduras (1991-98), New Caledonia (1996), Panama (1983) and Suriname (1987). There are also differences in the operational definition of adults. In general, adults are defined as all individuals above the age of 25, but some countries apply an upper age limit. The upper age limit would obviously affect only the ratio of youth-to-adult unemployment rates and the effect is likely to be very small. Finally, mention should be made of the reference period of the information reported. Because there will be a substantial group of school-leavers (either permanently or for the extended holiday break) in the reported figures, the level of youth unemployment is likely to vary significantly over the year as a result of different school opening and closing dates. Most of the information reported relates to annual averages. In other cases, however, the figures relate to a specific month of the year (as with census data). The implications of the particular month chosen will vary across countries, owing to differences in institutional arrangements.

### **Sources of discrepancies between global and national figures**

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### **Treatment of missing values**

See “Regional and Global Estimates”, below.

### **Data availability**

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### **Regional and Global estimates**

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disaggregated by age and sex – of employment, unemployment and other aggregates. The world and regional labour force estimates are produced using the Trends Labour Force Model (TLF Model).

Each of these models uses multivariate regression techniques to impute missing values at the country level. The first step in each model is to assemble every known piece of real information (i.e. every real data point) for each indicator in question. It is important to note that only data that are national in coverage and comparable across countries and over time are used as inputs. This is an important selection criterion when the models are run, because they are designed to use the relationship between the various labour market indicators and their macroeconomic correlates (such as per-capita GDP, GDP growth rates, demographic trends, country membership in the Highly Indebted Poor Country (HIPC) Initiative, geographic indicators and country and time dummy variables) in order to produce estimates of the labour market indicators where no data exist. Thus, the comparability of the labour market data that are used as inputs in the imputation models is essential to ensure that the models accurately capture the relationship between the labour market indicators and the macroeconomic variables.

The last step of the estimation procedure occurs once the datasets containing both the real and imputed labour market data have been assembled. In this step, the ILO Trends Team aggregates the data across countries to produce the final world and regional estimates. For further information on the world and regional econometric models, readers can consult the technical background papers available at the following website:

<http://www.ilo.org/public/english/employment/strat/wrest.htm>

### **Expected time of release**

Data are published every two years, usually in September, in the Key Indicators of the Labour Market report.

### **Please refer to series metadata**

## **Purchasing power parities (PPP) conversion factor, local currency unit to international dollar**

### **Contact point in international agency**

Data Help Desk

Development Data Group

The World Bank

**Postal Address:** Mailstop MSN MC2-209, 1818 H Street, NW, Washington, DC 20433 USA

**Telephone:** +1 202 473 7824

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E-mail: [data@worldbank.org](mailto:data@worldbank.org)

Website: <http://www.worldbank.org/data>

## Definition

Purchasing power parities (PPP) conversion factor, private consumption, is the number of units of a country's currency required to buy the same amount of goods and services in the domestic market as a U.S. dollar would buy in the United States. This conversion factor is applicable to private consumption.

## Method of computation

The World Bank uses consumption PPP rates estimated from International Comparison Program (ICP) surveys to estimate international poverty. This section explains the basic ICP 2005 methodology for estimating private consumption PPP rates. Because PPPs for consumption are computed as a component of GDP, the sources and methods used to compile GDP PPP are similar to those used to compile consumption PPP.

Statistically, PPPs are expenditure-weighted averages of relative prices of a vast number of goods and services on which people spend their incomes. Calculation of PPPs requires two sets of data: (a) GDP expenditure broken down into 155 detailed components called "basic headings" (of which 110 are related to private consumption); and (b) national annual average prices of a sample of comparable items representing each of the basic headings.

The World Bank PPP conversion factors are result of two separate PPP programs. The first is the ICP 2005 round which is organized in five geographic areas: Africa, Asia-Pacific, Commonwealth of Independent States, Latin America, and Western Asia. Regional agencies took the lead in coordinating the work in the five regions. In parallel, the Statistical Office of the European Communities (Eurostat) and the Organisation for Economic Co-operation and Development (OECD) conducted its 2005 PPP program that included 46 countries. Eurostat covered 37 countries - the 25 EU member states, the EFTA countries (Iceland, Norway and Switzerland), and Bulgaria, Romania, Turkey, Croatia, Macedonia, Albania, Serbia, Montenegro and Bosnia-Herzegovina. The OECD part of the program included nine other countries—Australia, Canada, Israel, Japan, Republic of Korea, Mexico, New Zealand, Russia, and United States.

Data on basic headings and prices were collected within each country and aggregated at the regional level. Three broad aggregation processes required to compute regional PPPs are: (1) Averaging the individual price observations to form an annual national average price for each product in each country; (2) Averaging individual price ratios for products

to obtain PPPs at the basic heading level between countries within a region; and (3) Averaging basic heading-PPPs to obtain aggregated PPPs for GDP and its major aggregates between countries within a region. For some of the stages, different techniques are used across regions. The key difference arises in compiling PPPs at the basic heading level, specifically: (a) the CPD (country-product-dummy) approach is used in Latin America, Africa, Asia, and Western Asia; and (b) the EKS (Elteto, Koves, and Szulc) approach is used in OECD/Eurostat and the Commonwealth of Independent States (CIS). For aggregation above the basic heading level, the EKS method is used in all regions other than in Africa, where the Iklé method was used.

Regional outputs must themselves be systematically matched with each other to produce global results. Two alternative methods are considered for linking regions in the ICP. One is to nominate “core” or “bridge” countries, which participate in two regional comparisons, providing a link between that pair of regions. The other is to select group of countries, a few from each region, which participate in a separate and parallel worldwide comparison organized specifically to provide a link between regions. With one exception, the second method was adopted for the 2005 ICP. This has become known as the “ring comparison” because of the way in which it works to determine the relativities between different global regions. The ring comparison is a much-reduced global ICP comparison in which transitive PPP relationships, at the basic heading level and above, are established between regions rather than between individual countries within a region. In total, special price collections are compiled for 18 ring countries, using a global product list to enable these relativities to be calculated. The one exception is the CIS, whose regional results are linked to the OECD/Eurostat region using the Russian Federation as a bridge country.

Additional information on the methodology and process of computation can be obtained from the *Global Purchasing Power Parities and Real Expenditures: 2005 International Comparison Program*, available at <http://www.worldbank.org/data/icp>.

### **Comments and limitations**

For the purpose of comparing levels of poverty across countries, the World Bank uses estimates of consumption converted to US dollars using purchasing power parity (PPP) rates rather than exchange rates. PPP conversion allows national accounts aggregates in national currencies to be compared on the basis of their purchasing powers of the currencies in their respective domestic markets free from differences in price levels across countries, much the same way as constant price estimates do in a time series comparison of real values free from differences in prices over time.

Purchasing power parities are statistical estimates. Like all statistics, they are point estimates that fall within some margin of error of the unknown, true values. The error margins surrounding the PPPs depend on the reliability of the expenditure weights and the price data and how well the goods and services that are priced represent the consumption pattern and price levels of each participating economy. As with national accounts data generally, it is not possible to calculate precise error margins for PPPs or the real expenditure data derived from them.

The ICP includes economies ranging from city-states to large and diverse countries such as China, India, Brazil, and Russia, which collectively account for over 40 percent of the world's population and include many people living in remote, rural locations. These and similar countries have to produce national average prices for goods and services that are comparable with other economies in their region. The accuracy of the PPPs for these countries depends upon the extent to which the selected goods and services are representative of their entire economy and on their ability to provide nationally representative average prices. The need to measure prices for internationally comparable goods and services means that they are more likely to reflect consumption patterns of urban areas. If this "urban bias" is consistent between countries, and if the urban to rural price differentials are similar across countries, any bias will tend to cancel out in the estimation of PPPs; if not, results for some countries may be biased, up or down, depending on the extent of over or under representation of urban and rural areas.

PPPs should not be used as indicators of the under- or overvaluation of currencies, nor should they be interpreted as equilibrium exchange rates. The PPPs cover all of GDP valued at purchaser's prices, which includes both traded and non-traded goods. Exchange rates, unlike PPPs, reflect the demand for currencies as a medium of exchange, speculative investments, or official reserves.

The 2005 PPPs are based on a new methodology designed to overcome problems encountered in previous rounds of the ICP. Therefore, users should be cautious about making comparisons to previous estimates of PPP-based GDP and components.

Time series of PPP conversion factors are obtained through extrapolating benchmark year data to other years. It has been established that the values extrapolated from one base year to another can be very different from those obtained from the base year survey and that the difference is larger for countries that have experienced larger shifts in relative prices from one benchmark to another. Therefore, as far as possible, extrapolations beyond benchmark years should be done sparingly and with caution.

For additional information on the data issues and limitations, see *Global Purchasing Power Parities and Real Expenditures: 2005 International Comparison Program*, available at <http://www.worldbank.org/data/icp>.

## Sources of discrepancies between global and national figures

National estimates are not available for this indicator.

## Process of obtaining data

The PPP data used by The World Bank for comparing poverty come from three sources:

- a. Latest round of benchmark surveys;
- b. Regression estimates for non-benchmark countries and
- c. Extrapolations of benchmark year data to household survey years.

The latest data for 146 benchmark countries are estimated from the ICP 2005 round and OECD-Eurostat 2005 round surveys. Data for 41 countries are estimated from regressions.

The GDP expenditure breakdown into 155 basic headings and its various sub-aggregates are provided by countries. For countries where data for some of the required basic heading levels are not available, estimates are made by the local national accounts experts using alternate data sources. In some countries where expenditure-based GDP are not available, the percentage distribution of an economically comparable country from the same region is applied to production-based GDP aggregates to impute the basic heading details.

For the 2005 ICP, a new approach has been adopted for collection of national level prices for basic heading items. First, different "product clusters," groups of products with shared broad characteristics such as "fresh whole milk" are defined, from which more specific products are specified. The classification of individual consumption by purpose (COICOP) is used as the starting point because most countries use it, or a compatible variant of it, in compiling their national accounts or their consumer price index (CPI). It is mapped to the OECD/Eurostat PPP classification to identify the products making up each ICP basic heading. The broad characteristics of each group of products are identified using the US Bureau of Labor Statistics "checklist" from its CPI as a starting point to develop a series of "Structured Product Descriptions" (SPDs), which show the key characteristics of each product to be priced (for example, type, variety, seasonal availability, quantity, packaging and pricing basis). An SPD identifies those characteristics that are price determining.

Each region goes through an independent exercise to define the specifications of the products to be priced. Once an SPD is set up for the product cluster, individual products are identified by selecting the specific characteristics for each product to be included (at least potentially) in the pricing list. Each selected product is given a detailed product specification. The number of products specified under each basic heading vary significantly from one basic heading to another and even for the same basic heading in different regions, because of the number and diversity of price-determining characteristics. Developing the final product specifications is a lengthy, iterative process. Chapter 5 of the ICP 2003-2006 Handbook describes in detail the preparation of the SPDs and the steps taken to derive product specifications within a region.

A basic concept guiding the price collection is that the prices should be consistent with those underlying each country's national accounts expenditure estimates. The prices collected should include all non-deductible taxes, and include tips or gratuities where significant. And the prices recorded must be annual national average prices consistent with the values recorded in the national accounts.

National annual average prices for all collected items along with GDP expenditures for the basic headings are sent to regional coordinators for processing. The regional coordinators run the data through an editing process to establish consistency. They then compute PPPs and PPP-measured values for each of the basic headings and various sub-aggregates leading up to GDP measured in PPP.

### **Treatment of missing values**

The 2005 round of the International Comparison Program includes 146 economies; at least another 65 economies or territories do not participate for a variety of reasons, including lack of resources or no national interest. Although the so-called nonbenchmark economies account for only a small share of the global output and population, it is important to include them in any comprehensive measurements of economic size and international poverty. The International Comparison Program 2005 final report includes a discussion of the regression models used in the previous (1993) round to impute PPP rates at GDP level. The same specification was used to impute PPPs for the 2005 round.

Afterward, an alternative model was found to yield better estimates. The new model uses the price level index (PLI) as the dependent variable. The PLI is the ratio of a PPP to a corresponding market exchange rate. The PLI for country  $i$  is modeled as:

$$PLI_i = a + b X_i + c D_i X_i + d D_i + e_i$$

The explanatory variables  $X_i$  include GDP per capita in U.S. dollars at market prices; imports as a share of GDP; exports as a share of GDP; and the age dependency ratio. Dummy variables  $D_i$  designate Sub-Saharan African economy, OE CD economy, island economy, and landlocked developing economy; and  $e_i$  is an error term. Also included are interaction terms of GDP per capita and the dummy variables. Data come from the 2005 International Comparison Program and World Development Indicators databases, supplemented by other official data sources in a small number of cases. The PLI and the continuous variables are all expressed in natural logs. Because the United States is the base country in the multilateral comparison, by definition its PPP is always 1 and its PLI is always 100. So it is necessary to add an explicit constraint on the equation to force those values:

$$PLI_i = \ln(100) = b(X_i - X_{USA}) + c(D_i X_i - D_i X_{USA}) + d(D_i - D_{USA}) + e_i$$

In effect, both dependent variable and explanatory variables are “normalized” by the corresponding U.S. values.

There are two regressions: one for PLI at the GDP level and one for PLI at the private consumption level. Two regressions are run together using Zellner’s seemingly unrelated regression method.<sup>1</sup>

The time series PPP rates are extrapolated through multiplying the 2005 PPP value by the relative rate of inflation (GDP deflator or CPI) in the country and US between 2005 and the year of concern.

1 Regression results are available in “Poverty data: A supplement to World Development Indicators 2008”, World Bank forthcoming in December 2008.

## Data availability

Over the last thirty-five years, the main source for collection of data for PPPs has been the ICP. Surveys have historically been conducted in about 120 countries at one time or another, and repeatedly in many of them. The wealth of data collected in these surveys constitutes the source from which all PPP computations are made. The World Bank’s most recent PPP estimates are derived from the ICP 2005 round of surveys in which 146 countries participated. PPP rates for additional 41 countries are estimated through regression method. The previous benchmark estimates were based on surveys carried out between 1993 and 1996 in a limited number of developing countries and more recent surveys in OECD and CIS countries. Many countries were included for the first time in 2005, including China. Previous estimates of China’s PPPs came from a 1986 research study. India participated for the first time since 1985. Time series estimates are

computed annually by extrapolating on the benchmark year data using ratios of price indexes (either GDP deflators or consumer price indexes). There is usually lag of one year between the reference year of the latest extrapolated estimates and the year of actual production. Extrapolated series are updated semi-annually in April and September of each year.

### **Regional and Global estimates**

Regional and Global estimates are not calculated for this indicator.

### **Expected time of release**

Consumption PPPs based on the latest available benchmark surveys, are published in the *World Bank's World Development Indicators (WDI)* publication and database. Extrapolated time series estimates are released in September of each year in the *WDI Online* database

## **Tuberculosis detection rate under DOTS, percentage**

### **Contact point in international agency**

Stop TB

World Health Organization

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**Website:** [www.who.int/tb/country/global\\_tb\\_database](http://www.who.int/tb/country/global_tb_database)

### **Definition**

The tuberculosis (TB) detection rate is the percentage of estimated new infectious tuberculosis cases detected under the internationally recommended tuberculosis control strategy directly observed treatment shortcourse (DOTS).

TB is an infectious bacterial disease caused by *Mycobacterium tuberculosis*, which most commonly affects the lungs. It is transmitted from person to person via droplets from the throat and lungs of people with the active respiratory disease. In healthy people, infection with *Mycobacterium tuberculosis* often causes no symptoms, since the person's immune system acts to "wall off" the bacteria. The symptoms of active TB of the lung are coughing, sometimes with sputum or blood, chest pains, weakness, weight loss, fever and night sweats. Tuberculosis is treatable with a six-month course of antibiotics.

The term "case detection", as used here, means that TB is diagnosed in a patient and is reported within the national surveillance system, and then to WHO. Smear-positive is defined as a case of TB where *Mycobacterium tuberculosis* bacilli are visible in the patient's sputum when examined under the microscope.

A new case of TB is defined as a patient who has never received treatment for TB, or who has taken anti-TB drugs for less than 1 month.

DOTS is the internationally recommended approach to TB control, which forms the core of the Stop TB Strategy (WHO, 2006b). The five components of DOTS are:

- Political commitment with increased and sustained financing;
- Case detection through quality-assured bacteriology;
- Standardized treatment with supervision and patient support;
- An effective drug supply and management system; and
- A monitoring and evaluation system, and impact measurement.

### Method of computation

Estimates of incidence [please see incidence indicator] are based on a consultative and analytical process in WHO and are published annually (see reference 5).

The DOTS detection rate for new smear-positive cases is calculated by dividing the number of new smear-positive cases treated in DOTS programmes and notified to WHO divided by the estimated number of incident smear-positive cases for the same year, expressed as a percentage.

Estimates of incidence (for additional details, please refer to the TB incidence indicator metadata) are based on a consultative and analytical process lead by the WHO and are published annually.

For more information please see the following:

#### References

1. *The Stop TB Strategy: building on and enhancing DOTS to meet the TB-related Millennium Development Goals*. Geneva, World Health Organization, 2006 (WHO/HTM/STB/2006.37).
2. *The Global Plan to Stop TB, 2006–2015*. Geneva, World Health Organization, 2006 (WHO/HTM/STB/2006.35).
3. Dye C et al. Global burden of tuberculosis: estimated incidence, prevalence and mortality by country. *Journal of the American Medical Association* 1999, **282**:677–686.
4. Corbett EL et al. The growing burden of tuberculosis: global trends and interactions with the HIV epidemic. *Archives of Internal Medicine* 2003, **163**:1009–1021.
5. *Global tuberculosis control: surveillance, planning, financing. WHO report 2008*. Geneva, World Health Organization (WHO/HTM/TB/2008.393).

#### Database

Global TB database: [www.who.int/tb/country/global\\_tb\\_database](http://www.who.int/tb/country/global_tb_database)

### **Comments and limitations**

Sputum smear-positive cases are the focus of this indicator because they are the principal sources of infection to others, because sputum smear microscopy is a highly specific (if somewhat insensitive) method of diagnosis, and because patients with smear-positive disease typically suffer higher rates of morbidity and mortality than smear-negative patients. However, national TB control programmes should aim to provide treatment to all patients, as set out in the Stop TB Strategy.

### **Sources of discrepancies between global and national figures**

In principle, there is no discrepancy between global and national figures as national data are not modified.

### **Process of obtaining data**

The number of new smear-positive cases detected by DOTS programmes is collected as part of the routine surveillance (recording and reporting) that is an essential component of DOTS. Quarterly reports of the number of TB cases registered are compiled and sent (either directly or via intermediate levels) to the central office of the national TB control programme. Annual case notifications (and other data on programme performance) are collected by WHO via an annual data collection form, distributed to national TB control programmes through WHO regional and country offices.

A standardized data collection form is distributed to all countries on an annual basis. Estimates are made using these data as well as country-specific analyses of TB epidemiology based on the published literature and consultation with national and international experts.

The TB case notifications reported by countries follow the WHO recommendations on case definitions and recording and reporting, therefore, they are internationally comparable and there is no need for any adjustment.

### **Treatment of missing values**

No adjustments are made for missing values. DOTS detection rate data are available only for countries that implement the DOTS strategy and report case notifications to WHO.

### **Data availability**

Data on case notifications were reported to WHO from 202 countries or territories (see reference 5; annex 3).

Data on the numerator of this indicator (i.e. number of new smear-positive TB cases) were reported from 202 countries or territories for 2006. The data on denominator of this indicator are available for 212 countries or territories (see reference 5; Annex 3 in the "Method of Computation" section).

Data are produced annually.

### **Regional and Global estimates**

Regional and global estimates are produced by aggregating national estimates, e.g. to calculate the global case detection rate of new smear-positive cases for a given year, the sum of number of new smear-positive cases reported by DOTS programmes of individual countries is divided by the sum of estimate of new smear-positive TB cases for the same countries and year multiplied by 100.

### **Expected time of release**

Estimates are published annually, in March, are available in WHO's Global TB Database at [http://www.who.int/tb/country/global\\_tb\\_database/en/](http://www.who.int/tb/country/global_tb_database/en/).

### **Please refer to series metadata**

## **People living with HIV, 15-49 years old, percentage**

### **Contact point in international agency**

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### **Definition**

The prevalence of HIV among the population 15-49 years old is the percentage of individuals aged 15-49 living with HIV.

Human Immunodeficiency Virus (HIV) is a virus that weakens the immune system, ultimately leading to AIDS, the acquired immunodeficiency syndrome. HIV destroys the body's ability to fight off infection and disease, which can ultimately lead to death.

## Method of computation

The prevalence of HIV among the population 15-49 years old is measured as the number of individuals aged 15-49 living with HIV divided by the total population aged 15-49.

UNAIDS and WHO, in close consultation with countries, developed a methodology to obtain national estimates of HIV prevalence for men and women. Different approaches are used for *generalized* epidemics (where adult HIV prevalence exceeds 1% and transmission is mostly heterosexual) and *low-level* or *concentrated* epidemics (where HIV is concentrated in groups with behaviours that expose them to a high risk of HIV infection). For countries with generalized epidemic:

All available surveillance data gathered from HIV-tested blood samples of pregnant women attending antenatal clinics and HIV prevalence results from population-based surveys are entered into a specialized software programme (called the “Estimation and Projection Package”)<sup>1</sup>. This programme generates a curve that describes the evolution of adult HIV prevalence rates over time. This adult prevalence curve, along with the national population estimates obtained from the UN Population Division, the antiretroviral therapy (ART) coverage, and various epidemiological assumptions (fertility rates, male/female ratios, survival time after HIV infection, etc.) are then entered into the Spectrum software programme which calculates the number of adults and children infected, new infections, deaths, orphans and treatment needs.

For countries with a low-level or concentrated epidemics:

Surveillance data are gathered for populations at high risk (such as sex workers, men who have sex with men and injecting drug users). Estimates are made of the size of those populations, and of populations that are at lower but significant risk (such as the partners of sex workers and their clients, injecting drug users, etc.). That information is then entered into the “Estimation and Projection Package” to produce curves that describe the evolution of adult HIV prevalence rates over time. This adult prevalence curve, along with the national population estimates obtained from the UN Population Division, the ART coverage, and various epidemiological assumptions (fertility rates, male/female ratios, survival time after HIV infection, etc.) are then entered into the Spectrum software programme which calculates the number of adults and children infected, new infections, deaths and treatment needs.

For additional details see:

<http://www.unaids.org/en/KnowledgeCentre/HIVData/Methodology/>

1 *For additional details see:*

[http://www.unaids.org/en/HIV\\_data/Epidemiology/epi\\_software2007.asp](http://www.unaids.org/en/HIV_data/Epidemiology/epi_software2007.asp)

## Comments and limitations

Improved methods, enhanced data and new estimation tools are enabling a better understanding of the degrees of uncertainty that surround HIV and AIDS estimates. This is part of an ongoing process of improving estimates and developing appropriate ranges—all of which are vital for effective HIV/AIDS planning and programming at national and regional levels.

Because the quality of data varies from country to country, the ranges of uncertainty surrounding estimates can widen or narrow depending on the country. The ranges reflect the degree of uncertainty associated with estimates and define the boundaries within which the actual numbers lie.

Four factors determine the extent of the ranges around the HIV estimates:

(i) *The HIV prevalence level* – Ranges tend to be smaller when HIV prevalence is higher. Thus the bounds around the best estimate of adults living with HIV in Zambia are relatively small (1,100,000 – 1,200,000) while they are much wider in a lower prevalence country such as Djibouti (3,900 – 31,000).

(ii) *The quality of the data* – Countries with better quality data have smaller ranges than countries with poorer quality data. The ranges for Asia and the Pacific are comparatively broad—which reflects the fact that HIV surveillance of key populations (such as injecting drug users, sex workers and men who have sex with men) is relatively poor in most countries in that region, hence resulting in more uncertainty. In general, the ranges for sub-Saharan Africa are narrower, because of recent improvements in the collection and interpretation of HIV data in that region (including the availability of a national survey for most countries).

(iii) *The number of steps or assumptions used to arrive at an estimate* – The more steps and assumptions, the wider the uncertainty range is likely to be (since each step introduces additional uncertainties). For example, ranges around estimates of adult HIV prevalence are smaller than those around estimates of HIV incidence among children, which require additional data on the probability of mother-to-child HIV transmission. The latter are based on prevalence among pregnant women, the probability of mother-to-

child HIV transmission, and estimated survival times for HIV-positive children. There is therefore greater uncertainty in these estimates than for adult prevalence alone.

(iv) *The type of epidemic (generalized or low-level/concentrated)*– Ranges tend to be wider in countries with low-level or concentrated epidemics than in countries with generalized epidemics because in low-level or concentrated epidemics, one needs to estimate both the numbers of people in the groups at higher risk of HIV infection and HIV prevalence rates.

Assumptions, methodologies and data used to produce the estimates are gradually changing as a result of ongoing enhancement of our knowledge of the epidemic; hence comparisons of recent estimates with those published in previous years is liable to yield misleading conclusions.

### **Sources of discrepancies between global and national figures**

The global estimates are representative of the national estimates for a given year.

### **Process of obtaining data**

Regional workshops are conducted every 2 years to produce draft estimates. These are finalized through correspondence with the country.

The UNAIDS Epidemiology team collaborates with national counterparts to generate HIV estimates for their country. Typically, the coordinating counterparts are based in the National AIDS Council or in the Ministry of Health, and they receive inputs from the AIDS programme (e.g. ART, Preventing Mother To Child Transmission programmes) and from the Statistics office.

Country estimates are collected and reviewed based on new findings at the country level, as well as previous data trends. Country data is validated by country representatives for accuracy.

No adjustments are made for international comparability. The data are comparable because of the well-standardised methodologies. HIV estimate data are reported as rounded figures.

### **Treatment of missing values**

There is no treatment of missing values. When the information needed to calculate the indicator is not available, the indicator is not estimated.

## Data availability

Data are available for approximately 147 countries.

Data are collected for people aged 15-49.

The lag between the reference year and actual production is from the period of regional workshops conducted every 2 years to publication of regional estimates in December, followed by publication of country estimates in the Global Report the following July.

## Regional and Global estimates

Regional and global estimates are estimated using the epidemiological tools described in the following website: [http://www.unaids.org/en/KnowledgeCentre/HIVData/Epidemiology/epi\\_software2007.asp](http://www.unaids.org/en/KnowledgeCentre/HIVData/Epidemiology/epi_software2007.asp).

## Expected time of release

Regional estimates are released annually in the Epidemic Update in December. National estimates are released in the Global Report every 2 years in July.

## Please refer to series metadata

# Current contraceptive use among married women 15-49 years old, any method, percentage

## Contact point in international agency

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## Definition

Contraceptive prevalence is the percentage of women married or in-union aged 15 to 49 who are currently using, or whose sexual partner is using, at least one method of contraception, regardless of the method used.

For analytical convenience, contraceptive methods are often classified as either modern or traditional. **Modern methods of contraception** include female and male

sterilization, oral hormonal pills, the intra-uterine device (IUD), the male condom, injectables, the implant (including Norplant), vaginal barrier methods, the female condom and emergency contraception. **Traditional methods of contraception** include the rhythm (periodic abstinence), withdrawal, lactational amenorrhea method (LAM) and folk methods.

### Method of computation

$$\text{Contraceptive prevalence} = \frac{\text{Women of reproductive age (15-49) who are married or in union and who are currently using any method of contraception}}{\text{Total number of women of reproductive age (15-49) who are married or in union}} \times 100$$

For further reference see:

United Nations (2004). Levels and Trends of Contraceptive Use as Assessed in 2002, Sales No. E.04.XIII.9. New York: United Nations

([http://www.un.org/esa/population/publications/wcu2002/WCU2002\\_Report.pdf](http://www.un.org/esa/population/publications/wcu2002/WCU2002_Report.pdf))

World Health Organization (2006). Reproductive Health Indicators: Guidelines for their Generation, Interpretation and Analysis for Global Monitoring. Geneva: World Health Organization ([http://www.who.int/reproductive-health/publications/rh\\_indicators/guidelines.pdf](http://www.who.int/reproductive-health/publications/rh_indicators/guidelines.pdf))

Demographic and Health Survey online guide under "Current Use of Contraceptive Methods" (<http://www.measuredhs.com/help/Datasets/index.htm>)

### Comments and limitations

Contraceptive prevalence is generally estimated from nationally representative sample survey data. Differences in the survey design and implementation, as well as differences in the way survey questionnaires are formulated and administered can affect the comparability of the data. The most common differences relate to the range of contraceptive methods included and the characteristics (age, sex, marital or union status) of the persons for whom contraceptive prevalence is estimated (base population). The time frame used to assess contraceptive prevalence can also vary. In most surveys there is no definition of what is meant by "currently using" a method of contraception.

When data on contraceptive use among married or in-union women aged 15 to 49 are not available, information on contraceptive prevalence for the next most comparable group of persons is reported. Illustrations of base populations that are sometimes presented are: sexually active women (irrespective of marital status), ever-married

women, or men and women who are married or in union. When information on current use is not available, data on use of contraceptive methods at last sexual intercourse or during the previous year are utilized. Footnotes are employed to indicate any differences between the data presented and the standard definition of contraceptive prevalence.

In some surveys, the lack of probing questions, asked to ensure that the respondent understands the meaning of the different contraceptive methods, can result in an underestimation of contraceptive prevalence, in particular for non-traditional methods. Sampling variability can also be an issue, especially when contraceptive prevalence is measured for a specific subgroup (according to method, age-group, level of educational attainment, place of residence, etc) or when analyzing trends over time.

The indicator “unmet need for family planning” provides complementary information to contraceptive prevalence.

### **Sources of discrepancies between global and national figures**

In principle, there is no discrepancy between global and national figures as national data are not modified except in the case of known errata in the reported figures.

In some cases, countries use estimates of contraceptive prevalence for national monitoring based on administrative sources instead of representative sample surveys. Those figures are not used for global monitoring since they are known to be of difficult comparability.

### **Process of obtaining data**

Data are produced by the United Nations Population Division using data from nationally representative surveys including the Demographic and Health Surveys (DHS), the Fertility and Family Surveys (FFS), the CDC-assisted Reproductive Health Surveys (RHS), the Multiple Indicator Cluster Surveys (MICS) and national family planning, or health, or household, or socio-economic surveys. Survey data from sources other than the National Statistical system are included when other data are not available.

The data are taken from published survey reports or, in exceptional cases, other published analytic reports. If clarification is needed, contact is made with the survey sponsors or authoring organization, which occasionally may supply corrected or adjusted estimates in response.

In general, all nationally representative surveys with comparable questions on current use of contraception are included.

### **Treatment of missing values**

There is no attempt to provide estimates when country data are not available, except for the estimation of regional and global averages.

### **Data availability**

Data are available for more than 170 countries and areas, and for more than 120 countries and areas there are at least two available data points.

Since the questions correspond to current use of contraceptives, contraceptive prevalence is measured at the time of interview. There is a lag, generally between one and four years, between the date of interview and the diffusion of the survey report. In cases where the interviews are held in two different years, the latest year is given as the reference year. On average, the surveys are undertaken every three to five years.

The dataset is updated annually by the United Nations Population Division.

### **Regional and Global estimates**

For reference years with missing data, linear interpolation between the closest data points on both sides of the reference year has been used. In other cases, the closest data point is used. Regional estimates are weighted averages of the country data, using the number of married or in-union women aged 15-49 for the reference year in each country as the weight. Global estimates are weighted averages of the regional estimates, using the number of married or in-union women aged 15-49 in each region as the weight. Regional averages are provided only if recent data are available for at least 50 per cent of the women of reproductive age who are married or in union in the region.

### **Expected time of release**

The dataset is updated annually and results are published in the United Nations Population Division's *World Contraceptive Use*, which is typically launched every two years in December.

## **Current contraceptive use among married women 15-49 years old, modern methods, percentage**

### **Contact point in international agency**

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## Definition

Contraceptive prevalence, modern methods is the percentage of women married or in-union aged 15 to 49 who are currently using, or whose sexual partner is using, at least one modern method of contraception, regardless of the method used.

**Modern methods of contraception** include female and male sterilization, oral hormonal pills, the intra-uterine device (IUD), the male condom, injectables, the implant (including Norplant), vaginal barrier methods, the female condom and emergency contraception.

## Method of computation

$$\text{Contraceptive prevalence, modern methods} = \frac{\text{Women of reproductive age (15-49) who are married or in union and who are currently using any modern methods of contraception}}{\text{Total number of women of reproductive age (15-49) who are married or in union}} \times 100$$

For further reference see:

United Nations (2004). Levels and Trends of Contraceptive Use as Assessed in 2002, Sales No. E.04.XIII.9. New York: United Nations

([http://www.un.org/esa/population/publications/wcu2002/WCU2002\\_Report.pdf](http://www.un.org/esa/population/publications/wcu2002/WCU2002_Report.pdf))

World Health Organization (2006). Reproductive Health Indicators: Guidelines for their Generation, Interpretation and Analysis for Global Monitoring. Geneva: World Health Organization ([http://www.who.int/reproductive-health/publications/rh\\_indicators/guidelines.pdf](http://www.who.int/reproductive-health/publications/rh_indicators/guidelines.pdf))

Demographic and Health Survey online guide under "Current Use of Contraceptive Methods" (<http://www.measuredhs.com/help/Datasets/index.htm>)

## Comments and limitations

Contraceptive prevalence, modern methods is generally estimated from nationally representative sample survey data. Differences in the survey design and implementation, as well as differences in the way survey questionnaires are formulated and administered can affect the comparability of the data. The most common differences relate to the range of contraceptive methods included and the characteristics (age, sex, marital or union status) of the persons for whom contraceptive prevalence is estimated (base

population). The time frame used to assess the prevalence of modern contraceptive methods can also vary. In most surveys there is no definition of what is meant by “currently using” a modern method of contraception.

When data on the use of modern contraceptive methods among married or in-union women aged 15 to 49 are not available, information on contraceptive prevalence for the next most comparable group of persons is reported. Illustrations of base populations that are sometimes presented are: sexually active women (irrespective of marital status), ever-married women, or men and women who are married or in union. When information on current use of modern methods is not available, data on use of modern contraceptive methods at last sexual intercourse or during the previous year are utilized. Footnotes are employed to indicate any differences between the data presented and the standard definition of contraceptive prevalence, modern methods.

In some surveys, the lack of probing questions, asked to ensure that the respondent understands the meaning of the different contraceptive methods, can result in an underestimation of contraceptive prevalence. Sampling variability can also be an issue, especially when contraceptive prevalence, modern methods is measured for a specific subgroup (according to method, age-group, level of educational attainment, place of residence, etc) or when analyzing trends over time.

### **Sources of discrepancies between global and national figures**

In principle, there is no discrepancy between global and national figures as national data are not modified except in the case of known errata in the reported figures.

In some cases, countries use estimates of contraceptive prevalence, modern methods for national monitoring based on administrative sources instead of representative sample surveys. Those figures are not used for global monitoring since they are known to be of difficult comparability.

### **Process of obtaining data**

Data are produced by the United Nations Population Division using data from nationally representative surveys including the Demographic and Health Surveys (DHS), the Fertility and Family Surveys (FFS), the CDC-assisted Reproductive Health Surveys (RHS), the Multiple Indicator Cluster Surveys (MICS) and national family planning, or health, or household, or socio-economic surveys. Survey data from sources other than the National Statistical system are included when other data are not available.

The data are taken from published survey reports or, in exceptional cases, other published analytic reports. If clarification is needed, contact is made with the survey

sponsors or authoring organization, which occasionally may supply corrected or adjusted estimates in response.

In general, all nationally representative surveys with comparable questions on current use of modern contraceptive methods are included.

### **Treatment of missing values**

There is no attempt to provide estimates when country data are not available, except for the estimation of regional and global averages.

### **Data availability**

Data are available for more than 170 countries and areas, and for more than 120 countries and areas there are at least two available data points.

Since the questions correspond to current use of contraceptives, contraceptive prevalence, modern methods is measured at the time of interview. There is a lag, generally between one and four years, between the date of interview and the diffusion of the survey report. In cases where the interviews are held in two different years, the latest year is given as the reference year. On average, the surveys are undertaken every three to five years.

The dataset is updated annually by the United Nations Population Division.

### **Regional and Global estimates**

For reference years with missing data, linear interpolation between the closest data points on both sides of the reference year has been used. In other cases, the closest data point is used. Regional estimates are weighted averages of the country data, using the number of married or in-union women aged 15-49 for the reference year in each country as the weight. Global estimates are weighted averages of the regional estimates, using the number of married or in-union women aged 15-49 in each region as the weight. Regional averages are provided only if recent data are available for at least 50 per cent of the women of reproductive age who are married or in union in the region.

### **Expected time of release**

The dataset is updated annually and results are published in the United Nations Population Division's *World Contraceptive Use*, which is typically launched every two years in December.

## Current contraceptive use among married women 15-49 years old, condom, percentage

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### Definition

Contraceptive prevalence, condom use is the percentage of women married or in-union aged 15 to 49, whose sexual partner is currently using a male condom for contraceptive purposes.

### Method of computation

$$\text{Contraceptive prevalence, condom use} = \frac{\text{Women of reproductive age (15-49) who are married or in union and whose sexual partner is currently using a male condom}}{\text{Total number of women of reproductive age (15-49) who are married or in union}} \times 100$$

For further reference see:

United Nations (2004). Levels and Trends of Contraceptive Use as Assessed in 2002, Sales No. E.04.XIII.9. New York: United Nations

([http://www.un.org/esa/population/publications/wcu2002/WCU2002\\_Report.pdf](http://www.un.org/esa/population/publications/wcu2002/WCU2002_Report.pdf))

World Health Organization (2006). Reproductive Health Indicators: Guidelines for their Generation, Interpretation and Analysis for Global Monitoring. Geneva: World Health Organization ([http://www.who.int/reproductive-health/publications/rh\\_indicators/guidelines.pdf](http://www.who.int/reproductive-health/publications/rh_indicators/guidelines.pdf))

Demographic and Health Survey online guide under "Current Use of Contraceptive Methods" (<http://www.measuredhs.com/help/Datasets/index.htm>)

## Comments and limitations

Contraceptive prevalence, condom use is generally estimated from nationally representative sample survey data. Differences in the survey design and implementation, as well as differences in the way survey questionnaires are formulated and administered can affect the comparability of the data. The most common differences relate to the characteristics (age, sex, marital or union status) of the persons for whom condom use is estimated (base population). The time frame used to assess condom use can also vary. In most surveys the concept of “current use” is not clearly defined.

When data on condom use among the sexual partners of married or in-union women aged 15 to 49 are not available, information on condom use for the next most comparable group of persons is reported. When information on current use is not available, data on condom use at last sexual intercourse or during the previous year are used. Footnotes are employed to indicate any differences between the data presented and the standard definition of condom use.

The way information on various contraceptive methods is gathered can result in an underestimation of condom use. Because most surveys report only the most effective contraceptive method currently used, women who are simultaneously using other more effective contraceptive methods such as implants, IUDs, or female sterilization will not record whether their sexual partner is also using a male condom. It should be noted that the data presented in this dataset refer to condom use “for contraceptive purposes” and not as a means of preventing the transmission of diseases such as HIV or other sexually transmitted infections. Again this may point to an underestimation of the overall extent of condom use, since, even among married or in union couples, male condoms tend to be more widely used as a protection against disease than as a contraceptive method.

Sampling variability can be an issue, especially when condom use is measured for a specific subgroup (age-group, level of educational attainment, place of residence, etc) or when analyzing trends over time.

## Sources of discrepancies between global and national figures

In principle, there is no discrepancy between global and national figures as national data are not modified except in the case of known errata in the reported figures.

In some cases, countries use estimates of condom use for national monitoring based on administrative sources instead of representative sample surveys. Those figures are not used for global monitoring since they are known to be of difficult comparability.

## **Process of obtaining data**

Data are produced by the United Nations Population Division using data from nationally representative surveys including the Demographic and Health Surveys (DHS), the Fertility and Family Surveys (FFS), the CDC-assisted Reproductive Health Surveys (RHS), the Multiple Indicator Cluster Surveys (MICS) and national family planning, or health, or household, or socio-economic surveys. Survey data from sources other than the National Statistical system are included when other data are not available.

The data are taken from published survey reports or, in exceptional cases, other published analytic reports. If clarification is needed, contact is made with the survey sponsors or authoring organization, which occasionally may supply corrected or adjusted estimates in response.

In general, all nationally representative surveys with comparable questions on current contraceptive prevalence, condom use are included.

## **Treatment of missing values**

There is no attempt to provide estimates when country data are not available, except for the estimation of regional and global averages.

## **Data availability**

Data are available for more than 170 countries and areas, and for more than 120 countries and areas there are at least two available data points.

Since the questions correspond to current use of contraceptives, condom use is measured at the time of interview. There is a lag, generally between one and four years, between the date of interview and the diffusion of the survey report. In cases where the interviews are held in two different years, the latest year is given as the reference year. On average, the surveys are undertaken every three to five years.

The dataset is updated annually by the United Nations Population Division.

## **Regional and Global estimates**

For reference years with missing data, linear interpolation between the closest data points on both sides of the reference year has been used. In other cases, the closest data point is used. Regional estimates are weighted averages of the country data, using the number of married or in-union women aged 15-49 for the reference year in each country as the weight. Global estimates are weighted averages of the regional estimates, using the number of married or in-union women aged 15-49 in each region as the

weight. Regional averages are provided only if recent data are available for at least 50 per cent of the women of reproductive age who are married or in union in the region.

### Expected time of release

The dataset is updated annually and results are published in the United Nations Population Division's *World Contraceptive Use*, which is typically launched every two years in December.

## Condom use to overall contraceptive use among currently married women 15-49 years old, percentage

### Contact point in international agency

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### Definition

Ratio of condom use to contraceptive prevalence. It is expressed as a percentage of all current contraceptive use among married women 15-49 years old.

### Method of computation

$$\text{Condom use ratio} = \frac{\text{Contraceptive prevalence, condom use}}{\text{Contraceptive prevalence}} \times 100$$

Contraceptive prevalence, condom use is the percentage of women married or in-union aged 15 to 49, whose sexual partner is currently using a male condom.

Contraceptive prevalence is the percentage of women married or in-union aged 15 to 49, who are currently using, or whose sexual partner is using, at least one method of contraception, regardless of the method used.

## Comments and limitations

The condom use ratio indicates the relative importance of the male condom among the various methods employed by in-union women and their partners to prevent pregnancy. This indicator may be useful, when employed in conjunction with related indicators, for understanding the role of male condoms in preventing the transmission of HIV and other sexually transmitted infections within marital unions. Other related indicators include the level of current condom use among married women 15-49 years old (see the data series for indicator 5.3) and condom use at last high-risk sex (indicator 6.2).

Because the numerator of the condom use ratio refers to condom use “for contraceptive purposes” and not as a means of preventing the transmission of diseases such as HIV or other sexually transmitted infections, the data may underestimate the overall extent of condom use. Furthermore, because most surveys record only the most effective contraceptive method currently used, women who are simultaneously using other more effective contraceptive methods such as implants, IUDs, or female sterilization will be recorded as using those methods even if their sexual partner is also using a male condom. In addition, women tend to report lower levels of condom use as a contraceptive method than men do.

The indicator does not capture condom use outside of marital unions and thus understates the overall use of condoms. Both as a contraceptive method and as means of preventing the transmission of diseases, male condoms tend to be more often used with casual than with regular partners. A more appropriate indicator for monitoring the role of condoms in halting the spread of HIV/AIDS outside of marital unions is to focus on condom use in high risk sex. For more details see information on the metadata for indicator 6.2 Condom use at the last high-risk sex.

## Sources of discrepancies between global and national figures

In principle, there is no discrepancy between global and national figures as national data are not modified except in the case of known errata in the reported figures.

Data based on administrative sources instead of representative sample surveys are not used for global monitoring since they are known to be of difficult comparability.

## Process of obtaining data

Data are produced by the United Nations Population Division using data from nationally representative surveys including the Demographic and Health Surveys (DHS), the Fertility and Family Surveys (FFS), the CDC-assisted Reproductive Health Surveys (RHS), the Multiple Indicator Cluster Surveys (MICS) and national family planning, or health, or

household, or socio-economic surveys. Survey data from sources other than the National Statistical system are included when other data are not available.

The data are taken from published survey reports or, in exceptional cases, other published analytic reports. If clarification is needed, contact is made with the survey sponsors or authoring organization, which occasionally may supply corrected or adjusted estimates in response.

In general, all nationally representative surveys with comparable questions on current contraceptive prevalence and condom use are included.

### **Treatment of missing values**

There is no attempt to provide estimates when country data are not available, except for the estimation of regional and global averages.

### **Data availability**

Data are available for more than 170 countries and areas, and for more than 120 countries and areas there are at least two available data points.

Since the questions correspond to current use of contraceptives, the condom use ratio is measured at the time of interview. There is a lag, generally between one and four years, between the date of interview and the diffusion of the survey report. In cases where the interviews are held in two different years, the latest year is given as the reference year. On average, the surveys are undertaken every three to five years.

The dataset is updated annually by the United Nations Population Division.

### **Regional and Global estimates**

For reference years with missing data, linear interpolation between the closest data points on both sides of the reference year has been used. In other cases, the closest data point is used. Regional estimates are weighted averages of the country data, using the number of married or in-union women aged 15-49 for the reference year in each country as the weight. Global estimates are weighted averages of the regional estimates, using the number of married or in-union women aged 15-49 in each region as the weight. Regional averages are provided only if recent data are available for at least 50 per cent of the women of reproductive age who are married or in union in the region.

### **Expected time of release**

The dataset is updated annually and results are published in the United Nations Population Division's *World Contraceptive Use*, which is typically launched every two years in December.

## Primary completion rate, both sexes

### Contact point in international agency

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### Definition

Primary Completion measured by the Gross Intake Ratio to Last Grade of primary education is the total number of new entrants in the last grade of primary education (according to the International Standard Classification of Education or ISCED97), regardless of age, expressed as percentage of the total population of the theoretical entrance age to the last grade of primary.

Primary education is defined by ISCED97 as programmes normally designed on a unit or project basis to give pupils a sound basic education in reading, writing and mathematics along with an elementary understanding of other subjects such as history, geography, natural science, social science, art and music.

### Method of computation

To calculate the indicator, one must first Determine the population of the theoretical entrance age to the last grade of primary by reference to the theoretical starting age and duration of primary education (ISCED97 Level 1) as reported by the country.

Then, the number of new entrants in the last grade of primary education, irrespective of age, is divided by the population of the theoretical entrance age to the last grade of primary, and the result is multiplied by 100.

This method requires information on the structure of education (i.e. theoretical entrance age and duration of ISCED97 Level 1), enrolment and repeaters in the last grade of

primary education, and population of the theoretical entrance age to the last grade of primary.

### **Comments and limitations**

The Gross Intake Ratio to Last Grade of primary reports on the current primary access to last grade stemming from previous years' of schooling and past education policies on entrance to primary education. It is a measure of first-time completion of primary education as it excludes pupils repeating the last grade. A high Gross Intake Ratio to Last Grade denotes a high degree of completion of primary education.

As this calculation includes all new entrants to last grade (regardless of age), the Gross Intake Ratio may exceed 100%, due to over-aged or under-aged pupils entering the last grade of primary school for the first time.

### **Sources of discrepancies between global and national figures**

Country figures may differ from the international ones because of differences between the national education system and ISCED97; or differences in coverage (i.e. the extent to which different types of education – e.g. private or special education – or different types of programmes e.g. adult education or early childhood care and education - are included in one rather than the other) and/or between national and UNPD population data.

### **Process of obtaining data**

The UNESCO Institute for Statistics (UIS) produces time series based on enrolments and repeaters data reported by education ministries or national statistical offices and UN population estimates. Enrolments and repeaters by grade are gathered through questionnaires sent annually to countries which are typically completed by ministries of education and/or national statistical offices. Countries are asked to report data according to the levels of education defined in ISCED97 to ensure international comparability of resulting indicators.

The data received by UIS are validated using electronic error detection systems that check for arithmetic errors & inconsistencies and trend analysis for implausible results. Queries are taken up with the country representatives reporting the data in order that corrections can be made (of errors) or explanations given (of implausible but correct results). In addition, countries also have an opportunity to see and comment on the main indicators the UIS produces in our annual "country review" of indicators.

The UIS also, if necessary, adjusts nationally reported data in order to take account either of under-reporting (i.e. data gaps) or over-reporting (i.e. inclusion of education programmes not covered by its surveys) before calculating indicators. In such cases, the

results – if published – will normally be designated as UIS estimates (denoted by \*\* in UIS publications).

### Treatment of missing values

The UIS estimates certain key items of data that may be missing or incomplete. Where data for a country are entirely missing or where an estimate is not based on evidence from or about the country directly, the UIS does not publish the resulting country-level estimates. They are used only for the purposes of calculating regional or global aggregates or averages.

For the purposes of calculating the Gross Intake Ratio to the Last Grade of primary education, the UIS may make one or more of the following:

- An adjustment to account for over- or under-reporting, for example:
  - To exclude enrolments in other programmes which have been reported together with enrolments at the primary level (very rare – and does not usually result in a country level publishable estimate);
  - To include enrolments in a type of education – such as private education or special education – not reported by the country; and/or
  - To include enrolments in a part of the country not reported by the country.
- An estimate of the population of the theoretical entrance age to the last grade of primary (if neither UNPD nor the country itself can provide estimates of their own).

In all cases, in the first instance, estimates are based on evidence from the country itself (e.g. information from the data provider on the size of the missing component, via correspondence, publications or data on the ministry's or National Statistical Office's (NSO's) Webpage, or via surveys conducted by other organisations). These figures may be published: as observed data (if the missing items are found in national source or the country submits them); as national estimates (if the country is persuaded to produce estimates and submit them in place of missing data); as UIS estimates (if the estimates are made by the UIS); or, occasionally, as inputs for regional and global aggregates and averages (if the evidence on which the estimates are based is weak or unsubstantiated).

Where no evidence is available for the reporting year from the country, estimates may be based on data already reported by the country in a previous year or on another data item which is available (eg total enrolments in primary education) and clearly linked to the missing item. These figures may be published as UIS estimates or, if the data reported are very old or the links with other available data are weak, they may only be used for the construction of regional or global aggregates and averages.

Where there is neither evidence from the country nor data available in previous years, we base estimates on a similar country. Such figures will only be used for regional or global aggregates and averages.

Over-reporting is corrected for first, then under-reporting, before estimating more detailed breakdowns of data such as age distributions or the redistribution of enrolments of unknown age.

Over- and under-reporting are typically adjusted by adding or subtracting a given percentage of enrolments thus assuming the same age, grade and sex distribution as for the reported enrolments. (If more detailed evidence is available this will be used but that is typically not the case.)

The number of repeaters in the last grade of primary is derived from estimates of the repeaters in each grade of primary education. If the country does not report these data in a given year, they are most commonly estimated from the grade distribution reported in a previous year.

The number of enrolments in the last grade of primary is derived from estimates of the enrolments in each grade of primary education. If the country does not report these data in a given year, they are most commonly estimated from the grade distribution reported in a previous year.

The number of repeaters in the last grade of primary is derived from estimates of the repeaters in each grade of primary education. If the country does not report these data in a given year, they are most commonly estimated from the grade distribution reported in a previous year.

Population estimates – produced only where there are no other suitable estimates available either from UNPD or from the country itself – are made only for countries which have reported education data to the UIS and for which population estimates from a reliable source are available in some years.

### **Data availability**

Gross Intake Ratio to Last Grade of primary is available for around 140 countries. Data are published 15 months after the end of the school reference year for countries with calendar school year, and 21 months for countries with split school year. A few countries, mainly from the second group, report more up-to-date data to the Institute and these are published more quickly (9 months after the end of the school year).

Gross Intake Ratios to Last Grade of primary produced by UNESCO Institute for Statistics are available on an annual basis. The United Nations Population Division estimates of population by individual years of age are revised biennially, although estimates may be based on population censuses conducted every 10 years in most countries.

### **Regional and Global estimates**

Regional and global averages are calculated on the basis of the data published by the UIS and using the best possible non-publishable estimates where no publishable data exist. Averages are produced using the population of the theoretical entrance age to the last grade of primary as weights.

### **Expected time of release**

The UIS disseminates education data twice a year: country data and regional averages are released in April, and country data (only) are updated with new countries' submission in September.

## **Primary completion rate, boys**

### **Contact point in international agency**

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### **Definition**

Primary Completion measured by the Gross Intake Ratio to Last Grade of primary education is the total number of new entrants in the last grade of primary education (according to the International Standard Classification of Education or ISCED97), regardless of age, expressed as percentage of the total population of the theoretical entrance age to the last grade of primary.

Primary education is defined by ISCED97 as programmes normally designed on a unit or project basis to give pupils a sound basic education in reading, writing and mathematics along with an elementary understanding of other subjects such as history, geography, natural science, social science, art and music.

### **Method of computation**

To calculate the indicator, one must first determine the population of the theoretical entrance age to the last grade of primary by reference to the theoretical starting age and duration of primary education (ISCED97 Level 1) as reported by the country.

Then, the number of new entrants in the last grade of primary education, irrespective of age, is divided by the population of the theoretical entrance age to the last grade of primary, and multiply the result is multiplied by 100.

This method requires information on the structure of education (i.e. theoretical entrance age and duration of ISCED97 Level 1), enrolment and repeaters in the last grade of primary education, and population of the theoretical entrance age to the last grade of primary.

### **Comments and limitations**

The Gross Intake Ratio to Last Grade of primary reports on the current primary access to last grade stemming from previous years' of schooling and past education policies on entrance to primary education. It is a measure of first-time completion of primary education as it excludes pupils repeating the last grade. A high Gross Intake Ratio to Last Grade denotes a high degree of completion of primary education.

As this calculation includes all new entrants to last grade (regardless of age), the Gross Intake Ratio may exceed 100%, due to over-aged or under-aged pupils entering the last grade of primary school for the first time.

#### **sources**

Country figures may differ from the international ones because of differences between the national education system and ISCED97; or differences in coverage (i.e. the extent to which different types of education – e.g. private or special education – or different types of programmes e.g. adult education or early childhood care and education - are included in one rather than the other) and/or between national and UNPD population data.

### **Sources of discrepancies between global and national figures**

Country figures may differ from the international ones because of differences between the national education system and ISCED97; or differences in coverage (i.e. the extent to which different types of education – e.g. private or special education – or different types of programmes e.g. adult education or early childhood care and education - are included in one rather than the other) and/or between national and UNPD population data.

### **Process of obtaining data**

The UNESCO Institute for Statistics (UIS) produces time series based on enrolments and repeaters data reported by education ministries or national statistical offices and UN population estimates. Enrolments and repeaters by grade are gathered through questionnaires sent annually to countries which are typically completed by ministries of education and/or national statistical offices. Countries are asked to report data according to the levels of education defined in ISCED97 to ensure international comparability of resulting indicators.

The data received by UIS are validated using electronic error detection systems that check for arithmetic errors & inconsistencies and trend analysis for implausible results. Queries are taken up with the country representatives reporting the data in order that corrections can be made (of errors) or explanations given (of implausible but correct results). In addition, countries also have an opportunity to see and comment on the main indicators the UIS produces in our annual "country review" of indicators.

The UIS also, if necessary, adjusts nationally reported data in order to take account either of under-reporting (i.e. data gaps) or over-reporting (i.e. inclusion of education programmes not covered by its surveys) before calculating indicators. In such cases, the results – if published – will normally be designated as UIS estimates (denoted by \*\* in UIS publications).

### **Treatment of missing values**

The UIS estimates certain key items of data that may be missing or incomplete. Where data for a country are entirely missing or where an estimate is not based on evidence from or about the country directly, the UIS does not publish the resulting country-level estimates. They are used only for the purposes of calculating regional or global aggregates or averages.

For the purposes of calculating the Gross Intake Ratio to the Last Grade of primary education, the UIS may make one or more of the following:

- An adjustment to account for over- or under-reporting, for example:
  - To exclude enrolments in other programmes which have been reported together with enrolments at the primary level (very rare – and does not usually result in a country level publishable estimate);
  - To include enrolments in a type of education – such as private education or special education – not reported by the country; and/or
  - To include enrolments in a part of the country not reported by the country.
- An estimate of the number of enrolments in the official age group for primary education
- An estimate of the number of repeaters in each grade of primary education

- An estimate of the population of the theoretical entrance age to the last grade of primary (if neither UNPD nor the country itself can provide estimates of their own).

In all cases, in the first instance, estimates are based on evidence from the country itself (e.g. information from the data provider on the size of the missing component, via correspondence, publications or data on the ministry's or National Statistical Office's (NSO's) Webpage, or via surveys conducted by other organisations). These figures may be published: as observed data (if the missing items are found in national source or the country submits them); as national estimates (if the country is persuaded to produce estimates and submit them in place of missing data); as UIS estimates (if the estimates are made by the UIS); or, occasionally, as inputs for regional and global aggregates and averages (if the evidence on which the estimates are based is weak or unsubstantiated).

Where no evidence is available for the reporting year from the country, estimates may be based on data already reported by the country in a previous year or on another data item which is available (eg total enrolments in primary education) and clearly linked to the missing item. These figures may be published as UIS estimates or, if the data reported are very old or the links with other available data are weak, they may only be used for the construction of regional or global aggregates and averages.

Where there is neither evidence from the country nor data available in previous years, we base estimates on a similar country. Such figures will only be used for regional or global aggregates and averages.

Over-reporting is corrected for first, then under-reporting, before estimating more detailed breakdowns of data such as age distributions or the redistribution of enrolments of unknown age.

Over- and under-reporting are typically adjusted by adding or subtracting a given percentage of enrolments thus assuming the same age, grade and sex distribution as for the reported enrolments. (If more detailed evidence is available this will be used but that is typically not the case.)

The number of repeaters in the last grade of primary is derived from estimates of the repeaters in each grade of primary education. If the country does not report these data in a given year, they are most commonly estimated from the grade distribution reported in a previous year.

The number of enrolments in the last grade of primary is derived from estimates of the enrolments in each grade of primary education. If the country does not report these data

in a given year, they are most commonly estimated from the grade distribution reported in a previous year.

The number of repeaters in the last grade of primary is derived from estimates of the repeaters in each grade of primary education. If the country does not report these data in a given year, they are most commonly estimated from the grade distribution reported in a previous year.

Population estimates – produced only where there are no other suitable estimates available either from UNPD or from the country itself – are made only for countries which have reported education data to the UIS and for which population estimates from a reliable source are available in some years.

### **Data availability**

Gross Intake Ratio to Last Grade of primary is available for around 140 countries. Data are published 15 months after the end of the school reference year for countries with calendar school year, and 21 months for countries with split school year. A few countries, mainly from the second group, report more up-to-date data to the Institute and these are published more quickly (9 months after the end of the school year).

Gross Intake Ratios to Last Grade of primary produced by UNESCO Institute for Statistics are available on an annual basis. The United Nations Population Division estimates of population by individual years of age are revised biennially, although estimates may be based on population censuses conducted every 10 years in most countries.

### **Regional and Global estimates**

Regional and global averages are calculated on the basis of the data published by the UIS and using the best possible non-publishable estimates where no publishable data exist. Averages are produced using the population of the theoretical entrance age to the last grade of primary as weights.

### **Expected time of release**

The UIS disseminates education data twice a year: country data and regional averages are released in April, and country data (only) are updated with new countries' submission in September.

## **Primary completion rate, girls**

### **Contact point in international agency**

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## **Definition**

Primary Completion measured by the Gross Intake Ratio to Last Grade of primary education is the total number of new entrants in the last grade of primary education (according to the International Standard Classification of Education or ISCED97), regardless of age, expressed as percentage of the total population of the theoretical entrance age to the last grade of primary.

Primary education is defined by ISCED97 as programmes normally designed on a unit or project basis to give pupils a sound basic education in reading, writing and mathematics along with an elementary understanding of other subjects such as history, geography, natural science, social science, art and music.

## **Method of computation**

To calculate the indicator, one must first determine the population of the theoretical entrance age to the last grade of primary by reference to the theoretical starting age and duration of primary education (ISCED97 Level 1) as reported by the country.

Then, the number of new entrants in the last grade of primary education, irrespective of age, is divided by the population of the theoretical entrance age to the last grade of primary, and multiply the result is multiplied by 100.

This method requires information on the structure of education (i.e. theoretical entrance age and duration of ISCED97 Level 1), enrolment and repeaters in the last grade of primary education, and population of the theoretical entrance age to the last grade of primary.

## **Comments and limitations**

The Gross Intake Ratio to Last Grade of primary reports on the current primary access to last grade stemming from previous years' of schooling and past education policies on entrance to primary education. It is a measure of first-time completion of primary

education as it excludes pupils repeating the last grade. A high Gross Intake Ratio to Last Grade denotes a high degree of completion of primary education.

As this calculation includes all new entrants to last grade (regardless of age), the Gross Intake Ratio may exceed 100%, due to over-aged or under-aged pupils entering the last grade of primary school for the first time.

### **Sources of discrepancies between global and national figures**

Country figures may differ from the international ones because of differences between the national education system and ISCED97; or differences in coverage (i.e. the extent to which different types of education – e.g. private or special education – or different types of programmes e.g. adult education or early childhood care and education - are included in one rather than the other) and/or between national and UNPD population data.

### **Process of obtaining data**

The UNESCO Institute for Statistics (UIS) produces time series based on enrolments and repeaters data reported by education ministries or national statistical offices and UN population estimates. Enrolments and repeaters by grade are gathered through questionnaires sent annually to countries which are typically completed by ministries of education and/or national statistical offices. Countries are asked to report data according to the levels of education defined in ISCED97 to ensure international comparability of resulting indicators.

The data received by UIS are validated using electronic error detection systems that check for arithmetic errors & inconsistencies and trend analysis for implausible results. Queries are taken up with the country representatives reporting the data in order that corrections can be made (of errors) or explanations given (of implausible but correct results). In addition, countries also have an opportunity to see and comment on the main indicators the UIS produces in our annual “country review” of indicators.

The UIS also, if necessary, adjusts nationally reported data in order to take account either of under-reporting (i.e. data gaps) or over-reporting (i.e. inclusion of education programmes not covered by its surveys) before calculating indicators. In such cases, the results – if published – will normally be designated as UIS estimates (denoted by \*\* in UIS publications).

### **Treatment of missing values**

The UIS estimates certain key items of data that may be missing or incomplete. Where data for a country are entirely missing or where an estimate is not based on evidence from or about the country directly, the UIS does not publish the resulting country-level

estimates. They are used only for the purposes of calculating regional or global aggregates or averages.

For the purposes of calculating the Gross Intake Ratio to the Last Grade of primary education, the UIS may make one or more of the following:

- An adjustment to account for over- or under-reporting, for example:
  - To exclude enrolments in other programmes which have been reported together with enrolments at the primary level (very rare – and does not usually result in a country level publishable estimate);
  - To include enrolments in a type of education – such as private education or special education – not reported by the country; and/or
  - To include enrolments in a part of the country not reported by the country.
- An estimate of the number of enrolments in the official age group for primary education
- An estimate of the number of repeaters in each grade of primary education
- An estimate of the population of the theoretical entrance age to the last grade of primary (if neither UNPD nor the country itself can provide estimates of their own).

In all cases, in the first instance, estimates are based on evidence from the country itself (e.g. information from the data provider on the size of the missing component, via correspondence, publications or data on the ministry's or National Statistical Office's (NSO's) Webpage, or via surveys conducted by other organisations). These figures may be published: as observed data (if the missing items are found in national source or the country submits them); as national estimates (if the country is persuaded to produce estimates and submit them in place of missing data); as UIS estimates (if the estimates are made by the UIS); or, occasionally, as inputs for regional and global aggregates and averages (if the evidence on which the estimates are based is weak or unsubstantiated).

Where no evidence is available for the reporting year from the country, estimates may be based on data already reported by the country in a previous year or on another data item which is available (eg total enrolments in primary education) and clearly linked to the missing item. These figures may be published as UIS estimates or, if the data reported are very old or the links with other available data are weak, they may only be used for the construction of regional or global aggregates and averages.

Where there is neither evidence from the country nor data available in previous years, we base estimates on a similar country. Such figures will only be used for regional or global aggregates and averages.

Over-reporting is corrected for first, then under-reporting, before estimating more detailed breakdowns of data such as age distributions or the redistribution of enrolments of unknown age.

Over- and under-reporting are typically adjusted by adding or subtracting a given percentage of enrolments thus assuming the same age, grade and sex distribution as for the reported enrolments. (If more detailed evidence is available this will be used but that is typically not the case.)

The number of repeaters in the last grade of primary is derived from estimates of the repeaters in each grade of primary education. If the country does not report these data in a given year, they are most commonly estimated from the grade distribution reported in a previous year.

The number of enrolments in the last grade of primary is derived from estimates of the enrolments in each grade of primary education. If the country does not report these data in a given year, they are most commonly estimated from the grade distribution reported in a previous year.

The number of repeaters in the last grade of primary is derived from estimates of the repeaters in each grade of primary education. If the country does not report these data in a given year, they are most commonly estimated from the grade distribution reported in a previous year.

Population estimates – produced only where there are no other suitable estimates available either from UNPD or from the country itself – are made only for countries which have reported education data to the UIS and for which population estimates from a reliable source are available in some years.

### **Data availability**

Gross Intake Ratio to Last Grade of primary is available for around 140 countries. Data are published 15 months after the end of the school reference year for countries with calendar school year, and 21 months for countries with split school year. A few countries, mainly from the second group, report more up-to-date data to the Institute and these are published more quickly (9 months after the end of the school year).

Gross Intake Ratios to Last Grade of primary produced by UNESCO Institute for Statistics are available on an annual basis. The United Nations Population Division estimates of population by individual years of age are revised biennially, although estimates may be based on population censuses conducted every 10 years in most countries.

## Regional and Global estimates

Regional and global averages are calculated on the basis of the data published by the UIS and using the best possible non-publishable estimates where no publishable data exist. Averages are produced using the population of the theoretical entrance age to the last grade of primary as weights.

## Expected time of release

The UIS disseminates education data twice a year: country data and regional averages are released in April, and country data (only) are updated with new countries' submission in September.

## HIV prevalence rate, men 15-49 years old, in national based surveys

### Contact point in international agency

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### Definition

HIV prevalence rate, men 15-49 years old, is the percentage of men aged 15-49 living with HIV, as measured in national based surveys.

Human Immunodeficiency Virus (HIV) is a virus that weakens the immune system, ultimately leading to AIDS, the acquired immunodeficiency syndrome. HIV destroys the body's ability to fight off infection and disease, which can ultimately lead to death.

### Method of computation

The HIV prevalence rate, men 15-49 years old, is derived by dividing the number of men aged 15-49, living with HIV by the male population aged 15-49, as measured in national based surveys.

## Comments and limitations

The demand by decision-makers for better data on the burden of HIV/AIDS in countries and the limitations of antenatal surveillance systems with respect to geographical coverage, under-representation of rural areas and the absence of data for men have led to an interest in including HIV testing in national population-based surveys. Population-based surveys can provide reasonable estimates of HIV prevalence for generalized epidemics, where HIV has spread throughout the general population in a country. However, for low-level and concentrated epidemics, these surveys will underestimate HIV prevalence, because HIV is concentrated in groups with high-risk behaviour and these groups are usually not adequately sampled in household-based surveys. In recent years, the number of population-based surveys that collect biological specimens for HIV testing has increased. Many of these surveys cover women and men of reproductive ages (women 15–49 years old and men 15–54 years old) and use dried blood spots for collecting specimens. Some early surveys were designed for unlinked anonymous testing, in which the HIV test results could not be linked to individuals, whereas more recent surveys have incorporated linked anonymous testing, in which HIV test results can be linked to behavioural data without revealing the identity of any individual who has been tested.

### Strengths

- In generalized epidemics, population-based surveys can provide representative estimates of HIV prevalence for the general population as well as for different subgroups, such as urban and rural areas, women and men, age groups and region or province.
- The results from population-based surveys can be used to adjust the estimates obtained from sentinel surveillance systems.
- Population-based surveys provide an opportunity to link HIV status with social, behavioural and other biomedical information, thus enabling researchers to analyse the dynamics of the epidemic in more detail. Information from this analysis could lead to better program design and planning.

### Weaknesses

- In population-based surveys, sampling from households may not adequately represent high-risk and mobile populations. In low-level or concentrated epidemics, population-based surveys therefore underestimate HIV prevalence.
- Nonresponse (either through refusal to participate or absence from the household at the time of the survey) can bias population-based estimates of HIV. (Collecting information on nonresponders can help in the process of adjusting for nonresponse.)
- Population-based surveys are expensive and logistically difficult to carry out and cannot be conducted frequently. Typically, these surveys are conducted every 5–10 years.

Sentinel surveillance and population-based surveys each have strengths and weaknesses but together provide complementary information. Sentinel surveillance provides samples that are consistent over time so that good estimates of HIV trends can be obtained. They can also provide good overall national coverage and allow estimates to be generated by age and geographical location. Population-based surveys, in contrast, provide much better coverage of the general population, including men, and can provide much more detailed information on social, economic and sexual behaviour and biomedical factors associated with HIV infection.

Because of the cost, they can usually not be conducted regularly and therefore provide limited temporal coverage. However, taken together, sentinel surveillance and population-based surveys can provide a clear picture of both overall trends and geographical distribution of HIV as well as detailed information on potential risk factors and groups exhibiting high-risk behaviour. In most instances one would expect estimates derived from population-based surveys to underestimate the true prevalence, especially in countries with relatively low prevalence where HIV is concentrated in groups with high-risk behaviour. However, the magnitude of this bias is likely to vary greatly between countries, depending both on the size of the high-risk groups that are not covered in the survey and the extent to which infection levels in the groups exceed the levels found in the general population. Special targeted surveys or surveillance efforts are needed if excluding these groups is considered to significantly affect the HIV prevalence estimates. Although these surveys are generally geographically representative, groups that might be at higher risk of infection (such as sex workers, migrant populations, army and police personnel, prisoners or others) may not be included in population-based surveys to the extent that their living arrangements (such as group quarters) are not covered as part of the household survey. Recent analyses suggest that in generalised epidemics, the bias in the HIV prevalence measured in surveys is small, with the size of proposed adjustments typically in the range of 0% to 3%, and exceptionally up to 10%, of the measured prevalence value.

For more details see:

[http://data.unaids.org/pub/Manual/2005/20050101\\_GS\\_GuideMeasuringPopulation\\_en.pdf](http://data.unaids.org/pub/Manual/2005/20050101_GS_GuideMeasuringPopulation_en.pdf)

### **Sources of discrepancies between global and national figures**

Regional and global estimates are not applicable for this indicator.

### **Process of obtaining data**

As data are neither collected nor reported by UNAIDS, this is not applicable.

### **Treatment of missing values**

There is no treatment of missing values. When the information needed to calculate the indicator is not available, the indicator is not estimated.

### **Data availability**

Data are available for a growing number of countries, mostly in sub-Saharan Africa. Some countries already have a second survey.

Data are collected for men aged 15-49.

The lag between the reference year and actual production of data series varies and depends on the country and survey.

Typically the surveys are conducted every 5-10 years.

### **Regional and Global estimates**

Regional and global estimates are not applicable for this indicator.

### **Expected time of release**

Data UNAIDS does not publish estimates for this indicator. Individual countries may report as per their own reporting cycle.

### **Please refer to series metadata**

## **HIV prevalence rate, women 15-49 years old, in national based surveys**

### **Contact point in international agency**

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**Website:** <http://www.unaids.org>

### **Definition**

The HIV prevalence rate, women 15-49 years old, is the percentage of women aged 15-49 living with HIV, as measured in national based surveys.

Human Immunodeficiency Virus (HIV) is a virus that weakens the immune system, ultimately leading to AIDS, the acquired immunodeficiency syndrome. HIV destroys the body's ability to fight off infection and disease, which can ultimately lead to death.

### **Method of computation**

The HIV prevalence rate, women 15-49 years old, is derived by dividing the number of women aged 15-49, living with HIV by the female population aged 15-49, as measured in national based surveys.

### **Comments and limitations**

The demand by decision-makers for better data on the burden of HIV/AIDS in countries and the limitations of antenatal surveillance systems with respect to geographical coverage, under-representation of rural areas and the absence of data for men have led to an interest in including HIV testing in national population-based surveys. Population-based surveys can provide reasonable estimates of HIV prevalence for generalized epidemics, where HIV has spread throughout the general population in a country. However, for low-level and concentrated epidemics, these surveys will underestimate HIV prevalence, because HIV is concentrated in groups with high-risk behaviour and these groups are usually not adequately sampled in household-based surveys. In recent years, the number of population-based surveys that collect biological specimens for HIV testing has increased. Many of these surveys cover women and men of reproductive ages (women 15–49 years old and men 15–54 years old) and use dried blood spots for collecting specimens. Some early surveys were designed for unlinked anonymous testing, in which the HIV test results could not be linked to individuals, whereas more recent surveys have incorporated linked anonymous testing, in which HIV test results can be linked to behavioural data without revealing the identity of any individual who has been tested.

#### Strengths

- In generalized epidemics, population-based surveys can provide representative estimates of HIV prevalence for the general population as well as for different subgroups, such as urban and rural areas, women and men, age groups and region or province.
- The results from population-based surveys can be used to adjust the estimates obtained from sentinel surveillance systems.
- Population-based surveys provide an opportunity to link HIV status with social, behavioural and other biomedical information, thus enabling researchers to analyse the dynamics of the epidemic in more detail. Information from this analysis could lead to better program design and planning.

#### Weaknesses

- In population-based surveys, sampling from households may not adequately represent high-risk and mobile populations. In low-level or concentrated epidemics, population-based surveys therefore underestimate HIV prevalence.
- Nonresponse (either through refusal to participate or absence from the household at the time of the survey) can bias population-based estimates of HIV. (Collecting information on nonresponders can help in the process of adjusting for nonresponse.)
- Population-based surveys are expensive and logistically difficult to carry out and cannot be conducted frequently. Typically, these surveys are conducted every 5–10 years.

Sentinel surveillance and population-based surveys each have strengths and weaknesses but together provide complementary information. Sentinel surveillance provides samples that are consistent over time so that good estimates of HIV trends can be obtained. They can also provide good overall national coverage and allow estimates to be generated by age and geographical location. Population-based surveys, in contrast, provide much better coverage of the general population, including men, and can provide much more detailed information on social, economic and sexual behaviour and biomedical factors associated with HIV infection.

Because of the cost, they can usually not be conducted regularly and therefore provide limited temporal coverage. However, taken together, sentinel surveillance and population-based surveys can provide a clear picture of both overall trends and geographical distribution of HIV as well as detailed information on potential risk factors and groups exhibiting high-risk behaviour. In most instances one would expect estimates derived from population-based surveys to underestimate the true prevalence, especially in countries with relatively low prevalence where HIV is concentrated in groups with high-risk behaviour. However, the magnitude of this bias is likely to vary greatly between countries, depending both on the size of the high-risk groups that are not covered in the survey and the extent to which infection levels in the groups exceed the levels found in the general population. Special targeted surveys or surveillance efforts are needed if excluding these groups is considered to significantly affect the HIV prevalence estimates. Although these surveys are generally geographically representative, groups that might be at higher risk of infection (such as sex workers, migrant populations, army and police personnel, prisoners or others) may not be included in population-based surveys to the extent that their living arrangements (such as group quarters) are not covered as part of the household survey. Recent analyses suggest that in generalised epidemics, the bias in the HIV prevalence measured in surveys is small, with the size of proposed adjustments typically in the range of 0% to 3%, and exceptionally up to 10%, of the measured prevalence value.

For more details see:

[http://data.unaids.org/pub/Manual/2005/20050101\\_GS\\_GuideMeasuringPopulation\\_en.pdf](http://data.unaids.org/pub/Manual/2005/20050101_GS_GuideMeasuringPopulation_en.pdf)

### **Sources of discrepancies between global and national figures**

Regional and global estimates are not applicable for this indicator.

### **Process of obtaining data**

As data are neither collected nor reported by UNAIDS, this is not applicable.

### **Treatment of missing values**

There is no treatment of missing values. When the information needed to calculate the indicator is not available, the indicator is not estimated.

### **Data availability**

Data are available for a growing number of countries, mostly in sub-Saharan Africa. Some countries already have a second survey.

Data are collected for women aged 15-49.

The lag between the reference year and actual production of data series varies, and depends on the country and survey.

Typically the surveys are conducted every 5-10 years

### **Regional and Global estimates**

Regional and global estimates are not applicable for this indicator.

### **Expected time of release**

UNAIDS does not publish estimates for this indicator. Individual countries may report as per their own reporting cycle.

### **Please refer to series metadata**

## **Carbon dioxide emissions (CO<sub>2</sub>), thousand metric tons of CO<sub>2</sub> (UNFCCC)**

### **Contact point in international agency**

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## Definition

### **Total CO<sub>2</sub> emissions**

Estimates of total carbon dioxide (CO<sub>2</sub>) emissions include anthropogenic emissions, less removal by sinks, of carbon dioxide (CO<sub>2</sub>). The term “total” implies that emissions from all national activities are considered. The typical sectors for which CO<sub>2</sub> emissions/removals are estimated are energy, industrial processes, agriculture, waste, and the sector of land use, land-use change and forestry (LULUCF).

National reporting to the United Nations Framework Convention on Climate Change that follows the Intergovernmental Panel on Climate Change guidelines is based on national emission inventories and covers all sources of anthropogenic carbon dioxide emissions as well as carbon sinks (such as forests).

CO<sub>2</sub> emissions/removals by land use, land-use change and forestry are often known with much less certainty than emissions from the other sectors, or emissions/removals estimates for LULUCF may not be available at all. In such cases, “total” emissions can be calculated as the sum of emissions for the sectors of energy, industrial processes, agriculture, and waste.

### **CO<sub>2</sub> emissions per capita**

Carbon emissions per capita are measured as the total amount of carbon dioxide emitted by the country as a consequence of all relevant human (production and consumption) activities, divided by the population of the country.

### **CO<sub>2</sub> emissions per \$1 GDP (PPP)**

Total CO<sub>2</sub> emissions divided by the total value of the gross domestic product (GDP) expressed in purchasing power parities (PPPs).

## Method of computation

To estimate emissions, the countries that are Parties to the Climate Change Convention (UNFCCC) use complex, state-of-the-art methodologies recommended by the Intergovernmental Panel on Climate Change (IPCC). The key methodological documents are:

- 1) Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories  
<http://www.ipcc-nggip.iges.or.jp/public/gl/invs1.htm>
- 2) Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories  
<http://www.ipcc-nggip.iges.or.jp/public/gp/english/>
- 3) Good Practice Guidance for Land Use, Land-Use Change and Forestry  
<http://www.ipcc-nggip.iges.or.jp/public/gp/lulucf/gp/lulucf.htm>

The exact application of these methodologies in the specific national circumstances is described (by industrialized countries only, which are included in Annex I to the Climate Change Convention) in the so-called national inventory reports (NIR) that are submitted by Annex I Parties every year to the UNFCCC secretariat and that describe how emission estimates were prepared. The latest NIRs can be found on the UNFCCC website at :

[http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/3734.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/3734.php)

For developing (non-Annex I) countries, the methodologies used for emission estimates are described in the national communications submitted periodically to the UNFCCC secretariat. The non-Annex I communications can be found at :

[http://unfccc.int/national\\_reports/non-annex\\_i\\_natcom/items/2979.php](http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php)

For the computation of CO<sub>2</sub> emissions, metric tons of CO<sub>2</sub> per capita and CO<sub>2</sub> emissions in kg CO<sub>2</sub> per \$1 GDP (PPP) both national and international data are used. National data for CO<sub>2</sub> emissions and international data for population estimates (United Nations Population Division, 2007, "[World population prospects: The 2006 revision](#)") and GDP (World Bank, 2009, "[World Development Indicators 2009](#)")

### **Comments and limitations**

Carbon dioxide is only one of greenhouse gases (GHGs) and therefore CO<sub>2</sub> emissions are smaller than the overall GHG emissions. Accordingly, the overall impact on climate may be underestimated if only CO<sub>2</sub> emissions are included in the estimate.

CO<sub>2</sub> data available at UNFCCC contain complete time series for industrialized (Annex I) countries only. Data for non-Annex I (developing) countries are usually available for a few years only. This does not allow calculating regional and global totals based on UNFCCC data only; alternative sources of CO<sub>2</sub> data have to be used for such regional and global estimates.

Data on CO<sub>2</sub> emissions/removals from forests and land-use changes usually have lower availability and greater uncertainty than data on CO<sub>2</sub> emissions from the sectors of energy, industrial processes, agriculture, and waste. Therefore, in practice CO<sub>2</sub> emissions/removals from forests and land-use changes are not always included into national totals.

### **Sources of discrepancies between global and national figures**

Data are national. No estimates for the possible differences with the MDGs global database are available.

### **Process of obtaining data**

All countries that are Parties to the Climate Change Convention (UNFCCC) are required to submit their data on GHG emissions regularly to the UNFCCC secretariat. Industrialized (Annex I) Parties submit their detailed GHG inventories, including CO<sub>2</sub> data, to the UNFCCC secretariat annually. Developing (non-Annex I) Parties submit GHG and CO<sub>2</sub> data periodically as part of their national communications. The UNFCCC Secretariat make all data submissions publicly available on its website:

[http://unfccc.int/ghg\\_emissions\\_data/items/3800.php](http://unfccc.int/ghg_emissions_data/items/3800.php)

The information, including GHG and CO<sub>2</sub> data, is usually submitted by Parties through their national UNFCCC focal points, which can be found at:

<http://maindb.unfccc.int/public/nfp.pl>

The data submitted by Annex I Parties are subject to a rigorous review process, which is coordinated by the UNFCCC secretariat in accordance with the guidelines agreed under the Climate Change Convention and conducted by international teams of experts. The reviews of national GHG data are conducted annually and the international expert teams check the robustness of the estimates and their correspondence to the methodologies recommended by the IPCC. The results of reviews are publicly available in the form of the so-called review reports which can be found at the UNFCCC website at:

[http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/inventory\\_review\\_reports/items/3723.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/inventory_review_reports/items/3723.php)

No adjustments to any international classification are used, but all data have to be submitted electronically in an agreed common format (the Common reporting Format - CRF) and the methodologies for emission calculation should be consistent with those recommended by the IPCC, which is checked during the annual reviews by international expert teams.

### **Treatment of missing values**

Data are stored as reported and data gaps are normally not filled-in by the UNFCCC secretariat. Identifying gaps and actions to address them is one of the tasks of the international expert teams during the review process. The UNFCCC secretariat uses interpolation and extrapolation only when total emissions for country groups are calculated, such as total emissions from all Annex I Parties taken together.

### **Data availability**

Data for industrialized countries, including economies in transition, are more complete (full time series are available from 1990) and easier available than data for developing countries (data are usually available for selected years only, such as 1990, 1994 or 2000). For industrialized countries, data are usually available with a two-year lag, e.g., in 2007 data for the period 1990–2005 are available.

### **Regional and Global estimates**

The UNFCCC does not make regional or global estimates with its data. The major reason is that the data for developing countries (non-Annex I Parties) are fragmented (available only for some years, which may be different for different Parties) and therefore global and regional totals cannot be calculated accurately.

### **Expected time of release**

The final set of data for a given year is usually available at the UNFCCC secretariat in November-December.

### **Please refer to series metadata**

## **Carbon dioxide emissions (CO<sub>2</sub>), metric tons of CO<sub>2</sub> per capita (UNFCCC)**

### **Contact point in international agency**

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## Definition

### Total CO2 emissions

Estimates of total carbon dioxide (CO<sub>2</sub>) emissions include anthropogenic emissions, less removal by sinks, of carbon dioxide (CO<sub>2</sub>). The term “total” implies that emissions from all national activities are considered. The typical sectors for which CO<sub>2</sub> emissions/removals are estimated are energy, industrial processes, agriculture, waste, and the sector of land use, land-use change and forestry (LULUCF).

National reporting to the United Nations Framework Convention on Climate Change that follows the Intergovernmental Panel on Climate Change guidelines is based on national emission inventories and covers all sources of anthropogenic carbon dioxide emissions as well as carbon sinks (such as forests).

CO<sub>2</sub> emissions/removals by land use, land-use change and forestry are often known with much less certainty than emissions from the other sectors, or emissions/removals estimates for LULUCF may not be available at all. In such cases, “total” emissions can be calculated as the sum of emissions for the sectors of energy, industrial processes, agriculture, and waste.

### CO2 emissions per capita

Carbon emissions per capita are measured as the total amount of carbon dioxide emitted by the country as a consequence of all relevant human (production and consumption) activities, divided by the population of the country.

### CO2 emissions per \$1 GDP (PPP)

Total CO<sub>2</sub> emissions divided by the total value of the gross domestic product (GDP) expressed in purchasing power parities (PPPs).

## Method of computation

- 1) Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories  
<http://www.ipcc-nggip.iges.or.jp/public/gl/invs1.htm>
- 2) Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories  
<http://www.ipcc-nggip.iges.or.jp/public/gp/english/>
- 3) Good Practice Guidance for Land Use, Land-Use Change and Forestry  
<http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.htm>

The exact application of these methodologies in the specific national circumstances is described (by industrialized countries only, which are included in Annex I to the Climate Change Convention) in the so-called national inventory reports (NIR) that are submitted by Annex I Parties every year to the UNFCCC secretariat and that describe how emission estimates were prepared. The latest NIRs can be found on the UNFCCC website at :

[http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/3734.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/3734.php)

For developing (non-Annex I) countries, the methodologies used for emission estimates are described in the national communications submitted periodically to the UNFCCC secretariat. The non-Annex I communications can be found at :

[http://unfccc.int/national\\_reports/non-annex\\_i\\_natcom/items/2979.php](http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php)

For the computation of CO<sub>2</sub> emissions, metric tons of CO<sub>2</sub> per capita and CO<sub>2</sub> emissions in kg CO<sub>2</sub> per \$1 GDP (PPP) both national and international data are used. National data for CO<sub>2</sub> emissions and international data for population estimates (United Nations Population Division, 2007, "[World population prospects: The 2006 revision](#)") and GDP (World Bank, 2009, "[World Development Indicators 2009](#)")

### **Comments and limitations**

Carbon dioxide is only one of greenhouse gases (GHGs) and therefore CO<sub>2</sub> emissions are smaller than the overall GHG emissions. Accordingly, the overall impact on climate may be underestimated if only CO<sub>2</sub> emissions are included in the estimate.

CO<sub>2</sub> data available at UNFCCC contain complete time series for industrialized (Annex I) countries only. Data for non-Annex I (developing) countries are usually available for a few years only. This does not allow calculating regional and global totals based on UNFCCC data only; alternative sources of CO<sub>2</sub> data have to be used for such regional and global estimates.

Data on CO<sub>2</sub> emissions/removals from forests and land-use changes usually have lower availability and greater uncertainty than data on CO<sub>2</sub> emissions from the sectors of energy, industrial processes, agriculture, and waste. Therefore, in practice CO<sub>2</sub> emissions/removals from forests and land-use changes are not always included into national totals.

### **Sources of discrepancies between global and national figures**

Data are national. No estimates for the possible differences with the MDGs global database are available.

## Process of obtaining data

All countries that are Parties to the Climate Change Convention (UNFCCC) are required to submit their data on GHG emissions regularly to the UNFCCC secretariat. Industrialized (Annex I) Parties submit their detailed GHG inventories, including CO<sub>2</sub> data, to the UNFCCC secretariat annually. Developing (non-Annex I) Parties submit GHG and CO<sub>2</sub> data periodically as part of their national communications. The UNFCCC Secretariat make all data submissions publicly available on its website:

[http://unfccc.int/ghg\\_emissions\\_data/items/3800.php](http://unfccc.int/ghg_emissions_data/items/3800.php)

The information, including GHG and CO<sub>2</sub> data, is usually submitted by Parties through their national UNFCCC focal points, which can be found at:

<http://maindb.unfccc.int/public/nfp.pl>

The data submitted by Annex I Parties are subject to a rigorous review process, which is coordinated by the UNFCCC secretariat in accordance with the guidelines agreed under the Climate Change Convention and conducted by international teams of experts. The reviews of national GHG data are conducted annually and the international expert teams check the robustness of the estimates and their correspondence to the methodologies recommended by the IPCC. The results of reviews are publicly available in the form of the so-called review reports which can be found at the UNFCCC website at:

[http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/inventory\\_review\\_reports/items/3723.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/inventory_review_reports/items/3723.php)

No adjustments to any international classification are used, but all data have to be submitted electronically in an agreed common format (the Common reporting Format - CRF) and the methodologies for emission calculation should be consistent with those recommended by the IPCC, which is checked during the annual reviews by international expert teams.

## Treatment of missing values

Data are stored as reported and data gaps are normally not filled-in by the UNFCCC secretariat. Identifying gaps and actions to address them is one of the tasks of the international expert teams during the review process. The UNFCCC secretariat uses interpolation and extrapolation only when total emissions for country groups are calculated, such as total emissions from all Annex I Parties taken together.

## Data availability

Data for industrialized countries, including economies in transition, are more complete (full time series are available from 1990) and easier available than data for developing

countries (data are usually available for selected years only, such as 1990, 1994 or 2000). For industrialized countries, data are usually available with a two-year lag, e.g., in 2007 data for the period 1990–2005 are available.

### **Regional and Global estimates**

The UNFCCC does not make regional or global estimates with its data. The major reason is that the data for developing countries (non-Annex I Parties) are fragmented (available only for some years, which may be different for different Parties) and therefore global and regional totals cannot be calculated accurately.

### **Expected time of release**

The final set of data for a given year is usually available at the UNFCCC secretariat in November-December.

### **Please refer to series metadata**

## **Growth rate of GDP per person employed, percentage**

### **Contact point in international agency**

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### **Definition**

The growth rate of GDP per person employed or labour productivity is defined as the growth rate of output per unit of labour input.

Output is measured as “value added”, which is the total production value minus the value of intermediate inputs, such as raw materials, semi-finished products, services purchased and energy inputs. Value added, called “gross domestic product” (GDP) in the national accounts, represents the compensation for input of services from capital (including depreciation) and labour directly engaged in the production.

Labour input is defined as persons employed.

For further information see: <http://www.ilo.org/trends>

### **Method of computation**

All estimates are made according to the national accounts conventions to ensure that labour productivity for individual sectors can be compared. Hence, the selection of economies is based on the availability of consistent series of output in both national currencies and PPP (purchasing power parity) converted United States (US) dollars and labour input.

Output measures are obtained from national accounts and represent, as much as possible, GDP at market prices for the aggregate economy, which reflects that market value of the output produced, and value added at basic prices for the individual sectors. For the individual sectors GDP at market prices is adjusted to basic price level, i.e. indirect taxes on products are subtracted and subsidies on products are added. The adjusted GDP, therefore, represents the amount receivable by the producer for a unit of good or service produced.

To compare labour productivity levels across economies, it is necessary to convert gross value added to US dollars on the basis of adjusted purchasing power parity (PPP). A PPP represents the amount of a country's currency that is required to purchase a standard set of goods and services worth one US dollar. Through the use of PPPs one takes account of differences in relative prices between countries. The total economy estimates of gross value added are expressed in terms of 1990 US dollars, as the 1990 PPP makes it possible to compare the largest set of countries. For the individual sectors the base year is 1997. This year was chosen due to the availability of a new set of multilateral PPPs by industry for this benchmark year. The agricultural sector PPPs were originally for 1995, but have been extrapolated to 1997 to enhance the comparability between sectors.

### **Comments and limitations**

Labour productivity is defined as output per unit of labour input (persons employed). Labour productivity growth may be due to either increased efficiency in the use of labour, without more of other inputs, or because each worker works with more of the other inputs, such as physical capital, human capital or intermediate inputs. More sophisticated measures, such as "total factor productivity", which is the output per combined unit of all inputs, are not included. Estimated labour productivity may also show an increase if the mix of activities in the economy or in an industry has shifted from activities with low levels of productivity to activities with higher levels, even if none of the activities have become more productive. For a constant "mix" of activities the best

measure of labour input to be used in the productivity equation would be "total number of annual hours actually worked by all persons employed". In many cases, however, this labour input measure is difficult to obtain or estimate reliably.

The limitations to the international and historical comparability of the estimates are summarized under the following three headings.

### **1. Output measures in national currencies**

Output measures are obtained from national accounts and represent, as much as possible, GDP at market prices for the aggregate economy and value added at basic prices for the individual sectors. However, despite common principles that are mostly based on the United Nations System of National Accounts, there are still significant problems in international consistency of national accounts estimates, in particular for economies outside the Organization for Economic Co-operation and Development (OECD). Such problems include: *(a) different treatment of output in services sectors; (b) different procedures in correcting output measures for price; and (c) different degree of coverage of informal economic activities in developing economies and of the underground economy in developed (industrialized) economies in national accounts.*

### **2. Purchasing power parities**

The International Comparison Program (ICP) price surveys to obtain PPPs are carried out for selected benchmark years only. Not all estimates are for the same year, so that it was necessary in Maddison (1995: *Monitoring the World Economy, 1820-1992*) to carry some data forward to 1990 with the use of national price indices. The precise nature of the ICP price surveys can differ across economies, principally for non-OECD countries. The ICP pricing procedures have been criticized for lack of comparability and reflection of the specified items between economies. Furthermore, the multilateral character of the estimates is affected by the fact that the PPPs are, in fact, estimated for six different regions, and "globalized" with particular interregional (binary) links. Finally, within each of the regions, the aggregation procedures of the PPPs differ. For example, for 1990 the country PPPs within the European Union are unweighted for size of GDP (using the so-called EKS procedure), whereas the PPPs for non-European OECD countries are combined with those for the European Union and weighted for size of GDP. Even though the industry by origin PPPs for manufacturing, transport and communication and wholesale and retail trade are assumed to be a proxy of relative producer prices, the comparability of these measures suffers from biased sample coverage. Moreover, due to the "unit value" characteristics of part of the information, the method takes, in many cases, insufficient account of quality differences across economies.

### 3. Employment

Estimates of employment are, as much as possible, for the average number of persons with one or more paid jobs during the year. Particularly for low- and middle-income economies in Asia and Latin America, statistics on the number of self-employed and family workers in agricultural and informal manufacturing activities are probably less reliable than those for paid employees. As in the case of output estimates, the employment estimates are sensitive to under-coverage of informal or underground activities, which harbour a substantial part of labour input. In some cases, informal activities are not included in the production and employment statistics at all. In agriculture the labour force estimates include a substantial part of (part time and seasonal) family workers. However, the estimates presented for the economies in this data set are meant to cover all economic activity.

#### Sources of discrepancies between global and national figures

The labour force data are harmonized to account for differences in national data and scope of coverage, collection and tabulation methodologies as well as for other country specific factors such as military service requirements. Furthermore, nationally reported data are utilized only when these meet strict criteria in terms of international comparability and geographic coverage. Model estimates are used where national data are not available or satisfactory. See “Comments and Limitations” section for additional details of sources of discrepancies.

#### Process of obtaining data

ILO gathers data to estimate the indicators from international data repositories managed by various international organisations. It rarely collects information directly from national sources.

The estimates for the aggregate economy are derived from the Total Economy Database of The Conference Board (TCB) and the Groningen Growth and Development Centre (GGDC) (University of Groningen, the Netherlands). TCB and GGDC have long-standing expertise in developing and analysing data on productivity performance. Complete documentation of sources and methods by country and underlying documentation on the use of PPPs, etc. can be downloaded from the website of the Groningen Growth and Development Centre <http://www.ggdc.net/>

The aggregate economy estimates for OECD countries, most of which are included in the tables under the headings of “Developed Economies & European Union”, and GDP (after 1990) are mostly obtained from OECD: *National Accounts*, Volumes I and II (annual issues) and The Statistical Office of the European Communities (Eurostat) New Chronos

database. A. Maddison: *The World Economy: Historical Statistics* (Paris, OECD Development Centre, 2001) has been extensively used to cover the period 1980-1990. Employment estimates for the aggregate economy are mostly taken from OECD: *Labour Force Statistics* (annual issues), Eurostat and the Bureau of Labor Statistics (BLS): *Comparative Civilian Labour Force Statistics*.

For other countries outside of the OECD, the national accounts and labour statistics assembled from national sources by international organizations such as the World Bank, the Asian Development Bank, the Food and Agriculture Organization (FAO), the ILO and the United Nations Statistical Office, are mostly taken as the point of departure. In individual cases use has also been made of national accounts statistics. The total economy series are linked to a benchmark estimate of GDP at market prices in US dollars for 1990 from Maddison (2003, op. cit.). Maddison's dollar estimates are based on purchasing power parities for GDP. The original PPPs were obtained from the ICP.

The PPPs for the total economy used by Maddison represent multilaterally weighted PPPs. Multilateralization implies that the weights of all economies are used to obtain the aggregate PPPs, which makes comparisons between economies fully transitive, i.e. comparisons between economies A and B and economies B and C equal a comparison between economies A and C. The year 1990 was chosen because it is still the latest for which a reasonably comprehensive and reliable set of PPPs can be obtained for a largest possible range of economies in the world economy. The multilateral weighting system for the aggregate economy is the Geary-Khamis system, which essentially weighs PPPs for each country on the basis of its relative size in terms of GDP.

Whenever information was available from more than one repository, the information and background documentation from each repository was reviewed in order to select the information most suitable for inclusion, based on an assessment of the general reliability of the sources, the availability of methodological information and explanatory notes regarding the scope of coverage, the availability of information by sex and age, and the degree of historical coverage. Occasionally, two data repositories have been chosen and presented for a single country; any resulting breaks in the historical series are duly noted.

For countries with less-developed labour market information systems, such as those in the developing economies, information may not be easily available. Many of these countries, however, do collect labour market information through household and establishment surveys, population censuses and administrative records.

Limitations to comparability are often indicator-specific; however, there are standard issues that require attention with every indicator. For example, the precision of the measurements made for each country and year, and systematic differences in the type of source, related to the methodology of collection, definitions, scope of coverage and reference period, will certainly affect comparisons. In order to minimize misinterpretation, detailed notes are provided that identify the repository, type of source (household and labour force surveys, censuses, administrative records, and so on), and changes or deviations in coverage, such as age groups and geographical coverage (national, urban, rural, capital city and so on).

### **Treatment of missing values**

See “Regional and Global Estimates”, below.

### **Data availability**

Data are available for 125 countries. Together these represent more than 96 per cent of the world population and more than 99 per cent of world GDP. Data are produced at least annually.

### **Regional and Global estimates**

The biggest challenge in the production of aggregate estimates is that of missing data. In an ideal world, producing world and regional estimates of labour market indicators, such as employment, for example, would simply require summing up the total number of employed persons across all countries in the world or within a given region. However, because not all countries report data in every year and, indeed, some countries do not report data for any years at all, it is not possible to derive aggregate estimates of labour market indicators by merely summing across countries. To address the problem of missing data, the ILO Employment Trends Unit has designed and actively maintains two econometric models which are used to produce estimates of labour market indicators in the countries and years for which no real data exist. The Global Employment Trends Model (GET Model) is used to produce estimates – disaggregated by age and sex – of employment-to-population ratios and other indicators. The world and regional labour force estimates are produced using the Trends Labour Force Model (TLF Model).

Each of these models uses multivariate regression techniques to impute missing values at the country level. The first step in each model is to assemble every known piece of real information (i.e. every real data point) for each indicator in question. It is important to note that only data that are national in coverage and comparable across countries and over time are used as inputs. This is an important selection criterion when the models are run, because they are designed to use the relationship between the various labour

market indicators and their macroeconomic correlates (such as per-capita GDP, GDP growth rates, demographic trends, country membership in the Highly Indebted Poor Country (HIPC) Initiative, geographic indicators and country and time dummy variables) in order to produce estimates of the labour market indicators where no data exist. Thus, the comparability of the labour market data that are used as inputs in the imputation models is essential to ensure that the models accurately capture the relationship between the labour market indicators and the macroeconomic variables.

The last step of the estimation procedure occurs once the datasets containing both the real and imputed labour market data have been assembled. In this step, the ILO Trends Team aggregates the data across countries to produce the final world and regional estimates. For further information on the world and regional econometric models, readers can consult the technical background papers available at the following website: <http://www.ilo.org/trends>

### **Expected time of release**

Data are published every two years, in September, in the Key Indicators of the Labour Market report.

## **Employment-to-population ratio, both sexes, percentage**

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### **Definition**

The employment-to-population ratio is the proportion of a country's working-age population that is employed.

Employment is defined as persons above a specified age who performed any work at all, in the reference period, for pay or profit (or pay in kind), or were temporarily absent from a job for such reasons as illness, maternity or parental leave, holiday, training or industrial dispute. Unpaid family workers who work for at least one hour should be

included in the count of employment, although many countries use a higher hour limit in their definition.<sup>1</sup>

For most countries, the working-age population is defined as persons aged 15 years and older, although this may vary slightly from country to country.

For further information see: <http://www.ilo.org/trends>

1 *For additional details see the resolution concerning statistics of the economically active population, employment, unemployment and underemployment, adopted by the 13th International Conference of Labour Statisticians, Geneva, 1982, available at: <http://http://www.ilo.org/public/english/bureau/stat/download/res/ecacpop.pdf>*

### **Method of computation**

The employment-to-population ratios are calculated by expressing the number of persons in employment as a percentage of the population for the corresponding sex and age group (either working-age or youth).

### **Comments and limitations**

The ILO standard for the lower age limit is 15 years. For many countries, this age corresponds directly to societal standards for education and work eligibility. However, in some countries, particularly developing ones, it is often appropriate to include younger workers because “working age” can, and often does, begin earlier. Some countries in these circumstances use a lower official bound and include younger workers in their measurements. Similarly, some countries have an upper limit for eligibility, such as 65 or 70 years, although this requirement is imposed rather infrequently (examples are Egypt (upper limit 64 years) and Finland (upper limit 74 years)).

Apart from issues related to age, the population base for employment ratios can vary across countries. In most cases, the resident non-institutional population of working age living in private households is used, excluding members of the armed forces and individuals residing in mental, penal or other types of institution. Many countries, however, include the armed forces in the population base for their employment ratios even when they do not include them in the employment figures.

Comparability of employment ratios across countries is affected most significantly by variations in the definitions used for the employment and population figures, as described above. Perhaps the biggest differences result from age coverage, such as the lower and upper bounds for labour force activity. Estimates of both employment and population are likely to vary according to whether members of the armed forces are

included. To a large extent, these comparability issues have been addressed in the construction of the table as employment and population figures are harmonized.

However, the use of nationally reported data in the construction of the estimates can also create issues with comparability due to the nature of the data source. National labour force surveys tend to be similar in several essential features, and data derived from them are likely to be more comparable than data obtained from other sources or from a combination of different sources. Nevertheless, despite their strength, labour force survey data may contain non-comparable elements in terms of scope and coverage or variations in national definitions of the employment concept.

An example of measurement differences that can arise has to do with the national treatment of particular groups of workers. The international definition, as stated above, calls for inclusion of all persons who worked for at least one hour during the reference period. The worker could be in paid employment or in self employment or engaged in less obvious forms of work, each of which is dealt with in detail in the resolution, such as unpaid family work, apprenticeship or non-market production. The majority of exceptions to coverage of all persons employed in a labour force survey have to do with slight national variations to the international recommendation applicable to the alternate employment statuses. For example, some countries measure persons employed in paid employment only (United States Virgin Island) and some countries measure only "all persons engaged" (Albania until 2002, Lithuania until 1993, Malta until 1999), meaning paid employees plus working proprietors who receive some remuneration based on corporate shares. Additional, although of less significance, variations that apply to the "norms" pertaining to measurement of total employment include hours limits (beyond one hour) placed on contributing family members before inclusion. The United States, for example, includes only contributing family members who worked more than 15 hours per week during the reference period.

For most cases, household labour force surveys are used, and they provide estimates that are consistent with ILO definitional and collection standards. A small number of countries use other sources, such as population censuses or official estimates, which can cause problems of comparability at the international level. Ratios may diverge slightly from nationally reported figures because of the harmonization process.

### **Sources of discrepancies between global and national figures**

Nationally reported data are utilized only when these meet strict criteria in terms of international comparability and geographic coverage. Model estimates are used where

national data are not available or satisfactory. See “Comments and Limitations” section for additional details of sources of discrepancies.

### **Process of obtaining data**

The ILO has made an intensive effort to assemble data on labour market indicators for as many countries, areas and territories as possible. Where there is no information for a country, it is usually because the country involved was not in a position to provide information for the indicator. Even when information for an indicator was available, it may not have been sufficiently current or may not have met other qualifications established for inclusion in the Key Indicators of the Labour Market (KILM), on which the information for the employment-to-population rate is based.

In compiling the KILM, the ILO concentrates on bringing together information from international repositories. In other words, the KILM team rarely collects information directly from national sources, but rather takes advantage of existing compilations held by various organizations, such as the following:

International Labour Office (Bureau of Statistics)

United Nations Statistics Division

Organisation for Economic Co-operation and Development (OECD)

World Bank

United Nations Industrial Development Organization (UNIDO)

Statistical Office of the European Union (EUROSTAT)

United Nations Educational, Scientific and Cultural Organization (UNESCO)

United States Bureau of Labor Statistics (BLS)

Information maintained by these organizations has generally been obtained from national sources or is based on official national publications.

Whenever information was available from more than one repository, the information and background documentation from each repository was reviewed in order to select the information most suitable for inclusion, based on an assessment of the general reliability of the sources, the availability of methodological information and explanatory notes regarding the scope of coverage, the availability of information by sex and age, and the

degree of historical coverage. Occasionally, two data repositories have been chosen and presented for a single country; any resulting breaks in the historical series are duly noted.

For countries with less-developed labour market information systems, such as those in the developing economies, information may not be easily available. Many of these countries, however, do collect labour market information through household and establishment surveys, population censuses and administrative records, so that the main problem remains the communication of such information to the global community. In this situation, the ILO Labour Market Indicators Library (LMIL) programme was used. The LMIL is a system for sharing information between the ILO regional offices and headquarters. ILO regional offices are closer to the original micro-sources of data and have therefore been successful in filling in numerous gaps where data at headquarters – used in the production of the KILM – had not existed. It is an ongoing programme that continues to assist the KILM and other ILO publications and research programmes in the expansion of its country and yearly coverage of indicators.

### **Treatment of missing values**

See “Regional and Global Estimates”, below.

### **Data availability**

Data are available for over 176 economies.

The lag between the reference year and actual production of data series is one year or more. Data are produced at least annually.

### **Regional and Global estimates**

The biggest challenge in the production of aggregate estimates is that of missing data. In an ideal world, producing world and regional estimates of labour market indicators, such as employment, for example, would simply require summing up the total number of employed persons across all countries in the world or within a given region. However, because not all countries report data in every year and, indeed, some countries do not report data for any years at all, it is not possible to derive aggregate estimates of labour market indicators by merely summing across countries.

To address the problem of missing data, the ILO Employment Trends Unit has designed and actively maintains two econometric models which are used to produce estimates of labour market indicators in the countries and years for which no real data exist. The Global Employment Trends Model (GET Model) is used to produce estimates – disaggregated by age and sex – of employment-to-population ratios and other indicators.

The world and regional labour force estimates are produced using the Trends Labour Force Model (TLF Model).

Each of these models uses multivariate regression techniques to impute missing values at the country level. The first step in each model is to assemble every known piece of real information (i.e. every real data point) for each indicator in question. It is important to note that only data that are national in coverage and comparable across countries and over time are used as inputs. This is an important selection criterion when the models are run, because they are designed to use the relationship between the various labour market indicators and their macroeconomic correlates (such as per-capita GDP, GDP growth rates, demographic trends, country membership in the Highly Indebted Poor Country (HIPC) Initiative, geographic indicators and country and time dummy variables) in order to produce estimates of the labour market indicators where no data exist. Thus, the comparability of the labour market data that are used as inputs in the imputation models is essential to ensure that the models accurately capture the relationship between the labour market indicators and the macroeconomic variables.

The last step of the estimation procedure occurs once the datasets containing both the real and imputed labour market data have been assembled. In this step, the ILO Trends Team aggregates the data across countries to produce the final world and regional estimates. For further information on the world and regional econometric models, readers can consult the technical background papers available at the following website: <http://www.ilo.org/trends>

### **Expected time of release**

Data are published every two years, in September, in the Key Indicators of the Labour Market report.

## **Proportion of employed people living below \$1 (PPP) per day, percentage**

### **Contact point in international agency**

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## Definition

The proportion of employed persons living below \$1 (PPP) per day, or working poor, is the share of individuals who are employed, but nonetheless live in a household whose members are estimated to be living below the international poverty line of \$1.25 a day, measured at 2005 international prices, adjusted for purchasing power parity (PPP).

For further information see: <http://www.ilo.org/trends>

## Method of computation

The ILO calculates upper- and lower-bound estimates of the working poor. Upper bound estimates for the working poor indicator are calculated using the equation: (*working poor<sub>u</sub>* = *poverty rate* \* *population15*), where *population15* is equal to the population aged 15 and above. The lower-bound estimate of the working poor is calculated using the equation: (*working poor<sub>l</sub>* = *poverty rate* \* *labour force15*), where *labour force15* is the labour force aged 15 and above.

The working poor data presented are based on a weighted-average of the data derived using the two methodologies (i.e. a weighted average of the upper bound estimates and the lower bound estimates). The key assumption behind using labour force in the lower-bound estimate is that all of the poor of working age and in the labour force are employed. This assumption is made because in countries where social safety nets do not exist, poor individuals must work in order to maintain a subsistence level. The working poor definition is consequently based on poverty data (the international poverty line at \$1.25 (PPP) or \$2 (PPP) a day calculated by the World Bank), but it also takes into account countries' specific labour market characteristics, such as the size of the working age population and the labour force participation rate. By combining these labour market factors with poverty data, working poverty estimates give a clearer picture of the relationship between poverty and employment than that provided by using standard poverty data alone.

For more information on ILO working poverty estimates, see S. Kapsos: "Estimating growth requirements for reducing working poverty: Can the world halve working poverty by 2015?", Employment Strategy Paper, No. 14 (Geneva, ILO, 2004); website: <http://www.ilo.org/public/english/employment/strat/download/kps01.pdf>

## Comments and limitations

In the case of estimates based on an international poverty line, the use of PPP, rather than exchange rates, ensures that the prices of non-traded goods are taken into account. However, it cannot be categorically asserted that two people in two different countries,

consuming at \$1.25(PPP) (or \$2(PPP)) a day, face the same degree of deprivation or have the same degree of need. Apart from the well-known problems in economics in making interpersonal comparisons of welfare, there are other problems, such as rural-urban price differentials, which may or may not have been taken into account. One estimate may relate to consumption and the other to income; and a daily income of \$1.25(PPP) (or \$2(PPP)) may permit less consumption than a daily consumption expenditure of the same amount. The adjustments that are often made to convert income estimates into consumption estimates also impart bias to the resulting consumption distributions. Again, the extent of non-market activity and the way in which non-market production and consumption are valued in the two hypothetical countries could substantially hamper comparability.

Even if measurements of poverty using international poverty lines were perfect, several unanswered questions would remain. For example, is a person with a particular consumption level (say \$1.25(PPP) a day) in a poor country better or worse off than a person with the same consumption level in a rich country? Or is a person receiving \$1.25(PPP) a day worse off if he or she lives in a country that has high inequality?

### **Sources of discrepancies between global and national figures**

Poverty data are based on measures derived using the international poverty line, and therefore will differ from poverty estimates based on national poverty lines. Population and labour force are derived from nationally reported data and harmonized labour force data. The labour force data are harmonized to account for differences in national data and scope of coverage, collection and tabulation methodologies as well as for other country specific factors such as military service requirements. Furthermore, nationally reported data are utilized only when these meet strict criteria in terms of international comparability and geographic coverage. Model estimates are used where national data are not available or satisfactory. See "Comments and Limitations" section for additional details of sources of discrepancies.

### **Process of obtaining data**

The ILO has made an intensive effort to assemble data on labour market indicators for as many countries, areas and territories as possible. Where there is no information for a country, it is usually because the country involved was not in a position to provide information for the indicator. Even when information for an indicator was available, it may not have been sufficiently current or may not have met other qualifications established for inclusion in the Key Indicators of the Labour Market (KILM), on which the information for working poverty is based.

In compiling the KILM, the ILO concentrates on bringing together information from international repositories. In other words, the KILM team rarely collects information directly from national sources, but rather takes advantage of existing compilations held by various organizations, such as the following:

International Labour Office (Bureau of Statistics)

United Nations Statistics Division

Organisation for Economic Co-operation and Development (OECD)

World Bank

United Nations Industrial Development Organization (UNIDO)

Statistical Office of the European Union (EUROSTAT)

United Nations Educational, Scientific and Cultural Organization (UNESCO)

United States Bureau of Labor Statistics (BLS)

Information maintained by these organizations has generally been obtained from national sources or is based on official national publications.

Whenever information was available from more than one repository, the information and background documentation from each repository was reviewed in order to select the information most suitable for inclusion, based on an assessment of the general reliability of the sources, the availability of methodological information and explanatory notes regarding the scope of coverage, the availability of information by sex and age, and the degree of historical coverage. Occasionally, two data repositories have been chosen and presented for a single country; any resulting breaks in the historical series are duly noted.

For countries with less-developed labour market information systems, such as those in the developing economies, information may not be easily available to policy-makers and the social partners, and even less so to international organizations seeking to compile global data sets. Many of these countries, however, do collect labour market information through household and establishment surveys, population censuses and administrative records, so that the main problem remains the communication of such information to the global community. In this situation, the ILO Labour Market Indicators Library (LMIL) programme is used. The LMIL is a system for sharing information between the ILO

regional offices and headquarters. ILO regional offices are closer to the original micro-sources of data and have therefore been successful in filling in numerous gaps where data at headquarters – used in the production of the KILM – had not existed. It is an ongoing programme that continues to assist the KILM and other ILO publications and research programmes in the expansion of its country and yearly coverage of indicators.

### **Treatment of missing values**

See “Regional and Global Estimates”, below.

### **Data availability**

Estimates of the working poor are available for 96 economies. Eighty-three economies have at least one estimate of people living below the national poverty line from 1991 to present, while 96 economies have an estimate of the \$1.25(PPP) a day international poverty line for one year from 1991 up to present (70 from 2000 or later). Estimates based on the \$1.25(PPP) and \$2(PPP) a day international poverty lines are of relatively more recent origin and are only available for a few years for most countries.

Information on poverty is mainly available for developing economies because similar data simply do not exist for most high-income economies, where extreme poverty is a more rare occurrence.

The lag between the reference year and actual production of data series is one year or more.

Data are produced at least annually.

### **Regional and Global estimates**

The biggest challenge in the production of aggregate estimates is that of missing data. In an ideal world, producing world and regional estimates of labour market indicators, such as employment, for example, would simply require summing up the total number of employed persons across all countries in the world or within a given region. However, because not all countries report data in every year and, indeed, some countries do not report data for any years at all, it is not possible to derive aggregate estimates of labour market indicators by merely summing across countries.

To address the problem of missing data, the ILO Employment Trends Unit has designed and actively maintains three econometric models which are used to produce estimates of labour market indicators in the countries and years for which no real data exist. The Global Employment Trends Model (GET Model) is used to produce estimates – disaggregated by age and sex – of employment-to-population ratios and other indicators.

The world and regional labour force estimates are produced using the Trends Labour Force Model (TLF Model) and finally, the working poor estimates come from the Trends Working Poverty Model (TWP Model).

Each of these models uses multivariate regression techniques to impute missing values at the country level. The first step in each model is to assemble every known piece of real information (i.e. every real data point) for each indicator in question. It is important to note that only data that are national in coverage and comparable across countries and over time are used as inputs. This is an important selection criterion when the models are run, because they are designed to use the relationship between the various labour market indicators and their macroeconomic correlates (such as per-capita GDP, GDP growth rates, demographic trends, country membership in the Highly Indebted Poor Country (HIPC) Initiative, geographic indicators and country and time dummy variables) in order to produce estimates of the labour market indicators where no data exist. Thus, the comparability of the labour market data that are used as inputs in the imputation models is essential to ensure that the models accurately capture the relationship between the labour market indicators and the macroeconomic variables.

The last step of the estimation procedure occurs once the datasets containing both the real and imputed labour market data have been assembled. In this step, the ILO Trends Team aggregates the data across countries to produce the final world and regional estimates. For further information on the world and regional econometric models, readers can consult the technical background papers available at the following website:

<http://www.ilo.org/public/english/employment/strat/wrest.htm>

### **Expected time of release**

Data are published every two years, usually in September, in the Key Indicators of the Labour Market report.

## **Proportion of own-account and contributing family workers in total employment, both sexes, percentage**

### **Contact point in international agency**

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## Definition

Vulnerable employment is defined as the sum of the employment status groups of own-account workers and contributing family workers.

Own-account workers are those workers who, working on their own account or with one or more partners, hold the type of jobs defined as a self-employment jobs (i.e. remuneration is directly dependent upon the profits derived from the goods and services produced), and have not engaged on a continuous basis any employees to work for them during the reference period.

Contributing family workers, also known as unpaid family workers, are those workers who are self-employed, as own-account workers in a market-oriented establishment operated by a related person living in the same household.

For further information see: <http://www.ilo.org/trends>

## Method of computation

The share of vulnerable employment is calculated as the sum of contributing family workers and own-account workers as a percentage of total employment.

The indicator of status in employment – used to identify people in vulnerable employment – distinguishes between three categories of the employed, following the International Classification by Status in Employment (ICSE), approved by the United Nations Statistical Commission in 1958 and revised at the 15th International Conference of Labour Statisticians (ICLS) in 1993: (1) wage and salary workers; (2) contributing family workers; and, (3) self-employed workers, including self-employed workers with employees (employers), self-employed workers without employees (own-account workers) and members of producers' cooperatives.

1. **Employees** are all those workers who hold the type of jobs defined as “paid employment jobs”, where the incumbents hold explicit (written or oral) or implicit employment contracts that give them a basic remuneration that is not directly dependent upon the revenue of the unit for which they work.
2. **Employers** are those workers who, working on their own account or with one or a few partners, hold the type of jobs defined as a “self-employment jobs” (i.e. jobs where the remuneration is directly dependent upon the profits derived from the goods and services produced), and, in this capacity, have engaged, on a continuous basis, one or more persons to work for them as employee(s).

3. **Own-account workers** are those workers who, working on their own account or with one or more partners, hold the type of jobs defined as a “self-employment jobs” [see ii above], and have not engaged on a continuous basis any employees to work for them.
4. **Members of producers’ cooperatives** are workers who hold “self-employment jobs” [see ii or iii above] in a cooperative producing goods and services.
5. **Contributing family workers** are those workers who hold “self-employment jobs” as own-account workers [see iii above] in a market-oriented establishment operated by a related person living in the same household.
6. **Workers not classifiable by status** include those for whom insufficient relevant information is available, and/or who cannot be included in any of the preceding categories.

### Comments and limitations

When using the indicator on status in employment to assess vulnerable employment, one has to bear in mind that there are often differences in definitions, as well as in coverage, across countries and for different years, resulting from variations in information sources and methodologies that make comparisons difficult.

Some definitional changes or differences in coverage can be overlooked. For example, it is not likely to be significant that status-in-employment comparisons are made between countries using information from labour force surveys with differing age coverage. (The generally used age coverage is 15 years and over, but some countries use a different lower limit or impose an upper age limit.) In addition, in a limited number of cases one category of self-employed – the members of producers’ cooperatives – are included with wage and salaried workers (Czech Republic and Poland). The effects of this non-standard grouping are likely to be small.

What is more important to note is that information from labour force surveys is not necessarily consistent in terms of what is included in employment. For example, the information supplied by the OECD relates to civilian employment, which can result in an underestimation of “employees” and “workers not classifiable by status”, especially in countries that have large armed forces. The other two categories, self-employed and contributing family workers, would not be affected, although their relative shares would be.

With respect to geographic coverage, information from a source that covers only urban areas or only particular cities cannot be compared fairly with information from sources that cover both rural and urban areas, that is, the entire country. It is, therefore, not meaningful to compare results from many of the Latin American countries with results from the rest of the world because employment-by status information for most Latin

American countries relates to urban areas only. Similarly, for some sub-Saharan African countries – where very limited information is available anyway – the self-employed group often does not include members of producers' cooperatives, while for other countries it may.

For “wage and salaried workers” one needs to be careful about the coverage, noting whether, as mentioned above, it refers only to the civilian population or to the total population. Moreover, the status-in-employment distinctions used in this chapter do not allow for finer distinctions in working status – in other words, whether workers have casual or regular contracts and the kind of protection the contracts provide against dismissals, as all wage and salaried workers are grouped together.

### **Sources of discrepancies between global and national figures**

Population and labour force are derived from nationally reported data and harmonized labour force data. The labour force data are harmonized to account for differences in national data and scope of coverage, collection and tabulation methodologies as well as for other country specific factors such as military service requirements. Furthermore, nationally reported data are utilized only when these meet strict criteria in terms of international comparability and geographic coverage. Model estimates are used where national data are not available or satisfactory. See “Comments and Limitations” section for additional details of sources of discrepancies.

### **Process of obtaining data**

In compiling the KILM, the ILO concentrates on bringing together information from international repositories. In other words, the KILM team rarely collects information directly from national sources, but rather takes advantage of existing compilations held by various organizations, such as the following:

International Labour Office (Bureau of Statistics)

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Organisation for Economic Co-operation and Development (OECD)

World Bank

United Nations Industrial Development Organization (UNIDO)

Statistical Office of the European Union (EUROSTAT)

United Nations Educational, Scientific and Cultural Organization (UNESCO)

United States Bureau of Labor Statistics (BLS)

Most of the information for the indicator Status in Employment is gathered from three international repositories of labour market data: (a) the ILO Bureau of Statistics, Yearbook of Labour Statistics (LABORSTA) database, (b) the Organisation for Economic Co-operation and Development (OECD); and the ILO Labour Market Indicators Library (LMIL). Additional documentation regarding national practices in the collection of statistics is provided in ILO: *Sources and Methods: Labour Statistics*, Vol. 3: *Economically Active Population, Employment, Unemployment and Hours of Work (Household Surveys)*; Vol. 5: *Total and Economically Active Population, Employment and Unemployment (Population Censuses)*. The *Sources and Methods* are available online at the country level on website: <http://laborista.ilo.org>

Information maintained by these organizations has generally been obtained from national sources or is based on official national publications.

Whenever information was available from more than one repository, the information and background documentation from each repository was reviewed in order to select the information most suitable for inclusion, based on an assessment of the general reliability of the sources, the availability of methodological information and explanatory notes regarding the scope of coverage, the availability of information by sex and age, and the degree of historical coverage. Occasionally, two data repositories have been chosen and presented for a single country; any resulting breaks in the historical series are duly noted.

For countries with less-developed labour market information systems, such as those in the developing economies, information may not be easily available to policy-makers and the social partners, and even less so to international organizations seeking to compile global data sets. Many of these countries, however, do collect labour market information through household and establishment surveys, population censuses and administrative records, so that the main problem remains the communication of such information to the global community. In this situation, the ILO Labour Market Indicators Library (LMIL) programme is used. The LMIL is a system for sharing information between the ILO regional offices and headquarters. ILO regional offices are closer to the original micro-sources of data and have therefore been successful in filling in numerous gaps where data at headquarters – used in the production of the KILM – had not existed. It is an ongoing programme that continues to assist the KILM and other ILO publications and research programmes in the expansion of its country and yearly coverage of indicators.

### **Treatment of missing values**

See “Regional and Global Estimates”, below.

### **Data availability**

The information for the indicator on status in employment is included, at least to some extent, for 131 economies.

Data are available for most developed economies, as well as for many Central and Eastern European, Eastern Asian, Latin American and Caribbean countries. Unfortunately, there are only a few sub-Saharan African countries for which this indicator is available and, where coverage does exist, extensive time series are lacking. Currently, information is also unavailable for some large developing countries, such as China and India.

The lag between the reference year and actual production of data series is one year or more.

Data are produced at least annually.

### **Regional and Global estimates**

The biggest challenge in the production of aggregate estimates is that of missing data. In an ideal world, producing world and regional estimates of labour market indicators, such as employment, for example, would simply require summing up the total number of employed persons across all countries in the world or within a given region. However, because not all countries report data in every year and, indeed, some countries do not report data for any years at all, it is not possible to derive aggregate estimates of labour market indicators by merely summing across countries.

To address the problem of missing data, the ILO Employment Trends Unit has designed and actively maintains two econometric models which are used to produce estimates of labour market indicators in the countries and years for which no real data exist. The Global Employment Trends Model (GET Model) is used to produce estimates – disaggregated by age and sex – of employment-to-population ratios and other indicators. The world and regional labour force estimates are produced using the Trends Labour Force Model (TLF Model).

Each of these models uses multivariate regression techniques to impute missing values at the country level. The first step in each model is to assemble every known piece of real information (i.e. every real data point) for each indicator in question. It is important to note that only data that are national in coverage and comparable across countries and over time are used as inputs. This is an important selection criterion when the models are run, because they are designed to use the relationship between the various labour

market indicators and their macroeconomic correlates (such as per-capita GDP, GDP growth rates, demographic trends, country membership in the Highly Indebted Poor Country (HIPC) Initiative, geographic indicators and country and time dummy variables) in order to produce estimates of the labour market indicators where no data exist. Thus, the comparability of the labour market data that are used as inputs in the imputation models is essential to ensure that the models accurately capture the relationship between the labour market indicators and the macroeconomic variables.

The last step of the estimation procedure occurs once the datasets containing both the real and imputed labour market data have been assembled. In this step, the ILO Trends Team aggregates the data across countries to produce the final world and regional estimates. For further information on the world and regional econometric models, readers can consult the technical background papers available at the following website:

<http://www.ilo.org/public/english/employment/strat/wrest.htm>

### **Expected time of release**

Data are published every two years, usually in September, in the Key Indicators of the Labour Market report.

## **Unmet need for family planning, total, percentage**

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## Definition

Women with unmet need are those who are fecund and sexually active but are not using any method of contraception, and report not wanting any more children or wanting to delay the next child. The concept of unmet need points to the gap between women's reproductive intentions and their contraceptive behaviour.

For MDG monitoring, unmet need is expressed as a percentage based on women who are married or in a consensual union.

## Method of computation

$$\text{Unmet need for family planning} = \frac{\text{Women (married or in consensual union) who are pregnant or amenorrheic and whose pregnancies were unwanted or mistimed + fecund women who desire to either stop childbearing or postpone their next birth for at least two years, or who are undecided about whether or when to have another child, and who are not using a contraceptive method}}{\text{Total number of women of reproductive age (15-49) who are married or in consensual union}} \times 100$$

The standard definition of unmet need for family planning (UMN), includes in the numerator:

- All pregnant women (married or in consensual union) whose pregnancies were unwanted or mistimed at the time of conception.
- All postpartum amenorrheic women (married or in consensual union) who are not using family planning and whose last birth was unwanted or mistimed.
- All fecund women (married or in consensual union) who are neither pregnant nor postpartum amenorrheic, and who either do not want any more children (limit), or who wish to postpone the birth of a child for at least two years or do not know when or if they want another child (spacing), but are not using any contraceptive method.

Excluded from the numerator of the unmet need definition are pregnant and amenorrheic women who became pregnant unintentionally due to contraceptive method failure (these women are assumed to be in need of a better contraceptive method). Infecund women are also excluded from the definition. Women are assumed to be infecund if:

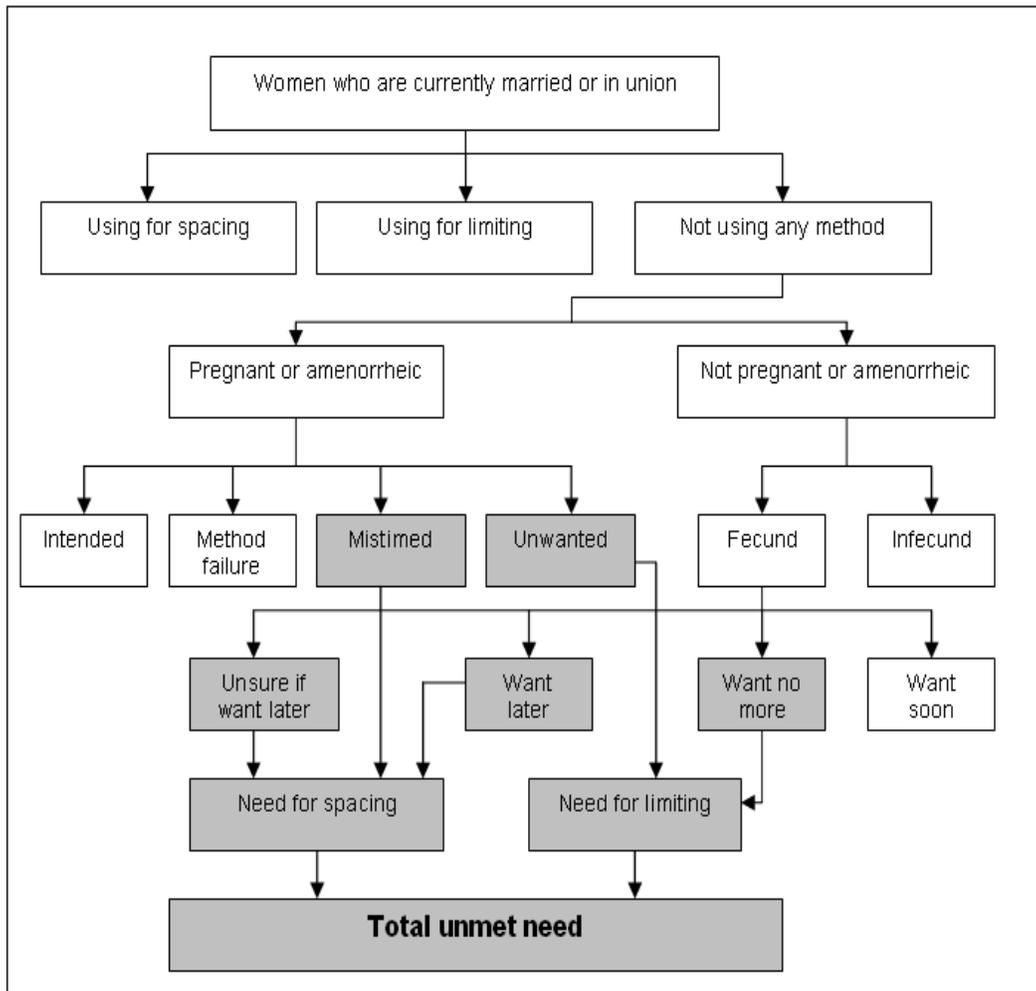
- They have been married for five or more years and
- they have not had a birth in the past five years and
- they are not currently pregnant and

- they have not used contraception within the preceding five years (or, if the timing of the last contraceptive use is not known, or if they have never used any kind of contraceptive method) or
- they self-report that they are infecund, menopausal or have had a hysterectomy, or (for women who are not pregnant or in post-partum amenorrhea) if the last menstrual period occurred more than six months prior to the survey.

Women who are married or in a consensual union are assumed to be sexually active. If unmarried women are to be included in the calculation of unmet need (in national monitoring supplementing global reporting for the MDGs), it is necessary to determine the timing of the most recent sexual activity. Unmarried women are considered currently at risk for pregnancy (and thus potentially in the numerator) if they have had intercourse in the month prior to the survey interview.

See figure 1 below for a flow diagram on the computation of unmet need.

Figure 1: Flow diagram: Computation of unmet need



**Source:** Based on Westoff C.F and L. H. Ochoa (1991). *Unmet Need and the Demand for Family Planning*, Comparative Studies No. 5. Demographic and Health Surveys, Institute for Resource Development, Macro International; and Westoff C.F. and Bankole A. (1995). *Unmet need: 1990-1994*. DHS Comparative Report No. 16, Macro International.

Unmet need for family planning is measured using data that are gathered in special surveys such as the Demographic and Health Surveys (DHS), Reproductive Health Surveys (RHS) and national surveys based on similar methodologies.

The operational definition of unmet need has been refined over time.<sup>1</sup> The refinements have not altered the core concept but have largely clarified the definition of the population at risk, e.g. using a combination of a self-reporting and an algorithmic approach to identifying infecund women; modifying the analysis of women unsure of their fertility desires; and defining women whose current pregnancy is due to method failure (including those due to incorrect or inconsistent use of contraception) as lacking unmet need. The largest adjustment separates the pre-1991 estimates from those later. The earliest surveys did not restrict the population at risk as much as later approaches.

A guide on the methodology can be found in DHS' online guide under "Fertility Preferences": <http://www.measuredhs.com/help/Datasets/index.htm>

A guide to the questions needed to calculate unmet need for family planning can be found on the DHS website in the document "DHS Model Questionnaire with Commentary" under the section "Current Questionnaire (Phase 5: 2003 – Present)" at: <http://www.measuredhs.com/aboutsurveys/dhs/questionnaires.cfm>

The relevant questions include the following in order to determine the various elements of the definition:

Marriage status (Q602, Q603, Q615)

Fecundity and contraception (Q215, Q226, Q237, Q304, Q310, Q322, Q454, Q711)

Fertility preferences (Q228, Q405, Q702, Q703)

1 *For additional details see Govindasamy, P. and E. Boadi 2000, A decade of unmet need for contraception in Ghana: Programmatic and policy implications. Macro International Calverton, Maryland, and National Population Council Secretariat, Ghana. Available at: <http://www.measuredhs.com/pubs/pdf/FA31/FA31.pdf>*

## Comments and limitations

According to the standard definition, women who are using a traditional method of contraception are not considered as having an unmet need for family planning. As traditional methods can be considerably less effective than modern methods, additional analyses often distinguish between traditional and modern methods and also report on unmet need for effective contraception. The indicator “contraceptive prevalence” provides complementary information to this indicator by focusing on those women that are currently using a contraceptive method.

In some countries Demographic Health Survey (DHS) samples do not include women who are neither married nor in a consensual union. These women are not considered to be sexually active, while married women are assumed to be sexually active and at risk of pregnancy. The assumption of universal exposure among married women increases the estimate (additional questions probing reasons for non-use of family planning often elicit reports of low risk due to infrequent sexual activity, including spousal separation resulting from labour migration).

There can be differences in the precise definition being used. Those differences are flagged with footnotes in the data series.

As estimates of unmet need are affected by changes in definition some caution needs to be adopted when interpreting trends, in particular for DHS estimates prior to the current definition (1998) and especially pre-1991. Strict comparisons between estimates based on different definitions should be avoided.

## Sources of discrepancies between global and national figures

The global estimates are based on unadjusted figures published in the national-level survey report unless the reported figure is known to be erroneous (i.e., it contains an errata note in DHS records or elsewhere). Thus, there should not be any discrepancies between global and national figures arising from adjustments to national data. However, some published national measurements of unmet need are not included in the dataset for global MDG monitoring because they were judged to depart too much from the core concept of unmet need employed here or because the estimation procedures were considered to produce results that were not comparable.

## Process of obtaining data

Unmet need for family planning is measured using data that are gathered in special surveys such as the Demographic and Health Surveys (DHS), Reproductive Health Surveys (RHS) and national surveys based on similar methodologies.

Data from Demographic and Health Surveys (DHS), collected from ORC Macro, are the primary source of data on unmet need for developing countries.

Another important source of data is the Reproductive Health Surveys (RHS), which collect data from developing countries, with technical assistance provided by the Centers for Disease Control and Prevention (CDC), Division of Reproductive Health (DRH), MEASURE CDC. In reports from those surveys, women who are married or in a consensual union are considered to have an unmet need for family planning if they report that they are not using contraception, do not wish to become pregnant (either currently – desire to space the next birth – or ever – desire to limit family size), are fecund and sexually active, and are not currently pregnant.

### Other National Surveys

In some cases, other national survey efforts, which have incorporated the DHS methodology, but were conducted by national authorities without international technical assistance (e.g., in India), are used as inputs. Similarly, some surveys did not receive technical assistance from CDC but have followed the CDC methodology for estimating unmet need.

National surveys conducted as part of the European Fertility and Family Surveys (FFS), the Pan-Arab Project for Family Health (PAPFAM) and other national surveys might also vary in their definition of unmet need. Those differences are flagged with footnotes in the data.

The data are taken from published survey reports or, in exceptional cases, other published analytic reports. If clarification is needed, contact is made with the survey sponsors or authoring organization, which occasionally may supply corrected or adjusted estimates in response.

The data are not adjusted.

### **Treatment of missing values**

There is no treatment of missing values. When the information needed to calculate unmet need is not available, the indicator is not estimated.

### **Data availability**

Data are available for approximately 100 countries. The data are available in the large majority of countries with significant problems in maternal health (e.g., high maternal

mortality ratios and low levels of contraceptive prevalence) where monitoring of progress is most critical.

Data are most often published the year after the reference year of the survey.

Frequency of data production: Typically the surveys are undertaken every 3 to 5 years.

### **Regional and Global estimates**

Regional and global estimates are calculated as weighted averages. National averages are weighted by the number of women of reproductive age who are married or in union.

### **Expected time of release**

The dataset is updated annually and results are published in United Nations Population Division's World Contraceptive Use, which is typically launched every two years in December.

## **Tuberculosis incidence rate per year per 100,000 population**

### **Contact point in international agency**

Stop TB

World Health Organization

Postal Address: 20 avenue Appia, 1211 Geneva 27, Switzerland

Website: [www.who.int/tb/country/global\\_tb\\_database](http://www.who.int/tb/country/global_tb_database)

### **Definition**

Tuberculosis incidence is the estimated number of new tuberculosis (TB) cases arising in one year per 100,000 population. All forms of TB are included, as are cases in people with HIV.

TB is an infectious bacterial disease caused by *Mycobacterium tuberculosis*, which most commonly affects the lungs. It is transmitted from person to person via droplets from the throat and lungs of people with the active respiratory disease. In healthy people, infection with *Mycobacterium tuberculosis* often causes no symptoms, since the person's immune system acts to "wall off" the bacteria. The symptoms of active TB of the lung are coughing, sometimes with sputum or blood, chest pains, weakness, weight loss, fever and night sweats. Tuberculosis is treatable with a six-month course of antibiotics.

Human Immunodeficiency Virus (HIV) is a virus that weakens the immune system, ultimately leading to AIDS, the acquired immunodeficiency syndrome. HIV destroys the body's ability to fight off infection and disease, which can ultimately lead to death.

### Method of computation

Estimates of TB incidence are based on a consultative and analytical process led by WHO and are published annually (see reference 5). Estimates of incidence for each country are derived using one or more of four approaches, depending on the available data:

1. incidence = case notifications / estimated proportion of cases detected
2. incidence = prevalence / duration of condition
3. incidence = annual risk of TB infection x Stýblo coefficient
4. incidence = deaths / proportion of incident cases that die.

The Stýblo coefficient in equation (3) is taken to be a constant, with an empirically derived value in the range 40–60, relating risk of infection (% per year) to the incidence of sputum smear-positive cases (per 100 000 per year). Given two of the quantities in any of these equations, we can calculate the third, and these formulae can be rearranged to estimate incidence, prevalence and death rates. The available data differ from country to country but include case notifications and death records (from routine surveillance and vital registration), and measures of the prevalence of infection and disease (from population-based surveys).

For each country, estimates of incidence for each year during the period 1995–2004 have been made as follows. First a reference year is selected, for which there is a best estimate of incidence; this may be the year in which a survey was carried out, or the year for which incidence was first estimated. Then the series of case notifications is used to determine how incidence changed before and after that reference year. The time series of estimated incidence rates is constructed from the notification series in one of two ways: if the rate of change of incidence is roughly constant through time, an exponential trend is fitted to the notifications; if the rate varies through time (eastern Europe, central Europe and high-HIV Africa), a three-year moving average of the notification rates is used. If the notifications for any country are considered to be an unreliable guide to trend (e.g. because reporting effort is known to have changed; or because reports are clearly erratic, changing in a way that cannot be attributed to TB epidemiology), the aggregated trend for all other countries from the same epidemiological region that have reliable data is applied. For some countries (China, Indonesia and Nepal), the assessment of the trend in incidence is based on risk of infection derived from other sources (tuberculin surveys for China and Nepal; prevalence surveys for Indonesia). For those countries that have no reliable data from which to

assess trends in incidence (e.g. for countries such as Iraq, for which data are hard to interpret) and which are atypical within their own regions, incidence is assumed to be stable.

Further details are available in the following references:

1. The Stop TB Strategy: building on and enhancing DOTS to meet the TB-related Millennium Development Goals. Geneva, World Health Organization, 2006 (WHO/HTM/STB/2006.37).
2. The Global Plan to Stop TB, 2006–2015. Geneva, World Health Organization, 2006 (WHO/HTM/STB/2006.35).
3. Dye C et al. Global burden of tuberculosis: estimated incidence, prevalence and mortality by country. *Journal of the American Medical Association* 1999, 282:677–686.
4. Corbett EL et al. The growing burden of tuberculosis: global trends and interactions with the HIV epidemic. *Archives of Internal Medicine* 2003, 163:1009–1021.
5. Global tuberculosis control: surveillance, planning, financing. WHO report 2008. Geneva, World Health Organization (WHO/HTM/TB/2008.393). Annex 4: Surveys of tuberculosis infection and disease, and death registrations, by country and year.
6. Dye C et al. Evolution of tuberculosis control and prospects for reducing tuberculosis incidence, prevalence, and deaths globally. *Journal of the American Medical Association*, 2005, 293:2767-2775.

## Comments and limitations

Routine surveillance data provide a good basis for estimating incidence in countries where the majority of incident cases are treated and notified to WHO. Where the proportion of cases notified is consistent over time (even if it is low), trends in incidence can be judged from trends in notified cases. Where TB control efforts change over time it is difficult to differentiate between changes in incidence and changes in the proportion of cases notified.

A national surveillance system is an integral part of good TB control, and one of the components of DOTS, which forms the core of the Stop TB Strategy. As surveillance improves in countries implementing the strategy, so will estimates of TB incidence.

Prevalence and death rates are more sensitive markers to the changing burden of tuberculosis than incidence (new cases), although data on trends in incidence are for more comprehensive and give the best overview of the incidence of tuberculosis control.

## Sources of discrepancies between global and national figures

Where population sizes are needed to calculate TB indicators, the latest United Nations Population Division estimates are used. These estimates sometimes differ from those

made by the countries themselves, some of which are based on more recent census data. The estimates of some TB indicators, such as the case detection rate, are derived from data and calculations that use only rates per capita, and discrepancies in population sizes do not affect these indicators. Where rates per capita are used as a basis for calculating numbers of TB cases, these discrepancies sometimes make a difference.

### Process of obtaining data

A standardized data collection form is distributed to all countries on an annual basis. Estimates are made using these data as well as country-specific analyses of TB epidemiology based on the published literature and consultation with national and international experts.

Every year, WHO requests information from the National Tuberculosis Control Programmes (NTPs) or relevant public health authorities. NTPs that respond to WHO are also asked to update information for earlier years where possible. As a result of such revisions, the data (case notifications, treatment outcomes, etc.) presented for a given year may differ from those published previously.

Completed forms are collected and reviewed at all levels of WHO, by country offices, regional offices and at headquarters. An acknowledgement form that tabulates all submitted data is sent back to the NTP correspondent in order to complete any missing responses and to resolve any inconsistencies. Then, using the complete set of data for each country, a profile is constructed that tabulates all key indicators, including epidemiological and financial data and estimates, and this too is returned to each NTP for review. In the WHO European Region only, data collection and verification are performed jointly by the regional office and a WHO collaborating centre, EuroTB (Paris). EuroTB subsequently publishes an annual report with additional analyses, using more detailed data for the European Region ( <http://www.eurotb.org> ).

Because accurate measurement is crucial in the evaluation of epidemic trends, a recent paper provides methodological guidance based on a review by the WHO Task Force on TB Impact Measurement. This paper can be read in conjunction with the list of countries that have done, or are planning, infection (tuberculin) and disease prevalence surveys, and with the set of countries that now register deaths by cause and provide these data to WHO (including TB).

Dye et al. Measuring tuberculosis burden, trends and the impact of control programmes. *Lancet Infectious Diseases* (published online 16 January 2008).

### Treatment of missing values

Estimates made for all indicators and for all countries. See “Process of Obtaining Data”, above, for details.

### **Data availability**

Data are available for 212 countries and territories.

Estimates of TB incidence, prevalence and deaths are based on a consultative and analytical process. They are revised annually to reflect new information gathered through surveillance (case notifications and death registrations) and from special studies (including surveys of the prevalence of infection and disease).

For most countries, the case notification data reported by the countries and adjusted by WHO for the comprehensiveness of the TB surveillance system are used to calculate the TB incidence. The notification data were reported to WHO from 202 (out of 212) countries or territories for year 2006. However, for some countries, the estimate of incidence is measured indirectly from the estimate of TB prevalence or mortality measured by the TB prevalence surveys or the vital registration systems (see reference 3, 4 and 5-Annex 4, listed in “Method of Computation”).

The data on case notifications are published by WHO two years after diagnosis and three years after completion of treatment of TB cases.

### **Regional and Global estimates**

Regional and global estimates are produced by aggregating national estimates, (e.g. to calculate the global incidence rate of TB per year per 100,000 population for a given year, the sum of estimate of TB incidence for individual countries is divided by the sum of the population of all countries multiplied by 100,000).

The WHO regions are the African Region, the Region of the Americas, the Eastern Mediterranean Region, the European Region, the South-East Asia Region and the Western Pacific Region. All essential statistics are summarized for each of these regions and globally. However, to make clear the differences in epidemiological trends within regions, the African Region is divided into countries with low and high rates of HIV infection (“high” is an infection rate of =4%, as estimated by UNAIDS in 2007). Central Europe is divided from Eastern Europe (countries of the former Soviet states plus Bulgaria and Romania), and Western European countries are combined with the other high-income countries.

### **Expected time of release**

Estimates are published annually, in March, are available in WHO's Global TB Database at [http://www.who.int/tb/country/global\\_tb\\_database/en/](http://www.who.int/tb/country/global_tb_database/en/).

**Please refer to series metadata**

## **Proportion of species threatened with extinction**

### **Contact point in international agency**

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### **Definition**

The indicator *Changes in the Status of Species* indicates the change in threat status of species in their natural habitat, based on population and range size and trends, as quantified by the categories of the IUCN Red List of Threatened Species™ (hereafter 'IUCN Red List'; <http://www.redlist.org>).

The world's species are impacted by a number of threatening processes, including habitat destruction and degradation, overexploitation, invasive alien species, human disturbance, pollution and climate change (Baillie *et al* 2004). This indicator measures overall changes in the extinction risk of sets of species as a result of these impacts and the extent to which they are being mitigated. The IUCN Red List Index (IUCN RLI) uses data from the IUCN Red List to show changes over time in the overall threat status (relative projected extinction risk) of representative sets of species.

The IUCN Red List is widely recognised as the most authoritative and objective method of classifying the status of species. It uses quantitative criteria based on population size, rate of decline, and area of distribution to assign species to the following categories of relative extinction risk: *Least Concern*, *Near Threatened*, *Vulnerable*, *Endangered*, *Critically Endangered*, *Extinct in the Wild*, *Extinct and Data Deficient* (IUCN 2001). It has been developed by the IUCN Species Survival Commission (IUCN SSC) and partners BirdLife International, the Zoological Society of London, Conservation International-Centre of Applied Biodiversity Science and NatureServe.

The IUCN RLI is an index of the proportion of species expected to remain living (i.e. not extinct) in the near future in the absence of any conservation action. The 'near future' cannot be quantified exactly, because it depends on the generation times of each of the species contributing to the index, but in most cases the period can be taken to be in the range of 10-50 years for species with short generation lengths and 10-100 years for species with long generation lengths. The IUCN RLI value can range from 1 (when all species are categorised as Least Concern) to 0 (when all species are categorised as Extinct). An intermediate value indicates how far the set of species has moved overall towards extinction. Thus, the IUCN RLI allows comparisons between sets of species in both their overall *level* of extinction risk (i.e. how threatened they are on average), and in the *rate* at which this changes over time. A downward trend in the IUCN RLI over time means that the expected rate of future species extinctions is worsening (i.e. the rate of biodiversity loss is increasing). An upward trend means that the expected rate of species extinctions is abating (i.e. the rate of biodiversity loss is decreasing), and a horizontal line means that the expected rate of species extinctions is remaining the same, although in each of these cases it does not mean that biodiversity loss has stopped. Hence, to show that the target of significantly reducing the rate of biodiversity loss may have been met, an upward IUCN RLI trend is needed at the very least. An IUCN RLI value of 1.0 would show that biodiversity loss has been halted.

### Method of computation

The IUCN RLI is based on the proportion of species in each Red List Category, and changes in this proportion over time resulting from genuine improvement or deterioration in the status of individual species (i.e. category changes owing to revised taxonomy or improved knowledge are excluded). It can be calculated for any representative set of species that has been assessed for the IUCN Red List at least twice.

The formula for calculating earlier versions of the IUCN RLI (Butchart *et al.* 2004, 2005) has recently been improved and revised (Butchart *et al.* 2007), and this revision is summarised here.

At any particular point in time, the number of species in each Red List Category is multiplied by a weight (ranging from 1 for Near Threatened up to 5 for Extinct and Extinct in the Wild) and these products are then summed. The total is then divided by a 'maximum threat score' (the number of species multiplied by the weight assigned to the Extinct category). This final value is subtracted from 1 to give the IUCN RLI value, so that when all species are *Least Concern* the IUCN RLI is equal to 1, and when all species are *Extinct* the IUCN RLI is equal to 0.

Mathematically this can be expressed as:

$$RLI_t = 1 - \frac{\sum W_{c(t,s)}}{W_{EX} \cdot N}$$

Where  $W_{c(t,s)}$  is the weight for category  $c$  at time  $t$  for species  $s$  ( $W_{EX}$  is the weight assigned to *Extinct* species [5], with the weight for *Critically Endangered* = 4, *Endangered* = 3, *Vulnerable* = 2, *Near threatened* = 1 and *Least Concern* = 0), and  $N$  is the total number of assessed species, excluding those considered Data Deficient in the current time period, and those considered to be Extinct in the year the set of species was first assessed.

The formula requires that (a) exactly the same set of species is included in all time steps, and (b) the only category changes are those resulting from genuine improvement or deterioration in status (i.e. excluding changes resulting from improved knowledge or taxonomic revisions). In many cases, species lists will change slightly from one assessment to the next (e.g. owing to taxonomic revisions). The conditions can therefore be met by 'back-casting' (retrospectively correcting earlier Red List categorisations using current information and taxonomy) through assuming that the current Red List Categories for the taxa have applied since the set of species was first assessed, unless there is information to the contrary that genuine status changes have occurred. Such information is often contextual, e.g. relating to the known history of habitat loss within the range of the species (see Butchart *et al.* 2007 for further details). If there is insufficient information available to back-cast categories of extinction risk for a newly added species, it is not incorporated into the IUCN RLI until it is assessed subsequently for a second time, at which point earlier assessments are back-cast by extrapolating recent trends in population, range, habitat and threats, supported by additional information.

The IUCN RLI can be calculated for any set of species for which Red List assessments have been completed for all the species in the set at a minimum of two points in time. RLIs can be produced at global, regional, and national scales. The global IUCN RLI was initially designed and tested using data on all bird species for 1988–2004 (Butchart *et al.* 2004), and has since been applied to amphibians (Butchart *et al.* 2005), with a global mammal IUCN RLI in preparation. By 2010, IUCN RLI trends will also be available for

some plant groups (conifers and cycads), and for a more representative set of taxa based on a random sample of all vertebrates and selected plant groups. First data points for all reptiles and selected freshwater, marine and other plant groups will also be available by 2010 (Butchart *et al.* 2006), allowing calculation of trends thereafter.

In any particular group, trends can be shown for all species, or disaggregated by ecosystems, political areas, particular threatening processes, taxonomic subsets (e.g. families), or for suites of species relevant to particular international treaties or legislation.

## Comments and limitations

### Sources of uncertainty

There are four main sources of uncertainty associated with IUCN RLI values and trends. These derive from, and are being addressed in the following ways:

(a) Inadequate, incomplete or inaccurate knowledge of a species status; Minimised through the process of assessment whereby estimates of extinction risk are assigned to categories that are broad in magnitude and timing.

(b) Delays in knowledge about a species becoming available for assessment; Such delays apply to a small (and diminishing) proportion of status changes, and can be reflected in the IUCN RLI through back-casting.

(c) Inconsistency between species assessments; Minimised through the requirement to have supporting documentation detailing the best available data, with justifications, sources, and estimates of uncertainty and data quality, which are checked and standardised by IUCN through Red List Authorities, a Users' Working Group Unit and a Red List Standards and Petitions Working Group.

(d) Data Deficient species - species that are too poorly known for the Red List Criteria to be applied are assigned to the Data Deficient category, and excluded from the calculation of the IUCN RLI. For birds, only 0.8% of extant species are evaluated as Data Deficient, compared with 24% of amphibians. If Data Deficient species differ in the rate at which their extinction risk is changing, the IUCN RLI may give a biased picture of the changing extinction risk of the overall set of species. The degree of uncertainty this introduces can be quantified once a significant proportion of Data Deficient species have been re-assigned to other Red List Categories and then reassessed.

Inadequate knowledge is likely to be the most important source of uncertainty in most taxonomic groups. The magnitude of this uncertainty, and hence confidence limits, can

be calculated for each IUCN RLI by using established techniques for incorporating uncertainty into Red List assessments. Sampling bias applies only to IUCN RLIs based on sampled sets of species, an approach that is still being developed to increase the taxonomic breadth of IUCN RLIs.

### **Limitations**

The main limitation of the IUCN RLI is that it shows relatively low temporal resolution (because the Red List Categories are relatively broad measures of status, and the IUCN RLI can practically be updated only every four years). The IUCN RLI captures trends in one particular aspect of biodiversity: the rate that species are moving towards extinction and becoming extinct. Biodiversity encompasses a much wider spectrum, from genes, through populations and species to ecosystems. Species, however, have a particular resonance with the public and decision makers, and losing species through extinction is a particularly tangible and readily understandable component of biodiversity loss, as well as having clear relevance to ecological processes and ecosystem function. The IUCN RLI does not capture particularly well the deteriorating status of common species that are declining slowly as a result of general environmental degradation.

### **Sources of discrepancies between global and national figures**

The IUCN RLI can be applied at global, regional, and national scales. Global IUCN RLIs are based on repeated assessments of species' extinction risk at the global scale. While they can be disaggregated to show trends for species at smaller spatial scales, the reverse is not true. National or regional IUCN RLIs cannot be aggregated to produce IUCN RLIs showing global trends. This is because a taxon's global extinction risk has to be evaluated at the global scale and cannot be directly determined from multiple national scale assessments across its range (although the *data* from such assessments can be aggregated for inclusion in the global assessment). The IUCN RLI can be applied at sub-global scales in two ways:

(a) *IUCN RLIs based on global extinction risk.* Global IUCN RLIs can be disaggregated to show trends at finer scales. An advantage of this approach is that such data are already available for some taxonomic groups, and so national or regional indices can therefore be calculated without further data gathering. This approach works well for large ecological or political units, and countries with relatively high levels of endemism (e.g. Madagascar). However, for smaller countries that share many species with their neighbours, it may be difficult to determine whether a species' global status changed because of factors operating within that particular nation, and also the IUCN RLI becomes less robust with fewer species driving the index trends. If a country has many

endemic taxa (for which the global and national assessments of extinction risk will be identical), a national IUCN RLI can be calculated from the global Red List categories for the endemic species only. This will show national trends in extinction risk for the species in a country that are particularly significant at a global scale.

(b) *IUCN RLIs based on national or regional extinction risk.* Given the caveats outlined above, regional or national RLIs may be best developed from repeated Red List assessments of regional or national extinction risk. Guidelines are available on applying the IUCN Red List Categories and Criteria at regional or national scales (IUCN 2003). If all species within a particular region or country have been assessed at least twice using this approach, an IUCN RLI can be calculated using these data.

### **Process of obtaining data**

The Category and Criteria and associated documentation for each species on the IUCN Red List are provided principally by the Specialist Groups of the IUCN Species Survival Commission (comprising nearly 8,000 specialists with representatives in almost every country of the world), the BirdLife International partnership (composed of more than 100 autonomous national non-governmental organisations and their network of several thousand scientists and ornithologists), and the other IUCN Red List partner organisations (NatureServe, Zoological Society of London and the Center for Applied Biodiversity Science of Conservation International). The staffs of the IUCN Species Programme compile, validate, and curate these data and are responsible for publishing and communicating the results.

Red List assessments are made through an inclusive process, which is open to all interested parties and stakeholders, either through open workshops or open-access web-based discussion fora (e.g. <http://www.birdlifeforums.org>). Contributors include professional scientists, specialists and conservationists from a broad spectrum of institutions, including governments, museums, universities and local, national, regional and global non-governmental organisations. Assessments are given independent scientific review by the appropriate Red List Authority (an individual or organisation appointed by the IUCN SSC to review assessments for specific species or groups of species) to ensure standardisation and consistency in the interpretation of information and application of the criteria. A Biodiversity Assessments User's Working Group and the IUCN Red List Unit work to ensure consistent categorisation between species, groups and assessments. Finally, a Red List Standards and Petitions Working Group monitors the process and resolves challenges and disputes over Red List assessments.

All these data are stored and managed in the IUCN Red List database (IUCN's Species Information Service, SIS), and made freely available through the IUCN Red List website (<http://www.redlist.org>), which is updated annually.

## Treatment of missing values

### Geographic gaps

Global IUCN RLIs are based on assessments of species' extinction risk at a global level. The guidelines for applying the Red List Categories and Criteria (IUCN Red List Standards and Petitions Working Group 2007) provide guidance on how to deal with incomplete data (e.g. from particular countries within a species' range) through adopting a precautionary approach to drawing inferences from all available information (e.g. data from elsewhere in a species' range).

### Taxonomic gaps

The IUCN RLI can only be calculated when a set of species has been comprehensively reassessed (i.e. all species evaluated) at a second point in time. This is because if only a subset of species have been reassessed, these might represent a sample that is biased in some way (e.g. by geography, or degree of knowledge) and an IUCN RLI based on these partial data may not accurately reflect trends in the complete set of species.

### Temporal gaps

The data points for the IUCN RLI are based on the dates when the set of species was assessed. Once a time series of data are available, it is possible to interpolate values for missing years through linear modelling or other approaches. The method for calculating the IUCN RLI allows retrospective correction (back-casting) of previous assessments using the best and most recent information, which permits missing values (categories) to be determined for species that have been assessed for the first time (e.g. owing to taxonomic revisions, or new information allowing a previously Data Deficient species to be evaluated).

## Data availability

### Global IUCN Red List

The 2006 release of the IUCN Red List (IUCN 2006) included assessments for 40,168 species, spanning every country of the world, of which 16,118 species are threatened with extinction. This includes species from a broad range of taxonomic groups spanning vertebrates, invertebrates, plants and fungi. However, only a subset of groups has been

comprehensively assessed: birds (9,934 species, 12% threatened), mammals (5,416 species, 23% threatened), amphibians (5,918 species, 31% threatened) and gymnosperms (primarily conifers and cycads, 980 species, 34% threatened). A number of recent and ongoing initiatives are greatly improving the taxonomic coverage of the IUCN Red List. These include global assessments for amphibians (first comprehensive assessment completed in 2004), mammals (second comprehensive assessment due to be completed in 2008), reptiles, marine and freshwater species (several taxonomic groups), and plants (initially trees and legumes).

To calculate the IUCN RLI comprehensive assessments at two different time points are required. To date, only birds have been assessed more than once (four times, 1988–2004). Amphibians were comprehensively assessed for the first time in 2004 and their conservation status was also retrospectively assessed for 1980, allowing a preliminary IUCN RLI to be calculated for 1980–2004. Mammals and cycads will be reassessed by 2008, permitting IUCN RLIs to be calculated for these groups as well. Once groups have been completely assessed, they ideally (depending on available resources) will be reassessed at four-yearly intervals thereafter (e.g. the fifth assessment for birds is due in 2008).

In recognition that it will take time to carry out comprehensive assessments for some poorly known but species-rich groups, and that it will be difficult to repeat these regularly, IUCN has developed an IUCN RLI based on a randomised sample of at least 1,500 species starting with 15 major taxonomic groups representing vertebrates, invertebrates and plants. In the future this will be expanded to include fungi and algae. This IUCN RLI sampled approach (IUCN SRLI) will provide an indicator of trends in global extinction risk for a broader spectrum of biodiversity. It will give the first estimate of the status of fish and reptiles (and therefore the first estimate of the status of all vertebrate classes) by 2007, with trends in extinction risk available by 2010, once the fish and reptile groups have been retrospectively assessed.

The lag between the reference year and actual production of data series is up to one year.

Data are produced every four years for birds. Assessments for other taxa are still under development.

### **National Red Lists**

Most countries of the world have initiated programmes to assess the status of their species. As a result, at least 122 countries have published one or more national Red Data

Books or Red Lists. Of these, at least 77 countries are using the IUCN Red List Categories and Criteria, either fully or in part, and many others intend to do so in future. These countries are in the best position to implement the IUCN RLI nationally, once they have carried out at least two national Red Lists using the IUCN system in a consistent way. To date, no country is known to have done this, and hence no national RLIs using this approach have been published yet. IUCN, UNEP, the CBD and other agencies are developing programmes to expand national-level capacity for developing biodiversity indicators in support of the 2010 biodiversity target and the MDGs, which will lead to a growing number of national IUCN RLIs in the future, particularly in developing countries.

### **Regional and Global estimates**

The IUCN RLI can be applied at global, regional, and national scales. Global IUCN RLIs are based on repeated assessments of species' extinction risk at the global scale. While they can be disaggregated to show trends for species at smaller spatial scales, the reverse is not true. National or regional IUCN RLIs cannot be aggregated to produce IUCN RLIs showing global trends. This is because a taxon's global extinction risk has to be evaluated at the global scale and cannot be directly determined from multiple national scale assessments across its range (although the data from such assessments can be aggregated for inclusion in the global assessment). The IUCN RLI can be applied at sub-global scales in two ways:

(a) IUCN RLIs based on global extinction risk. Global IUCN RLIs can be disaggregated to show trends at finer scales. An advantage of this approach is that such data are already available for some taxonomic groups, and so national or regional indices can therefore be calculated without further data gathering. This approach works well for large ecological or political units and countries with relatively high levels of endemism (e.g. Madagascar). However, for smaller countries that share many species with their neighbours, it may be difficult to determine whether a species' global status changed because of factors operating within that particular nation, and also the IUCN RLI becomes less robust with fewer species driving the index trends. If a country has many endemic taxa (for which the global and national assessments of extinction risk will be identical), a national IUCN RLI can be calculated from the global Red List categories for the endemic species only. This will show national trends in extinction risk for the species in a country that are particularly significant at a global scale.

(b) IUCN RLIs based on national or regional extinction risk. Given the caveats outlined above, regional or national RLIs may be best developed from repeated Red List assessments of regional or national extinction risk. Guidelines are available on applying the IUCN Red List Categories and Criteria at regional or national scales (IUCN 03). If all

species within a particular region or country have been assessed at least twice using this approach, an IUCN RLI can be calculated using these data.

### **Expected time of release**

The global IUCN Red List is updated annually in October. IUCN RLIs for any sets of species that have been comprehensively reassessed in that year are released alongside the update of the IUCN Red List. Data stored and managed in the IUCN Red List database (IUCN's Species Information Service, SIS) are made freely available through the IUCN Red List website : <http://www.redlist.org>

### **Please refer to series metadata**

## **Employment-to-population ratio, men, percentage**

### **Contact point in international agency**

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### **Definition**

The employment-to-population ratio is the proportion of a country's working-age population that is employed.

Employment is defined as persons above a specified age who performed any work at all, in the reference period, for pay or profit (or pay in kind), or were temporarily absent from a job for such reasons as illness, maternity or parental leave, holiday, training or industrial dispute. Unpaid family workers who work for at least one hour should be included in the count of employment, although many countries use a higher hour limit in their definition. <sup>1</sup>

For most countries, the working-age population is defined as persons aged 15 years and older, although this may vary slightly from country to country.

For further information see: <http://www.ilo.org/trends>

<sup>1</sup> *For additional details see the resolution concerning statistics of the economically*

*active population, employment, unemployment and underemployment, adopted by the 13th International Conference of Labour Statisticians, Geneva, 1982, available at: <http://http://www.ilo.org/public/english/bureau/stat/download/res/ecacpop.pdf>*

### **Method of computation**

The employment-to-population ratios are calculated by expressing the number of persons in employment as a percentage of the population for the corresponding sex and age group (either working-age or youth).

### **Comments and limitations**

The ILO standard for the lower age limit is 15 years. For many countries, this age corresponds directly to societal standards for education and work eligibility. However, in some countries, particularly developing ones, it is often appropriate to include younger workers because “working age” can, and often does, begin earlier. Some countries in these circumstances use a lower official bound and include younger workers in their measurements. Similarly, some countries have an upper limit for eligibility, such as 65 or 70 years, although this requirement is imposed rather infrequently (examples are Egypt (upper limit 64 years) and Finland (upper limit 74 years)).

Apart from issues related to age, the population base for employment ratios can vary across countries. In most cases, the resident non-institutional population of working age living in private households is used, excluding members of the armed forces and individuals residing in mental, penal or other types of institution. Many countries, however, include the armed forces in the population base for their employment ratios even when they do not include them in the employment figures.

Comparability of employment ratios across countries is affected most significantly by variations in the definitions used for the employment and population figures, as described above. Perhaps the biggest differences result from age coverage, such as the lower and upper bounds for labour force activity. Estimates of both employment and population are likely to vary according to whether members of the armed forces are included. To a large extent, these comparability issues have been addressed in the construction of the table as employment and population figures are harmonized.

However, the use of nationally reported data in the construction of the estimates can also create issues with comparability due to the nature of the data source. National labour force surveys tend to be similar in several essential features, and data derived from them are likely to be more comparable than data obtained from other sources or from a combination of different sources. Nevertheless, despite their strength, labour force survey data may contain non-comparable elements in terms of scope and coverage or variations in national definitions of the employment concept.

An example of measurement differences that can arise has to do with the national treatment of particular groups of workers. The international definition, as stated above, calls for inclusion of all persons who worked for at least one hour during the reference period. The worker could be in paid employment or in self employment or engaged in less obvious forms of work, each of which is dealt with in detail in the resolution, such as unpaid family work, apprenticeship or non-market production. The majority of exceptions to coverage of all persons employed in a labour force survey have to do with slight national variations to the international recommendation applicable to the alternate employment statuses. For example, some countries measure persons employed in paid employment only (United States Virgin Island) and some countries measure only "all persons engaged" (Albania until 2002, Lithuania until 1993, Malta until 1999), meaning paid employees plus working proprietors who receive some remuneration based on corporate shares. Additional, although of less significance, variations that apply to the "norms" pertaining to measurement of total employment include hours limits (beyond one hour) placed on contributing family members before inclusion. The United States, for example, includes only contributing family members who worked more than 15 hours per week during the reference period.

For most cases, household labour force surveys are used, and they provide estimates that are consistent with ILO definitional and collection standards. A small number of countries use other sources, such as population censuses or official estimates, which can cause problems of comparability at the international level. Ratios may diverge slightly from nationally reported figures because of the harmonization process.

### **Sources of discrepancies between global and national figures**

Nationally reported data are utilized only when these meet strict criteria in terms of international comparability and geographic coverage. Model estimates are used where national data are not available or satisfactory. See "Comments and Limitations" section for additional details of sources of discrepancies.

### **Process of obtaining data**

The ILO has made an intensive effort to assemble data on labour market indicators for as many countries, areas and territories as possible. Where there is no information for a country, it is usually because the country involved was not in a position to provide information for the indicator. Even when information for an indicator was available, it may not have been sufficiently current or may not have met other qualifications established for inclusion in the Key Indicators of the Labour Market (KILM), on which the information for the employment-to-population rate is based.

In compiling the KILM, the ILO concentrates on bringing together information from international repositories. In other words, the KILM team rarely collects information directly from national sources, but rather takes advantage of existing compilations held by various organizations, such as the following:

International Labour Office (Bureau of Statistics)

United Nations Statistics Division

Organisation for Economic Co-operation and Development (OECD)

World Bank

United Nations Industrial Development Organization (UNIDO)

Statistical Office of the European Union (EUROSTAT)

United Nations Educational, Scientific and Cultural Organization (UNESCO)

United States Bureau of Labor Statistics (BLS)

Information maintained by these organizations has generally been obtained from national sources or is based on official national publications.

Whenever information was available from more than one repository, the information and background documentation from each repository was reviewed in order to select the information most suitable for inclusion, based on an assessment of the general reliability of the sources, the availability of methodological information and explanatory notes regarding the scope of coverage, the availability of information by sex and age, and the degree of historical coverage. Occasionally, two data repositories have been chosen and presented for a single country; any resulting breaks in the historical series are duly noted.

For countries with less-developed labour market information systems, such as those in the developing economies, information may not be easily available. Many of these countries, however, do collect labour market information through household and establishment surveys, population censuses and administrative records, so that the main problem remains the communication of such information to the global community. In this situation, the ILO Labour Market Indicators Library (LMIL) programme was used. The LMIL is a system for sharing information between the ILO regional offices and headquarters. ILO regional offices are closer to the original micro-sources of data and

have therefore been successful in filling in numerous gaps where data at headquarters – used in the production of the KILM – had not existed. It is an ongoing programme that continues to assist the KILM and other ILO publications and research programmes in the expansion of its country and yearly coverage of indicators.

### **Treatment of missing values**

See “Regional and Global Estimates”, below.

### **Data availability**

Data are available for over 176 economies.

The lag between the reference year and actual production of data series is one year or more. Data are produced at least annually.

### **Regional and Global estimates**

The biggest challenge in the production of aggregate estimates is that of missing data. In an ideal world, producing world and regional estimates of labour market indicators, such as employment, for example, would simply require summing up the total number of employed persons across all countries in the world or within a given region. However, because not all countries report data in every year and, indeed, some countries do not report data for any years at all, it is not possible to derive aggregate estimates of labour market indicators by merely summing across countries.

To address the problem of missing data, the ILO Employment Trends Unit has designed and actively maintains two econometric models which are used to produce estimates of labour market indicators in the countries and years for which no real data exist. The Global Employment Trends Model (GET Model) is used to produce estimates – disaggregated by age and sex – of employment-to-population ratios and other indicators. The world and regional labour force estimates are produced using the Trends Labour Force Model (TLF Model).

Each of these models uses multivariate regression techniques to impute missing values at the country level. The first step in each model is to assemble every known piece of real information (i.e. every real data point) for each indicator in question. It is important to note that only data that are national in coverage and comparable across countries and over time are used as inputs. This is an important selection criterion when the models are run, because they are designed to use the relationship between the various labour market indicators and their macroeconomic correlates (such as per-capita GDP, GDP growth rates, demographic trends, country membership in the Highly Indebted Poor Country (HIPC) Initiative, geographic indicators and country and time dummy variables)

in order to produce estimates of the labour market indicators where no data exist. Thus, the comparability of the labour market data that are used as inputs in the imputation models is essential to ensure that the models accurately capture the relationship between the labour market indicators and the macroeconomic variables.

The last step of the estimation procedure occurs once the datasets containing both the real and imputed labour market data have been assembled. In this step, the ILO Trends Team aggregates the data across countries to produce the final world and regional estimates. For further information on the world and regional econometric models, readers can consult the technical background papers available at the following website: <http://www.ilo.org/trends>

### **Expected time of release**

Data are published every two years, in September, in the Key Indicators of the Labour Market report.

## **Employment-to-population ratio, women, percentage**

### **Contact point in international agency**

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### **Definition**

The employment-to-population ratio is the proportion of a country's working-age population that is employed.

Employment is defined as persons above a specified age who performed any work at all, in the reference period, for pay or profit (or pay in kind), or were temporarily absent from a job for such reasons as illness, maternity or parental leave, holiday, training or industrial dispute. Unpaid family workers who work for at least one hour should be included in the count of employment, although many countries use a higher hour limit in their definition. <sup>1</sup>

For most countries, the working-age population is defined as persons aged 15 years and older, although this may vary slightly from country to country.

For further information see: <http://www.ilo.org/trends>

- 1 *For additional details see the resolution concerning statistics of the economically active population, employment, unemployment and underemployment, adopted by the 13th International Conference of Labour Statisticians, Geneva, 1982, available at: <http://http://www.ilo.org/public/english/bureau/stat/download/res/ecacpop.pdf>*

### **Method of computation**

The employment-to-population ratios are calculated by expressing the number of persons in employment as a percentage of the population for the corresponding sex and age group (either working-age or youth).

### **Comments and limitations**

The ILO standard for the lower age limit is 15 years. For many countries, this age corresponds directly to societal standards for education and work eligibility. However, in some countries, particularly developing ones, it is often appropriate to include younger workers because “working age” can, and often does, begin earlier. Some countries in these circumstances use a lower official bound and include younger workers in their measurements. Similarly, some countries have an upper limit for eligibility, such as 65 or 70 years, although this requirement is imposed rather infrequently (examples are Egypt (upper limit 64 years) and Finland (upper limit 74 years)).

Apart from issues related to age, the population base for employment ratios can vary across countries. In most cases, the resident non-institutional population of working age living in private households is used, excluding members of the armed forces and individuals residing in mental, penal or other types of institution. Many countries, however, include the armed forces in the population base for their employment ratios even when they do not include them in the employment figures.

Comparability of employment ratios across countries is affected most significantly by variations in the definitions used for the employment and population figures, as described above. Perhaps the biggest differences result from age coverage, such as the lower and upper bounds for labour force activity. Estimates of both employment and population are likely to vary according to whether members of the armed forces are included. To a large extent, these comparability issues have been addressed in the construction of the table as employment and population figures are harmonized.

However, the use of nationally reported data in the construction of the estimates can also create issues with comparability due to the nature of the data source. National

labour force surveys tend to be similar in several essential features, and data derived from them are likely to be more comparable than data obtained from other sources or from a combination of different sources. Nevertheless, despite their strength, labour force survey data may contain non-comparable elements in terms of scope and coverage or variations in national definitions of the employment concept.

An example of measurement differences that can arise has to do with the national treatment of particular groups of workers. The international definition, as stated above, calls for inclusion of all persons who worked for at least one hour during the reference period. The worker could be in paid employment or in self employment or engaged in less obvious forms of work, each of which is dealt with in detail in the resolution, such as unpaid family work, apprenticeship or non-market production. The majority of exceptions to coverage of all persons employed in a labour force survey have to do with slight national variations to the international recommendation applicable to the alternate employment statuses. For example, some countries measure persons employed in paid employment only (United States Virgin Island) and some countries measure only “all persons engaged” (Albania until 2002, Lithuania until 1993, Malta until 1999), meaning paid employees plus working proprietors who receive some remuneration based on corporate shares. Additional, although of less significance, variations that apply to the “norms” pertaining to measurement of total employment include hours limits (beyond one hour) placed on contributing family members before inclusion. The United States, for example, includes only contributing family members who worked more than 15 hours per week during the reference period.

For most cases, household labour force surveys are used, and they provide estimates that are consistent with ILO definitional and collection standards. A small number of countries use other sources, such as population censuses or official estimates, which can cause problems of comparability at the international level. Ratios may diverge slightly from nationally reported figures because of the harmonization process.

### **Sources of discrepancies between global and national figures**

Nationally reported data are utilized only when these meet strict criteria in terms of international comparability and geographic coverage. Model estimates are used where national data are not available or satisfactory. See “Comments and Limitations” section for additional details of sources of discrepancies.

### **Process of obtaining data**

The ILO has made an intensive effort to assemble data on labour market indicators for as many countries, areas and territories as possible. Where there is no information for a

country, it is usually because the country involved was not in a position to provide information for the indicator. Even when information for an indicator was available, it may not have been sufficiently current or may not have met other qualifications established for inclusion in the Key Indicators of the Labour Market (KILM), on which the information for the employment-to-population rate is based.

In compiling the KILM, the ILO concentrates on bringing together information from international repositories. In other words, the KILM team rarely collects information directly from national sources, but rather takes advantage of existing compilations held by various organizations, such as the following:

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United Nations Educational, Scientific and Cultural Organization (UNESCO)

United States Bureau of Labor Statistics (BLS)

Information maintained by these organizations has generally been obtained from national sources or is based on official national publications.

Whenever information was available from more than one repository, the information and background documentation from each repository was reviewed in order to select the information most suitable for inclusion, based on an assessment of the general reliability of the sources, the availability of methodological information and explanatory notes regarding the scope of coverage, the availability of information by sex and age, and the degree of historical coverage. Occasionally, two data repositories have been chosen and presented for a single country; any resulting breaks in the historical series are duly noted.

For countries with less-developed labour market information systems, such as those in the developing economies, information may not be easily available. Many of these

countries, however, do collect labour market information through household and establishment surveys, population censuses and administrative records, so that the main problem remains the communication of such information to the global community. In this situation, the ILO Labour Market Indicators Library (LMIL) programme was used. The LMIL is a system for sharing information between the ILO regional offices and headquarters. ILO regional offices are closer to the original micro-sources of data and have therefore been successful in filling in numerous gaps where data at headquarters – used in the production of the KILM – had not existed. It is an ongoing programme that continues to assist the KILM and other ILO publications and research programmes in the expansion of its country and yearly coverage of indicators.

### **Treatment of missing values**

See “Regional and Global Estimates”, below.

### **Data availability**

Data are available for over 176 economies.

The lag between the reference year and actual production of data series is one year or more. Data are produced at least annually.

### **Regional and Global estimates**

The biggest challenge in the production of aggregate estimates is that of missing data. In an ideal world, producing world and regional estimates of labour market indicators, such as employment, for example, would simply require summing up the total number of employed persons across all countries in the world or within a given region. However, because not all countries report data in every year and, indeed, some countries do not report data for any years at all, it is not possible to derive aggregate estimates of labour market indicators by merely summing across countries.

To address the problem of missing data, the ILO Employment Trends Unit has designed and actively maintains two econometric models which are used to produce estimates of labour market indicators in the countries and years for which no real data exist. The Global Employment Trends Model (GET Model) is used to produce estimates – disaggregated by age and sex – of employment-to-population ratios and other indicators. The world and regional labour force estimates are produced using the Trends Labour Force Model (TLF Model).

Each of these models uses multivariate regression techniques to impute missing values at the country level. The first step in each model is to assemble every known piece of real information (i.e. every real data point) for each indicator in question. It is important to

note that only data that are national in coverage and comparable across countries and over time are used as inputs. This is an important selection criterion when the models are run, because they are designed to use the relationship between the various labour market indicators and their macroeconomic correlates (such as per-capita GDP, GDP growth rates, demographic trends, country membership in the Highly Indebted Poor Country (HIPC) Initiative, geographic indicators and country and time dummy variables) in order to produce estimates of the labour market indicators where no data exist. Thus, the comparability of the labour market data that are used as inputs in the imputation models is essential to ensure that the models accurately capture the relationship between the labour market indicators and the macroeconomic variables.

The last step of the estimation procedure occurs once the datasets containing both the real and imputed labour market data have been assembled. In this step, the ILO Trends Team aggregates the data across countries to produce the final world and regional estimates. For further information on the world and regional econometric models, readers can consult the technical background papers available at the following website: <http://www.ilo.org/trends>

### **Expected time of release**

Data are published every two years, in September, in the Key Indicators of the Labour Market report.

## **Proportion of own-account and contributing family workers in total employment, men, percentage**

### **Contact point in international agency**

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### **Definition**

Vulnerable employment is defined as the sum of the employment status groups of own-account workers and contributing family workers.

Own-account workers are those workers who, working on their own account or with one or more partners, hold the type of jobs defined as a self-employment jobs (i.e. remuneration is directly dependent upon the profits derived from the goods and services produced), and have not engaged on a continuous basis any employees to work for them during the reference period.

Contributing family workers, also known as unpaid family workers, are those workers who are self-employed, as own-account workers in a market-oriented establishment operated by a related person living in the same household.

For further information see: <http://www.ilo.org/trends>

### Method of computation

The share of vulnerable employment is calculated as the sum of contributing family workers and own-account workers as a percentage of total employment.

The indicator of status in employment – used to identify people in vulnerable employment – distinguishes between three categories of the employed, following the International Classification by Status in Employment (ICSE), approved by the United Nations Statistical Commission in 1958 and revised at the 15th International Conference of Labour Statisticians (ICLS) in 1993: (1) wage and salary workers; (2) contributing family workers; and, (3) self-employed workers, including self-employed workers with employees (employers), self-employed workers without employees (own-account workers) and members of producers' cooperatives.

1. **Employees** are all those workers who hold the type of jobs defined as “paid employment jobs”, where the incumbents hold explicit (written or oral) or implicit employment contracts that give them a basic remuneration that is not directly dependent upon the revenue of the unit for which they work.
2. **Employers** are those workers who, working on their own account or with one or a few partners, hold the type of jobs defined as a “self-employment jobs” (i.e. jobs where the remuneration is directly dependent upon the profits derived from the goods and services produced), and, in this capacity, have engaged, on a continuous basis, one or more persons to work for them as employee(s).
3. **Own-account workers** are those workers who, working on their own account or with one or more partners, hold the type of jobs defined as a “self-employment jobs” [see ii above], and have not engaged on a continuous basis any employees to work for them.
4. **Members of producers' cooperatives** are workers who hold “self-employment jobs” [see ii or iii above] in a cooperative producing goods and services.
5. **Contributing family workers** are those workers who hold “self-employment jobs” as own-account workers [see iii above] in a market-oriented establishment operated by a related person living in the same household.

6. **Workers not classifiable by status** include those for whom insufficient relevant information is available, and/or who cannot be included in any of the preceding categories.

### Comments and limitations

When using the indicator on status in employment to assess vulnerable employment, one has to bear in mind that there are often differences in definitions, as well as in coverage, across countries and for different years, resulting from variations in information sources and methodologies that make comparisons difficult.

Some definitional changes or differences in coverage can be overlooked. For example, it is not likely to be significant that status-in-employment comparisons are made between countries using information from labour force surveys with differing age coverage. (The generally used age coverage is 15 years and over, but some countries use a different lower limit or impose an upper age limit.) In addition, in a limited number of cases one category of self-employed – the members of producers' cooperatives – are included with wage and salaried workers (Czech Republic and Poland). The effects of this non-standard grouping are likely to be small.

What is more important to note is that information from labour force surveys is not necessarily consistent in terms of what is included in employment. For example, the information supplied by the OECD relates to civilian employment, which can result in an underestimation of "employees" and "workers not classifiable by status", especially in countries that have large armed forces. The other two categories, self-employed and contributing family workers, would not be affected, although their relative shares would be.

With respect to geographic coverage, information from a source that covers only urban areas or only particular cities cannot be compared fairly with information from sources that cover both rural and urban areas, that is, the entire country. It is, therefore, not meaningful to compare results from many of the Latin American countries with results from the rest of the world because employment-by status information for most Latin American countries relates to urban areas only. Similarly, for some sub-Saharan African countries – where very limited information is available anyway – the self-employed group often does not include members of producers' cooperatives, while for other countries it may.

For "wage and salaried workers" one needs to be careful about the coverage, noting whether, as mentioned above, it refers only to the civilian population or to the total population. Moreover, the status-in-employment distinctions used in this chapter do not

allow for finer distinctions in working status – in other words, whether workers have casual or regular contracts and the kind of protection the contracts provide against dismissals, as all wage and salaried workers are grouped together.

### **Sources of discrepancies between global and national figures**

Population and labour force are derived from nationally reported data and harmonized labour force data. The labour force data are harmonized to account for differences in national data and scope of coverage, collection and tabulation methodologies as well as for other country specific factors such as military service requirements. Furthermore, nationally reported data are utilized only when these meet strict criteria in terms of international comparability and geographic coverage. Model estimates are used where national data are not available or satisfactory. See “Comments and Limitations” section for additional details of sources of discrepancies.

### **Process of obtaining data**

In compiling the KILM, the ILO concentrates on bringing together information from international repositories. In other words, the KILM team rarely collects information directly from national sources, but rather takes advantage of existing compilations held by various organizations, such as the following:

International Labour Office (Bureau of Statistics)

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United Nations Industrial Development Organization (UNIDO)

Statistical Office of the European Union (EUROSTAT)

United Nations Educational, Scientific and Cultural Organization (UNESCO)

United States Bureau of Labor Statistics (BLS)

Most of the information for the indicator Status in Employment is gathered from three international repositories of labour market data: (a) the ILO Bureau of Statistics, Yearbook of Labour Statistics (LABORSTA) database, (b) the Organisation for Economic Co-operation and Development (OECD); and the ILO Labour Market Indicators Library (LMIL). Additional documentation regarding national practices in the collection of

statistics is provided in ILO: *Sources and Methods: Labour Statistics*, Vol. 3: *Economically Active Population, Employment, Unemployment and Hours of Work (Household Surveys)*; Vol. 5: *Total and Economically Active Population, Employment and Unemployment (Population Censuses)*. The *Sources and Methods* are available online at the country level on website: <http://laborista.ilo.org>

Information maintained by these organizations has generally been obtained from national sources or is based on official national publications.

Whenever information was available from more than one repository, the information and background documentation from each repository was reviewed in order to select the information most suitable for inclusion, based on an assessment of the general reliability of the sources, the availability of methodological information and explanatory notes regarding the scope of coverage, the availability of information by sex and age, and the degree of historical coverage. Occasionally, two data repositories have been chosen and presented for a single country; any resulting breaks in the historical series are duly noted.

For countries with less-developed labour market information systems, such as those in the developing economies, information may not be easily available to policy-makers and the social partners, and even less so to international organizations seeking to compile global data sets. Many of these countries, however, do collect labour market information through household and establishment surveys, population censuses and administrative records, so that the main problem remains the communication of such information to the global community. In this situation, the ILO Labour Market Indicators Library (LMIL) programme is used. The LMIL is a system for sharing information between the ILO regional offices and headquarters. ILO regional offices are closer to the original micro-sources of data and have therefore been successful in filling in numerous gaps where data at headquarters – used in the production of the KILM – had not existed. It is an ongoing programme that continues to assist the KILM and other ILO publications and research programmes in the expansion of its country and yearly coverage of indicators.

### **Treatment of missing values**

See “Regional and Global Estimates”, below.

### **Data availability**

The information for the indicator on status in employment is included, at least to some extent, for 131 economies.

Data are available for most developed economies, as well as for many Central and Eastern European, Eastern Asian, Latin American and Caribbean countries. Unfortunately, there are only a few sub-Saharan African countries for which this indicator is available and, where coverage does exist, extensive time series are lacking. Currently, information is also unavailable for some large developing countries, such as China and India.

The lag between the reference year and actual production of data series is one year or more.

Data are produced at least annually.

### **Regional and Global estimates**

The biggest challenge in the production of aggregate estimates is that of missing data. In an ideal world, producing world and regional estimates of labour market indicators, such as employment, for example, would simply require summing up the total number of employed persons across all countries in the world or within a given region. However, because not all countries report data in every year and, indeed, some countries do not report data for any years at all, it is not possible to derive aggregate estimates of labour market indicators by merely summing across countries.

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Each of these models uses multivariate regression techniques to impute missing values at the country level. The first step in each model is to assemble every known piece of real information (i.e. every real data point) for each indicator in question. It is important to note that only data that are national in coverage and comparable across countries and over time are used as inputs. This is an important selection criterion when the models are run, because they are designed to use the relationship between the various labour market indicators and their macroeconomic correlates (such as per-capita GDP, GDP growth rates, demographic trends, country membership in the Highly Indebted Poor Country (HIPC) Initiative, geographic indicators and country and time dummy variables) in order to produce estimates of the labour market indicators where no data exist. Thus, the comparability of the labour market data that are used as inputs in the imputation

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<http://www.ilo.org/public/english/employment/strat/wrest.htm>

### **Expected time of release**

Data are published every two years, usually in September, in the Key Indicators of the Labour Market report.

## **Proportion of own-account and contributing family workers in total employment, women, percentage**

### **Contact point in international agency**

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### **Definition**

Vulnerable employment is defined as the sum of the employment status groups of own-account workers and contributing family workers.

Own-account workers are those workers who, working on their own account or with one or more partners, hold the type of jobs defined as a self-employment jobs (i.e. remuneration is directly dependent upon the profits derived from the goods and services produced), and have not engaged on a continuous basis any employees to work for them during the reference period.

Contributing family workers, also known as unpaid family workers, are those workers who are self-employed, as own-account workers in a market-oriented establishment operated by a related person living in the same household.

For further information see: <http://www.ilo.org/trends>

### Method of computation

The share of vulnerable employment is calculated as the sum of contributing family workers and own-account workers as a percentage of total employment.

The indicator of status in employment – used to identify people in vulnerable employment – distinguishes between three categories of the employed, following the International Classification by Status in Employment (ICSE), approved by the United Nations Statistical Commission in 1958 and revised at the 15th International Conference of Labour Statisticians (ICLS) in 1993: (1) wage and salary workers; (2) contributing family workers; and, (3) self-employed workers, including self-employed workers with employees (employers), self-employed workers without employees (own-account workers) and members of producers' cooperatives.

1. **Employees** are all those workers who hold the type of jobs defined as “paid employment jobs”, where the incumbents hold explicit (written or oral) or implicit employment contracts that give them a basic remuneration that is not directly dependent upon the revenue of the unit for which they work.
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3. **Own-account workers** are those workers who, working on their own account or with one or more partners, hold the type of jobs defined as a “self-employment jobs” [see ii above], and have not engaged on a continuous basis any employees to work for them.
4. **Members of producers' cooperatives** are workers who hold “self-employment jobs” [see ii or iii above] in a cooperative producing goods and services.
5. **Contributing family workers** are those workers who hold “self-employment jobs” as own-account workers [see iii above] in a market-oriented establishment operated by a related person living in the same household.
6. **Workers not classifiable by status** include those for whom insufficient relevant information is available, and/or who cannot be included in any of the preceding categories.

## Comments and limitations

When using the indicator on status in employment to assess vulnerable employment, one has to bear in mind that there are often differences in definitions, as well as in coverage, across countries and for different years, resulting from variations in information sources and methodologies that make comparisons difficult.

Some definitional changes or differences in coverage can be overlooked. For example, it is not likely to be significant that status-in-employment comparisons are made between countries using information from labour force surveys with differing age coverage. (The generally used age coverage is 15 years and over, but some countries use a different lower limit or impose an upper age limit.) In addition, in a limited number of cases one category of self-employed – the members of producers' cooperatives – are included with wage and salaried workers (Czech Republic and Poland). The effects of this non-standard grouping are likely to be small.

What is more important to note is that information from labour force surveys is not necessarily consistent in terms of what is included in employment. For example, the information supplied by the OECD relates to civilian employment, which can result in an underestimation of "employees" and "workers not classifiable by status", especially in countries that have large armed forces. The other two categories, self-employed and contributing family workers, would not be affected, although their relative shares would be.

With respect to geographic coverage, information from a source that covers only urban areas or only particular cities cannot be compared fairly with information from sources that cover both rural and urban areas, that is, the entire country. It is, therefore, not meaningful to compare results from many of the Latin American countries with results from the rest of the world because employment-by status information for most Latin American countries relates to urban areas only. Similarly, for some sub-Saharan African countries – where very limited information is available anyway – the self-employed group often does not include members of producers' cooperatives, while for other countries it may.

For "wage and salaried workers" one needs to be careful about the coverage, noting whether, as mentioned above, it refers only to the civilian population or to the total population. Moreover, the status-in-employment distinctions used in this chapter do not allow for finer distinctions in working status – in other words, whether workers have casual or regular contracts and the kind of protection the contracts provide against dismissals, as all wage and salaried workers are grouped together.

## Sources of discrepancies between global and national figures

Population and labour force are derived from nationally reported data and harmonized labour force data. The labour force data are harmonized to account for differences in national data and scope of coverage, collection and tabulation methodologies as well as for other country specific factors such as military service requirements. Furthermore, nationally reported data are utilized only when these meet strict criteria in terms of international comparability and geographic coverage. Model estimates are used where national data are not available or satisfactory. See “Comments and Limitations” section for additional details of sources of discrepancies.

## Process of obtaining data

In compiling the KILM, the ILO concentrates on bringing together information from international repositories. In other words, the KILM team rarely collects information directly from national sources, but rather takes advantage of existing compilations held by various organizations, such as the following:

International Labour Office (Bureau of Statistics)

United Nations Statistics Division

Organisation for Economic Co-operation and Development (OECD)

World Bank

United Nations Industrial Development Organization (UNIDO)

Statistical Office of the European Union (EUROSTAT)

United Nations Educational, Scientific and Cultural Organization (UNESCO)

United States Bureau of Labor Statistics (BLS)

Most of the information for the indicator Status in Employment is gathered from three international repositories of labour market data: (a) the ILO Bureau of Statistics, Yearbook of Labour Statistics (LABORSTA) database, (b) the Organisation for Economic Co-operation and Development (OECD); and the ILO Labour Market Indicators Library (LMIL). Additional documentation regarding national practices in the collection of statistics is provided in ILO: *Sources and Methods: Labour Statistics*, Vol. 3: *Economically Active Population, Employment, Unemployment and Hours of Work (Household Surveys)*; Vol. 5: *Total and Economically Active Population, Employment and Unemployment*

(*Population Censuses*). The *Sources and Methods* are available online at the country level on website: <http://laborista.ilo.org>

Information maintained by these organizations has generally been obtained from national sources or is based on official national publications.

Whenever information was available from more than one repository, the information and background documentation from each repository was reviewed in order to select the information most suitable for inclusion, based on an assessment of the general reliability of the sources, the availability of methodological information and explanatory notes regarding the scope of coverage, the availability of information by sex and age, and the degree of historical coverage. Occasionally, two data repositories have been chosen and presented for a single country; any resulting breaks in the historical series are duly noted.

For countries with less-developed labour market information systems, such as those in the developing economies, information may not be easily available to policy-makers and the social partners, and even less so to international organizations seeking to compile global data sets. Many of these countries, however, do collect labour market information through household and establishment surveys, population censuses and administrative records, so that the main problem remains the communication of such information to the global community. In this situation, the ILO Labour Market Indicators Library (LMIL) programme is used. The LMIL is a system for sharing information between the ILO regional offices and headquarters. ILO regional offices are closer to the original micro-sources of data and have therefore been successful in filling in numerous gaps where data at headquarters – used in the production of the KILM – had not existed. It is an ongoing programme that continues to assist the KILM and other ILO publications and research programmes in the expansion of its country and yearly coverage of indicators.

### **Treatment of missing values**

See “Regional and Global Estimates”, below.

### **Data availability**

The information for the indicator on status in employment is included, at least to some extent, for 131 economies.

Data are available for most developed economies, as well as for many Central and Eastern European, Eastern Asian, Latin American and Caribbean countries. Unfortunately, there are only a few sub-Saharan African countries for which this indicator is available

and, where coverage does exist, extensive time series are lacking. Currently, information is also unavailable for some large developing countries, such as China and India.

The lag between the reference year and actual production of data series is one year or more.

Data are produced at least annually.

### **Regional and Global estimates**

The biggest challenge in the production of aggregate estimates is that of missing data. In an ideal world, producing world and regional estimates of labour market indicators, such as employment, for example, would simply require summing up the total number of employed persons across all countries in the world or within a given region. However, because not all countries report data in every year and, indeed, some countries do not report data for any years at all, it is not possible to derive aggregate estimates of labour market indicators by merely summing across countries.

To address the problem of missing data, the ILO Employment Trends Unit has designed and actively maintains two econometric models which are used to produce estimates of labour market indicators in the countries and years for which no real data exist. The Global Employment Trends Model (GET Model) is used to produce estimates – disaggregated by age and sex – of employment-to-population ratios and other indicators. The world and regional labour force estimates are produced using the Trends Labour Force Model (TLF Model).

Each of these models uses multivariate regression techniques to impute missing values at the country level. The first step in each model is to assemble every known piece of real information (i.e. every real data point) for each indicator in question. It is important to note that only data that are national in coverage and comparable across countries and over time are used as inputs. This is an important selection criterion when the models are run, because they are designed to use the relationship between the various labour market indicators and their macroeconomic correlates (such as per-capita GDP, GDP growth rates, demographic trends, country membership in the Highly Indebted Poor Country (HIPC) Initiative, geographic indicators and country and time dummy variables) in order to produce estimates of the labour market indicators where no data exist. Thus, the comparability of the labour market data that are used as inputs in the imputation models is essential to ensure that the models accurately capture the relationship between the labour market indicators and the macroeconomic variables.

The last step of the estimation procedure occurs once the datasets containing both the real and imputed labour market data have been assembled. In this step, the ILO Trends Team aggregates the data across countries to produce the final world and regional estimates. For further information on the world and regional econometric models, readers can consult the technical background papers available at the following website:

<http://www.ilo.org/public/english/employment/strat/wrest.htm>

### **Expected time of release**

Data are published every two years, usually in September, in the Key Indicators of the Labour Market report.

## **Carbon dioxide emissions (CO<sub>2</sub>), kg CO<sub>2</sub> per \$1 GDP (PPP) (UNFCCC)**

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### **Definition**

#### **Total CO<sub>2</sub> emissions**

Estimates of total carbon dioxide (CO<sub>2</sub>) emissions include anthropogenic emissions, less removal by sinks, of carbon dioxide (CO<sub>2</sub>). The term "total" implies that emissions from all national activities are considered. The typical sectors for which CO<sub>2</sub> emissions/removals are estimated are energy, industrial processes, agriculture, waste, and the sector of land use, land-use change and forestry (LULUCF).

National reporting to the United Nations Framework Convention on Climate Change that follows the Intergovernmental Panel on Climate Change guidelines is based on national emission inventories and covers all sources of anthropogenic carbon dioxide emissions as well as carbon sinks (such as forests).

CO2 emissions/removals by land use, land-use change and forestry are often known with much less certainty than emissions from the other sectors, or emissions/removals estimates for LULUCF may not be available at all. In such cases, "total" emissions can be calculated as the sum of emissions for the sectors of energy, industrial processes, agriculture, and waste.

### **CO2 emissions per capita**

Carbon emissions per capita are measured as the total amount of carbon dioxide emitted by the country as a consequence of all relevant human (production and consumption) activities, divided by the population of the country.

### **CO2 emissions per \$1 GDP (PPP)**

Total CO2 emissions divided by the total value of the gross domestic product (GDP) expressed in purchasing power parities (PPPs).

### **Method of computation**

- 1) Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories  
<http://www.ipcc-nggip.iges.or.jp/public/gl/invs1.htm>
- 2) Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories  
<http://www.ipcc-nggip.iges.or.jp/public/gp/english/>
- 3) Good Practice Guidance for Land Use, Land-Use Change and Forestry  
<http://www.ipcc-nggip.iges.or.jp/public/gp/lulucf/gp/lulucf.htm>

The exact application of these methodologies in the specific national circumstances is described (by industrialized countries only, which are included in Annex I to the Climate Change Convention) in the so-called national inventory reports (NIR) that are submitted by Annex I Parties every year to the UNFCCC secretariat and that describe how emission estimates were prepared. The latest NIRs can be found on the UNFCCC website at :

[http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/3734.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/3734.php)

For developing (non-Annex I) countries, the methodologies used for emission estimates are described in the national communications submitted periodically to the UNFCCC secretariat. The non-Annex I communications can be found at :

[http://unfccc.int/national\\_reports/non-annex\\_i\\_natcom/items/2979.php](http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php)

For the computation of CO<sub>2</sub> emissions, metric tons of CO<sub>2</sub> per capita and CO<sub>2</sub> emissions in kg CO<sub>2</sub> per \$1 GDP (PPP) both national and international data are used. National data for CO<sub>2</sub> emissions and international data for population estimates (United Nations Population Division, 2007, "[World population prospects: The 2006 revision](#)") and GDP (World Bank, 2009, "[World Development Indicators 2009](#)")

### **Comments and limitations**

Carbon dioxide is only one of greenhouse gases (GHGs) and therefore CO<sub>2</sub> emissions are smaller than the overall GHG emissions. Accordingly, the overall impact on climate may be underestimated if only CO<sub>2</sub> emissions are included in the estimate.

CO<sub>2</sub> data available at UNFCCC contain complete time series for industrialized (Annex I) countries only. Data for non-Annex I (developing) countries are usually available for a few years only. This does not allow calculating regional and global totals based on UNFCCC data only; alternative sources of CO<sub>2</sub> data have to be used for such regional and global estimates.

Data on CO<sub>2</sub> emissions/removals from forests and land-use changes usually have lower availability and greater uncertainty than data on CO<sub>2</sub> emissions from the sectors of energy, industrial processes, agriculture, and waste. Therefore, in practice CO<sub>2</sub> emissions/removals from forests and land-use changes are not always included into national totals.

### **Sources of discrepancies between global and national figures**

Data are national. No estimates for the possible differences with the MDGs global database are available.

### **Process of obtaining data**

All countries that are Parties to the Climate Change Convention (UNFCCC) are required to submit their data on GHG emissions regularly to the UNFCCC secretariat. Industrialized (Annex I) Parties submit their detailed GHG inventories, including CO<sub>2</sub> data, to the UNFCCC secretariat annually. Developing (non-Annex I) Parties submit GHG and CO<sub>2</sub> data periodically as part of their national communications. The UNFCCC Secretariat make all data submissions publicly available on its website:

[http://unfccc.int/ghg\\_emissions\\_data/items/3800.php](http://unfccc.int/ghg_emissions_data/items/3800.php)

The information, including GHG and CO<sub>2</sub> data, is usually submitted by Parties through their national UNFCCC focal points, which can be found at:

<http://maindb.unfccc.int/public/nfp.pl>

The data submitted by Annex I Parties are subject to a rigorous review process, which is coordinated by the UNFCCC secretariat in accordance with the guidelines agreed under the Climate Change Convention and conducted by international teams of experts. The reviews of national GHG data are conducted annually and the international expert teams check the robustness of the estimates and their correspondence to the methodologies recommended by the IPCC. The results of reviews are publicly available in the form of the so-called review reports which can be found at the UNFCCC website at:

[http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/inventory\\_review\\_reports/items/3723.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/inventory_review_reports/items/3723.php)

No adjustments to any international classification are used, but all data have to be submitted electronically in an agreed common format (the Common reporting Format - CRF) and the methodologies for emission calculation should be consistent with those recommended by the IPCC, which is checked during the annual reviews by international expert teams.

### **Treatment of missing values**

Data are stored as reported and data gaps are normally not filled-in by the UNFCCC secretariat. Identifying gaps and actions to address them is one of the tasks of the international expert teams during the review process. The UNFCCC secretariat uses interpolation and extrapolation only when total emissions for country groups are calculated, such as total emissions from all Annex I Parties taken together.

### **Data availability**

Data for industrialized countries, including economies in transition, are more complete (full time series are available from 1990) and easier available than data for developing countries (data are usually available for selected years only, such as 1990, 1994 or 2000). For industrialized countries, data are usually available with a two-year lag, e.g., in 2007 data for the period 1990–2005 are available.

### **Regional and Global estimates**

The UNFCCC does not make regional or global estimates with its data. The major reason is that the data for developing countries (non-Annex I Parties) are fragmented (available only for some years, which may be different for different Parties) and therefore global and regional totals cannot be calculated accurately.

### **Expected time of release**

The final set of data for a given year is usually available at the UNFCCC secretariat in November-December.

## Please refer to series metadata

# Unmet need for family planning, spacing, percentage

## Contact point in international agency

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## Definition

Women with unmet need for spacing births are those who are fecund and sexually active but are not using any method of contraception, and report wanting to delay the next child. This is a subcategory of total unmet need for family planning, which also includes unmet need for limiting births. The concept of unmet need points to the gap between women's reproductive intentions and their contraceptive behaviour.

For MDG monitoring, unmet need is expressed as a percentage based on women who are married or in a consensual union.

## Method of computation

Unmet need for family planning for spacing births	=	Women (married or in consensual union) who are pregnant or amenorrheic and whose pregnancies were mistimed + fecund women who desire to postpone their next birth for at least two years, or who are undecided about whether or when to have another child, and who are not using a contraceptive method	x 100
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Total number of women of reproductive age (15-49) who are married or in consensual union

The standard definition of unmet need for family planning (UMN) for spacing births, includes in the numerator:

- All pregnant women (married or in consensual union) whose pregnancies were mistimed at the time of conception.
- All postpartum amenorrheic women (married or in consensual union) who are not using family planning and whose last birth was mistimed.
- All fecund women (married or in consensual union) who are neither pregnant nor postpartum amenorrheic, and who wish to postpone the birth of a child for at least two years or do not know when or if they want another child, but are not using any contraceptive method.

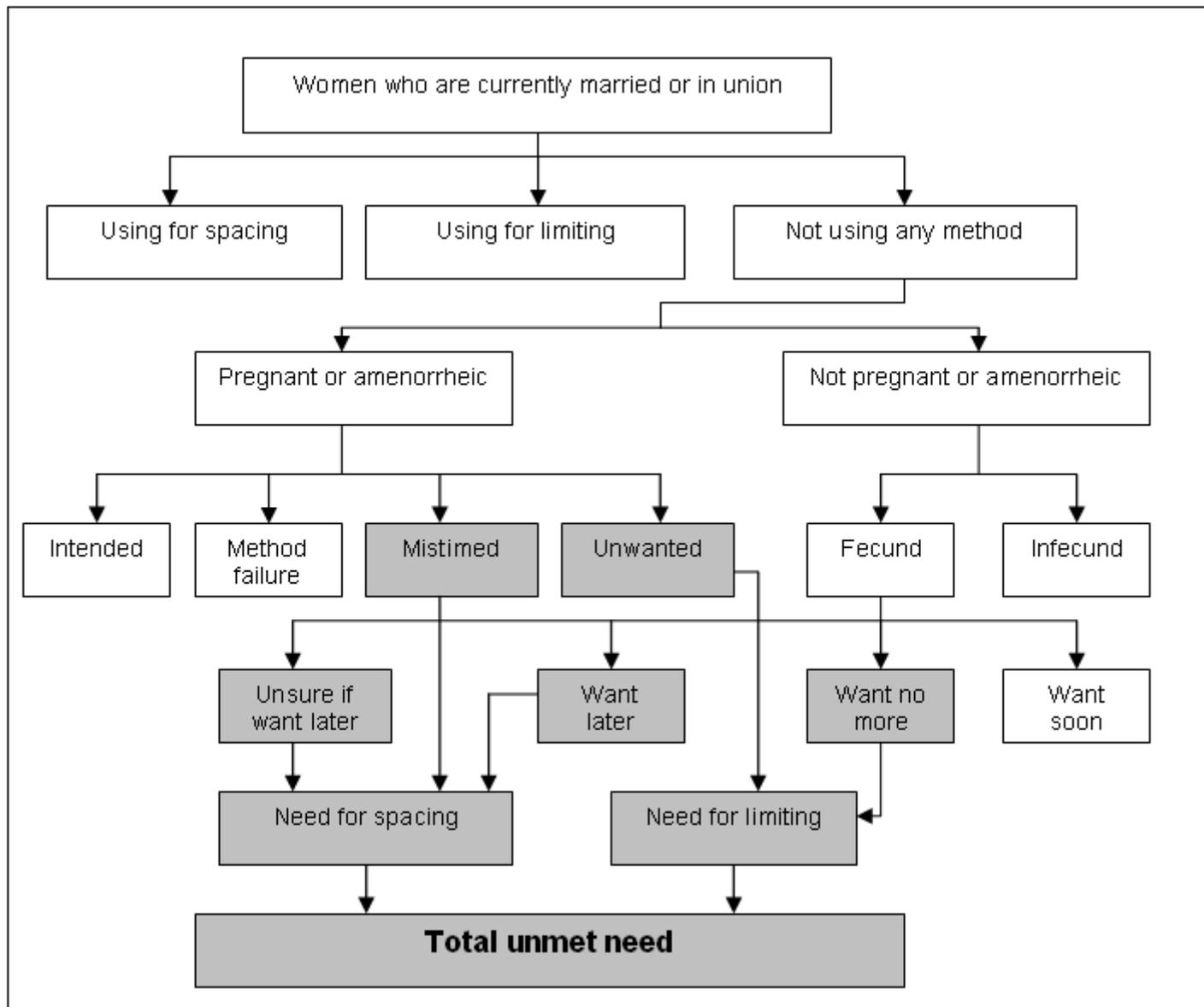
Excluded from the numerator of the unmet need definition are pregnant and amenorrheic women who became pregnant unintentionally due to contraceptive method failure (these women are assumed to be in need of a better contraceptive method). Infecund women are also excluded from the definition. Women are assumed to be infecund if:

- They have been married for five or more years and
- they have not had a birth in the past five years and
- they are not currently pregnant and
- they have not used contraception within the preceding five years (or, if the timing of the last contraceptive use is not known, or if they have never used any kind of contraceptive method) or
- they self-report that they are infecund, menopausal or have had a hysterectomy, or (for women who are not pregnant or in post-partum amenorrhea) if the last menstrual period occurred more than six months prior to the survey.

Women who are married or in a consensual union are assumed to be sexually active. If unmarried women are to be included in the calculation of unmet need (in national monitoring supplementing global reporting for the MDGs), it is necessary to determine the timing of the most recent sexual activity. Unmarried women are considered currently at risk for pregnancy (and thus potentially in the numerator) if they have had intercourse in the month prior to the survey interview.

See figure 1 below for a flow diagram on the computation of unmet need.

Figure 1: Flow diagram: Computation of unmet need



**Source:** Based on Westoff C.F and L. H. Ochoa (1991). *Unmet Need and the Demand for Family Planning*, Comparative Studies No. 5. Demographic and Health Surveys, Institute for Resource Development, Macro International; and Westoff C.F. and Bankole A. (1995). *Unmet need: 1990-1994*. DHS Comparative Report No. 16, Macro International.

Unmet need for family planning is measured using data that are gathered in special surveys such as the Demographic and Health Surveys (DHS), Reproductive Health Surveys (RHS) and national surveys based on similar methodologies.

The operational definition of unmet need has been refined over time.<sup>1</sup> The refinements have not altered the core concept but have largely clarified the definition of the population at risk, e.g. using a combination of a self-reporting and an algorithmic approach to identifying infecund women; modifying the analysis of women unsure of their fertility desires; and defining women whose current pregnancy is due to method failure (including those due to incorrect or inconsistent use of contraception) as lacking unmet need. The largest adjustment separates the pre-1991 estimates from those later. The earliest surveys did not restrict the population at risk as much as later approaches.

A guide on the methodology can be found in DHS' online guide under "Fertility Preferences": <http://www.measuredhs.com/help/Datasets/index.htm>

A guide to the questions needed to calculate unmet need for family planning can be found on the DHS website in the document "DHS Model Questionnaire with Commentary" under the section "Current Questionnaire (Phase 5: 2003 – Present)" at: <http://www.measuredhs.com/aboutsurveys/dhs/questionnaires.cfm>

The relevant questions include the following in order to determine the various elements of the definition:

Marriage status (Q602, Q603, Q615)

Fecundity and contraception (Q215, Q226, Q237, Q304, Q310, Q322, Q454, Q711)

Fertility preferences (Q228, Q405, Q702, Q703)

1 *For additional details see Govindasamy, P. and E. Boadi 2000, A decade of unmet need for contraception in Ghana: Programmatic and policy implications. Macro International Calverton, Maryland, and National Population Council Secretariat, Ghana. Available at: <http://www.measuredhs.com/pubs/pdf/FA31/FA31.pdf>*

### **Comments and limitations**

According to the standard definition, women who are using a traditional method of contraception are not considered as having an unmet need for family planning. As traditional methods can be considerably less effective than modern methods, additional analyses often distinguish between traditional and modern methods and also report on unmet need for effective contraception. The indicator "contraceptive prevalence" provides complementary information to this indicator by focusing on those women that are currently using a contraceptive method.

In some countries Demographic Health Survey (DHS) samples do not include women who are neither married nor in a consensual union. These women are not considered to

be sexually active, while married women are assumed to be sexually active and at risk of pregnancy. The assumption of universal exposure among married women increases the estimate (additional questions probing reasons for non-use of family planning often elicit reports of low risk due to infrequent sexual activity, including spousal separation resulting from labour migration).

There can be differences in the precise definition being used. Those differences are flagged with footnotes in the data series.

As estimates of unmet need are affected by changes in definition some caution needs to be adopted when interpreting trends, in particular for DHS estimates prior to the current definition (1998) and especially pre-1991. Strict comparisons between estimates based on different definitions should be avoided.

### **Sources of discrepancies between global and national figures**

The global estimates are based on unadjusted figures published in the national-level survey report unless the reported figure is known to be erroneous (i.e., it contains an errata note in DHS records or elsewhere). Thus, there should not be any discrepancies between global and national figures arising from adjustments to national data. However, some published national measurements of unmet need are not included in the dataset for global MDG monitoring because they were judged to depart too much from the core concept of unmet need employed here or because the estimation procedures were considered to produce results that were not comparable.

### **Process of obtaining data**

Unmet need for family planning is measured using data that are gathered in special surveys such as the Demographic and Health Surveys (DHS), Reproductive Health Surveys (RHS) and national surveys based on similar methodologies.

Data from Demographic and Health Surveys (DHS), collected from ORC Macro, are the primary source of data on unmet need for developing countries.

Another important source of data is the Reproductive Health Surveys (RHS), which collect data from developing countries, with technical assistance provided by the Centers for Disease Control and Prevention (CDC), Division of Reproductive Health (DRH), MEASURE CDC. In reports from those surveys, women who are married or in a consensual union are considered to have an unmet need for family planning if they report that they are not using contraception, do not wish to become pregnant (either currently – desire to space the next birth – or ever – desire to limit family size), are fecund and sexually active, and are not currently pregnant.

### Other National Surveys

In some cases, other national survey efforts, which have incorporated the DHS methodology, but were conducted by national authorities without international technical assistance (e.g., in India), are used as inputs. Similarly, some surveys did not receive technical assistance from CDC but have followed the CDC methodology for estimating unmet need.

National surveys conducted as part of the European Fertility and Family Surveys (FFS), the Pan-Arab Project for Family Health (PAPFAM) and other national surveys might also vary in their definition of unmet need. Those differences are flagged with footnotes in the data.

The data are taken from published survey reports or, in exceptional cases, other published analytic reports. If clarification is needed, contact is made with the survey sponsors or authoring organization, which occasionally may supply corrected or adjusted estimates in response.

The data are not adjusted.

### **Treatment of missing values**

There is no treatment of missing values. When the information needed to calculate unmet need is not available, the indicator is not estimated.

### **Data availability**

Data are available for approximately 100 countries. The data are available in the large majority of countries with significant problems in maternal health (e.g., high maternal mortality ratios and low levels of contraceptive prevalence) where monitoring of progress is most critical.

Data are most often published the year after the reference year of the survey.

Frequency of data production: Typically the surveys are undertaken every 3 to 5 years.

### **Regional and Global estimates**

Regional and global estimates are calculated as weighted averages. National averages are weighted by the number of women of reproductive age who are married or in union.

### **Expected time of release**

The dataset is updated annually and results are published in United Nations Population Division's World Contraceptive Use, which is typically launched every two years in December.

## **Unmet need for family planning, limiting, percentage**

### **Contact point in international agency**

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### **Definition**

Women with unmet need for family planning for limiting births are those who are fecund and sexually active but are not using any method of contraception, and report not wanting any more children. This is a subcategory of total unmet need for family planning, which also includes unmet need for spacing births. The concept of unmet need points to the gap between women's reproductive intentions and their contraceptive behaviour.

For MDG monitoring, unmet need is expressed as a percentage based on women who are married or in a consensual union

## Method of computation

$$\text{Unmet need for family planning for limiting births} = \frac{\text{Women (married or in consensual union) who are pregnant or amenorrheic and whose pregnancies were unwanted + fecund women who desire to stop childbearing and who are not using a contraceptive method}}{\text{Total number of women of reproductive age (15-49) who are married or in consensual union}} \times 100$$

The standard definition of unmet need for family planning (UMN) for limiting births, includes in the numerator:

- All pregnant women (married or in consensual union) whose pregnancies were unwanted at the time of conception.
- All postpartum amenorrheic women (married or in consensual union) who are not using family planning and whose last birth was unwanted.
- All fecund women (married or in consensual union) who are neither pregnant nor postpartum amenorrheic, and who do not want any more children but are not using any contraceptive method.

Excluded from the numerator of the unmet need definition are pregnant and amenorrheic women who became pregnant unintentionally due to contraceptive method failure (these women are assumed to be in need of a better contraceptive method). Infecund women are also excluded from the definition. Women are assumed to be infecund if:

- They have been married for five or more years and
- they have not had a birth in the past five years and
- they are not currently pregnant and
- they have not used contraception within the preceding five years (or, if the timing of the last contraceptive use is not known, or if they have never used any kind of contraceptive method) or
- they self-report that they are infecund, menopausal or have had a hysterectomy, or (for women who are not pregnant or in post-partum amenorrhea) if the last menstrual period occurred more than six months prior to the survey.

Women who are married or in a consensual union are assumed to be sexually active. If unmarried women are to be included in the calculation of unmet need (in national monitoring supplementing global reporting for the MDGs), it is necessary to determine the timing of the most recent sexual activity. Unmarried women are considered currently at risk for pregnancy (and thus potentially in the numerator) if they have had intercourse in the month prior to the survey interview.

See figure 1 below for a flow diagram on the computation of unmet need.

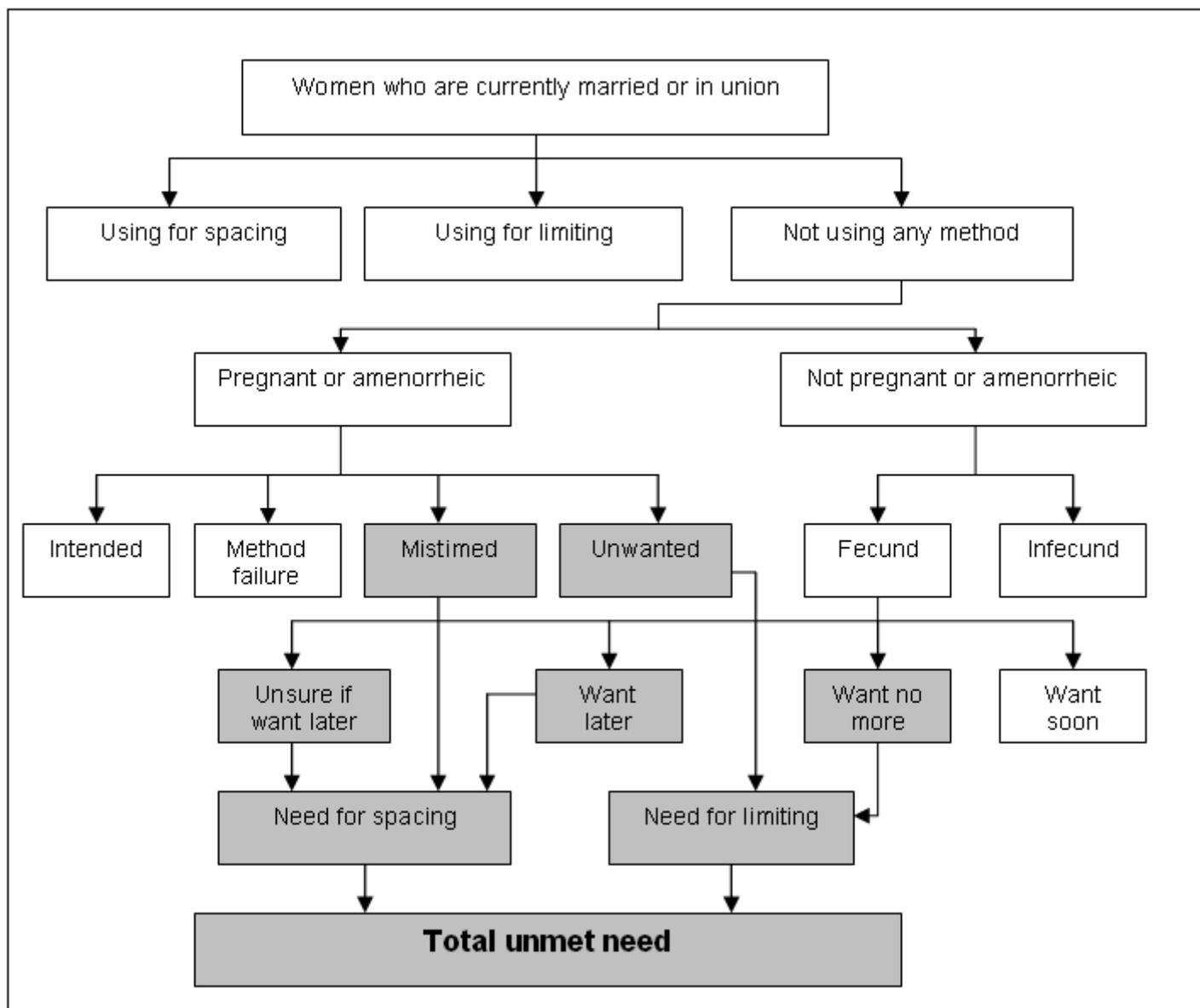


Figure 1: Flow diagram: Computation of unmet need

**Source:** Based on Westoff C.F and L. H. Ochoa (1991). *Unmet Need and the Demand for Family Planning*, Comparative Studies No. 5. Demographic and Health Surveys, Institute for Resource Development, Macro International; and Westoff C.F. and Bankole A. (1995). *Unmet need: 1990-1994*. DHS Comparative Report No. 16, Macro International.

Unmet need for family planning is measured using data that are gathered in special surveys such as the Demographic and Health Surveys (DHS), Reproductive Health Surveys (RHS) and national surveys based on similar methodologies.

The operational definition of unmet need has been refined over time.<sup>1</sup> The refinements have not altered the core concept but have largely clarified the definition of the population at risk, e.g. using a combination of a self-reporting and an algorithmic approach to identifying infecund women; modifying the analysis of women unsure of their fertility desires; and defining women whose current pregnancy is due to method failure (including those due to incorrect or inconsistent use of contraception) as lacking unmet need. The largest adjustment separates the pre-1991 estimates from those later. The earliest surveys did not restrict the population at risk as much as later approaches.

A guide on the methodology can be found in DHS' online guide under "Fertility Preferences": <http://www.measuredhs.com/help/Datasets/index.htm>

A guide to the questions needed to calculate unmet need for family planning can be found on the DHS website in the document "DHS Model Questionnaire with Commentary" under the section "Current Questionnaire (Phase 5: 2003 – Present)" at: <http://www.measuredhs.com/aboutsurveys/dhs/questionnaires.cfm>

The relevant questions include the following in order to determine the various elements of the definition:

Marriage status (Q602, Q603, Q615)

Fecundity and contraception (Q215, Q226, Q237, Q304, Q310, Q322, Q454, Q711)

Fertility preferences (Q228, Q405, Q702, Q703)

1 *For additional details see Govindasamy, P. and E. Boadi 2000, A decade of unmet need for contraception in Ghana: Programmatic and policy implications. Macro International Calverton, Maryland, and National Population Council Secretariat, Ghana. Available at: <http://www.measuredhs.com/pubs/pdf/FA31/FA31.pdf>*

### **Comments and limitations**

According to the standard definition, women who are using a traditional method of contraception are not considered as having an unmet need for family planning. As traditional methods can be considerably less effective than modern methods, additional analyses often distinguish between traditional and modern methods and also report on unmet need for effective contraception. The indicator "contraceptive prevalence"

provides complementary information to this indicator by focusing on those women that are currently using a contraceptive method.

In some countries Demographic Health Survey (DHS) samples do not include women who are neither married nor in a consensual union. These women are not considered to be sexually active, while married women are assumed to be sexually active and at risk of pregnancy. The assumption of universal exposure among married women increases the estimate (additional questions probing reasons for non-use of family planning often elicit reports of low risk due to infrequent sexual activity, including spousal separation resulting from labour migration).

There can be differences in the precise definition being used. Those differences are flagged with footnotes in the data series.

As estimates of unmet need are affected by changes in definition some caution needs to be adopted when interpreting trends, in particular for DHS estimates prior to the current definition (1998) and especially pre-1991. Strict comparisons between estimates based on different definitions should be avoided.

### **Sources of discrepancies between global and national figures**

The global estimates are based on unadjusted figures published in the national-level survey report unless the reported figure is known to be erroneous (i.e., it contains an errata note in DHS records or elsewhere). Thus, there should not be any discrepancies between global and national figures arising from adjustments to national data. However, some published national measurements of unmet need are not included in the dataset for global MDG monitoring because they were judged to depart too much from the core concept of unmet need employed here or because the estimation procedures were considered to produce results that were not comparable.

### **Process of obtaining data**

Unmet need for family planning is measured using data that are gathered in special surveys such as the Demographic and Health Surveys (DHS), Reproductive Health Surveys (RHS) and national surveys based on similar methodologies.

Data from Demographic and Health Surveys (DHS), collected from ORC Macro, are the primary source of data on unmet need for developing countries.

Another important source of data is the Reproductive Health Surveys (RHS), which collect data from developing countries, with technical assistance provided by the Centers for Disease Control and Prevention (CDC), Division of Reproductive Health (DRH), MEASURE

CDC. In reports from those surveys, women who are married or in a consensual union are considered to have an unmet need for family planning if they report that they are not using contraception, do not wish to become pregnant (either currently – desire to space the next birth – or ever – desire to limit family size), are fecund and sexually active, and are not currently pregnant.

#### Other National Surveys

In some cases, other national survey efforts, which have incorporated the DHS methodology, but were conducted by national authorities without international technical assistance (e.g., in India), are used as inputs. Similarly, some surveys did not receive technical assistance from CDC but have followed the CDC methodology for estimating unmet need.

National surveys conducted as part of the European Fertility and Family Surveys (FFS), the Pan-Arab Project for Family Health (PAPFAM) and other national surveys might also vary in their definition of unmet need. Those differences are flagged with footnotes in the data. The data are taken from published survey reports or, in exceptional cases, other published analytic reports. If clarification is needed, contact is made with the survey sponsors or authoring organization, which occasionally may supply corrected or adjusted estimates in response.

The data are not adjusted.

### **Treatment of missing values**

There is no treatment of missing values. When the information needed to calculate unmet need is not available, the indicator is not estimated.

### **Data availability**

Data are available for approximately 100 countries. The data are available in the large majority of countries with significant problems in maternal health (e.g., high maternal mortality ratios and low levels of contraceptive prevalence) where monitoring of progress is most critical.

Data are most often published the year after the reference year of the survey.

Frequency of data production: Typically the surveys are undertaken every 3 to 5 years.

### **Regional and Global estimates**

Regional and global estimates are calculated as weighted averages. National averages are weighted by the number of women of reproductive age who are married or in union.

### **Expected time of release**

The dataset is updated annually and results are published in United Nations Population Division's World Contraceptive Use, which is typically launched every two years in December.

## **School attendance rate of orphans aged 10-14**

### **Contact point in international agency**

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### **Definition**

The impact of the AIDS epidemic on orphans is measured through the ratio of the current school attendance rate of children aged 10–14 both of whose biological parents have died to the current school attendance rate of children aged 10–14 both of whose parents are still alive and who currently live with at least one biological parent.

### **Method of computation**

The current school attendance rate of children ages 10–14 both of whose biological parents have died is divided by the current school attendance rate of children ages 10–14 whose parents are both still alive and who live with at least one biological parent.

Orphan school attendance rate (1)

**Numerator:** Number of children who have lost both parents and attend school.

**Denominator:** Number of children who have lost both parents.

Non-orphan school attendance (2)

**Numerator:** Number of children, both of whose parents are still alive, who live with at least one parent and who attend school.

**Denominator:** Number of children both of whose parents are still alive and who live with at least one parent.

The data from household surveys used to produce the indicator are weighted according to the survey design to create a nationally representative indicator. No additional alterations are made to the data.

### **Comments and limitations**

AIDS is claiming the lives of ever-growing numbers of adults just when they are forming families and bringing up children. As a result, orphan prevalence is rising steadily in many countries, while fewer relatives within the prime adult ages mean that orphaned children face an increasingly uncertain future. They are likely to drop out of school owing to discrimination, emotional distress, inability to pay school fees, and/or the need to care for parents or caretakers infected with HIV or for younger siblings. It is important to monitor the extent to which AIDS support programmes succeed in securing educational opportunities for orphaned children.

The indicator is confined to children ages 10–14 for comparability, as age at school entry varies across countries. Household surveys can miss children in unstable households, and orphaned children are disproportionately likely to be in such households. The indicator is not a direct measure of the number of children orphaned by AIDS, despite the wording. The indicator does not directly distinguish the cause of orphanhood. However, it is believed that high proportions of deaths of adults with school-age children.

### **Sources of discrepancies between global and national figures**

In principle, there is no discrepancy between global and national figures, as national data are not modified.

### **Process of obtaining data**

These data are collected through household surveys, such as Multiple Indicator Cluster Surveys (MICS) and Demographic and Health Surveys (DHS), reproductive and health surveys, and behavioural surveillance surveys. The results are reported regularly in the final reports of these surveys. In addition, most data are available at : [www.measuredhs.com/hivdata](http://www.measuredhs.com/hivdata) and [www.childinfo.org](http://www.childinfo.org)

Nationally representative population-based surveys, such as DHS and MICS, are conducted by national statistical offices or other relevant government offices under the supervision of government or international agencies.

As part of routine data quality control, survey results are checked for inconsistencies and to ensure that data are collected using a clearly defined population-based sampling frame, permitting inferences to be drawn for the entire population. UNICEF also conducts an annual exercise called the Country Reports on Indicators for the Goals (CRING), in which data maintained in the global databases at UNICEF for all regularly reported indicators are sent to countries for validation and updating. Updates from countries must be accompanied by original source documentation, e.g. survey reports.

No adjustments are made to the data compiled from DHS, MICS and other surveys that are statistically sound and nationally representative.

### **Treatment of missing values**

There is no treatment of missing values. When the information needed to calculate the indicator is not available, the indicator is not estimated.

### **Data availability**

Data are available from approximately 70 countries.

The universe/population interest is comprised of children aged 10-14 years.

The lag between the reference year and actual production of data series depends on the availability and reliability of the survey for each country. Household surveys, such as Demographic and Health Surveys, reproductive and health surveys, and Behavioural Surveillance Surveys, are generally conducted every three to five years.

Household surveys, such as DHS and MICS, are in general implemented every 3-5 years with results published within a year of field data collection. Data from national-level household surveys are compiled in the UNICEF global databases and are published annually by UNICEF in *The State of the World's Children* report, and are available at [www.childinfo.org](http://www.childinfo.org).

### **Regional and Global estimates**

Regional and global estimates are based on population-weighted averages weighted by the total number of young women and men 10-14 years of age. These estimates are presented only if available data cover at least 50% of total young men and women 10-14 years of age in the regional or global groupings.

### Expected time of release

Available data are published in annual reports, at the end of the calendar year, by UNICEF in *The State of the World's Children, Children and AIDS Stock Taking Report* and are available at [www.childinfo.org](http://www.childinfo.org).

## School attendance rate of children aged 10-14 both of whose parents are alive and who live with at least one parent

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### Definition

Current school attendance is estimated for both orphans and non-orphans aged 10–14. Orphans are defined as children both of whose biological parents have died. Non-orphans are defined as children both of whose parents are alive and who currently live with at least one biological parent.

### Method of computation

Orphan school attendance rate (1)

**Numerator:** Number of children who have lost both parents and attend school.

**Denominator:** Number of children who have lost both parents.

Non-orphan school attendance (2)

**Numerator:** Number of children, both of whose parents are still alive, who live with at least one parent and who attend school.

**Denominator:** Number of children both of whose parents are still alive and who live with at least one parent.

The household survey data used to produce the indicator are weighted according to the survey design to create a nationally representative indicator. No additional alterations are made to the data.

### **Comments and limitations**

The intent of this indicator is to compare school attendance among the most vulnerable children (double orphans) to school attendance among the least vulnerable children (those with both parents still alive and who are living with at least one parent).

The definitions of orphan/non-orphan used here—i.e. child aged 10–14 years as of the last birthday both of whose parents have died/are still alive—are chosen so that the maximum effect of disadvantage resulting from orphanhood can be identified and tracked over time. The age-range 10–14 years is used because younger orphans are more likely to have lost their parents recently so any detrimental effect on their education will have had little time to materialize. However, orphaned children are typically older than non-orphaned children (because the parents of younger children have often been HIV-infected for less time) and older children are more likely to have left school.

Typically, the data used to measure this indicator are taken from household-based surveys. Children not recorded in such surveys—e.g. those living in institutions or on the street—generally, are more disadvantaged and are more likely to be orphans. Thus, the indicator will tend to understate the relative disadvantage in educational attendance experienced by orphaned children.

This indicator does not distinguish children who lost their parents due to AIDS from those whose parents died of other causes. In countries with smaller epidemics or in the early stages of epidemics, most orphans will have lost their parents due to non-HIV-related causes. Any differences in the treatment of orphans according to the known or suspected cause of death of their parents could influence trends in the indicator. However, to date there is little evidence that such differences in treatment are common.

The indicator provides no information on actual numbers of orphaned children. The restrictions to double orphans and to 10–14-year-olds mean that estimates may be based on small numbers in countries with small or nascent epidemics.

### **Sources of discrepancies between global and national figures**

In principle, there is no discrepancy between global and national figures, as national data are not modified.

### **Process of obtaining data**

These data are collected through household surveys, such as Multiple Indicator Cluster Surveys (MICS) and Demographic and Health Surveys (DHS), reproductive and health surveys, and behavioural surveillance surveys. The results are reported regularly in the final reports of these surveys. In addition the data are available at : [www.measuredhs.com/hivdata](http://www.measuredhs.com/hivdata).

Nationally representative population-based surveys, such as DHS and MICS, are conducted by national statistical offices or other relevant government offices under the supervision of government or international agencies.

### **Treatment of missing values**

There is no treatment of missing values. When the information needed to calculate the indicator is not available, the indicator is not estimated.

### **Data availability**

Data are available from approximately 70 countries.

The universe/population interest is comprised of children aged 10-14 years.

The lag between the reference year and actual production of data series depends on the availability and reliability of the survey for each country. Household surveys, such as Demographic and Health Surveys, reproductive and health surveys, and Behavioural Surveillance Surveys, are generally conducted every three to five years.

Household surveys, such as DHS and MICS, are in general implemented every 3-5 years with results published within a year of field data collection. Data from national-level household surveys are compiled in the UNICEF global databases and are published annually by UNICEF in *The State of the World's Children* report, and are available at [www.childinfo.org](http://www.childinfo.org).

### **Regional and Global estimates**

Regional and global estimates are based on population-weighted averages weighted by the total number of young women and men 10-14 years of age. These estimates are presented only if available data cover at least 50% of total young men and women 10-14 years of age in the regional or global groupings.

### **Expected time of release**

Available data are published in annual reports, at the end of the calendar year, by UNICEF in *The State of the World's Children, Children and AIDS Stock Taking Report* and are available at [www.childinfo.org](http://www.childinfo.org).

## Terrestrial areas protected, sq. km.

### Contact point in international agency

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### Definition

The unit of measure in this indicator is the definition of a "protected area" as adopted by the International Union for Conservation of Nature (IUCN). The definition of a protected area is "an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means".<sup>1</sup>

Only protected areas that are "nationally designated" are included in this indicator. The status "designated" is attributed to a protected area: when the authority that corresponds, according to national legislation or common practice (e.g. by means of an executive decree or the like), officially endorses a document of designation.

1 IUCN 1994. *Guidelines for Protected Areas Management Categories*. IUCN; Gland; Switzerland and Cambridge; UK.

### Method of computation

The total terrestrial protected area extent by country/territory is divided by the area of total surface area (includes total land area and inland waters). Protected areas increase with time and are not deleted from subsequent years.

The size of the protected area (its "extent") is the officially documented total area provided by the national authority, unless otherwise stated. Many protected areas can contain proportions of both the marine and terrestrial environment, and the size of the protected area extent that falls into each environment is not always available.

The data source for this indicator is the World Database on Protected Areas (WDPA). The WDPA is held within a Geographical Information System (GIS), which can store information about a protected area such as its name, designation, total documented area geographic location and/or delineated spatial boundary.

### **Comments and limitations**

The ratio of total terrestrial surface area protected is a useful indicator of Government's will to protect biodiversity. However it neither indicates how well managed the area is, nor confirms that protection measures are actually enforced. Further, the indicator does not provide information on non-designated protected areas that may also be important for conserving biodiversity.

There are known data and knowledge gaps that exist in some countries/regions due to difficulties in: reporting capacities; measuring the proportion of a protected area within the terrestrial and/or marine environment; and determining whether a site conforms to the IUCN definition of a protected area/MPA.

### **Sources of discrepancies between global and national figures**

The national figures are aggregated to produce the global statistics for this indicator. The Antarctic land mass is added to ensure the global protection levels are not inflated.

### **Process of obtaining data**

The World Database on Protected Areas (WDPA) is compiled from multiple sources and is the most comprehensive global dataset on marine and terrestrial protected areas available. It is a joint project of UNEP-WCMC and the IUCN World Commission on Protected Areas working with governments and collaborating non-governmental organizations (NGOs).

A major source of information is through the UN List process, which takes place every 4-5 years. As part of this process, key stakeholders review and provide information to assist in the compilation of the UN List of Protected areas.

In the intervening period between UN Lists, UNEP-WCMC works closely with national authorities and NGOs continually updating the WDPA as new information becomes available.

Partnerships such as the one between UNEP-WCMC and the European Environment Agency have aided the collection of information on a regional scale. Collaborative projects such as the 'MPA Global' project, undertaken through the Sea Around Us Project and the University of British Columbia, with the support of WWF and UNEP-WCMC, have

enhanced the amount and quality of marine protected areas data for the WDPAs. Early 2008 will see a transition of MPA Global back into the WDPAs, which includes the data and the mechanisms for data collection, ready for the re-launch of the redeveloped online WDPAs system in 2008.

Through the UN List process, every 4 – 5 years, UNEP-WCMC requests national agencies to review current lists (including GIS) of protected areas for their country as well as to provide updated information. Additionally UNEP-WCMC works closely with national agencies, NGOs and protected areas experts (through the IUCN WCPA) around the world to review, update and acquire new protected areas data. Once at UNEP-WCMC the data is processed and validated through a number of spatial (GIS) and database tools, developed by UNEP-WCMC, to project and translate the data into the standard WDPAs data structure to enable integration into the database. Once the data has been converted it is also compared to the existing information within the WDPAs. Where discrepancies or gaps in the dataset exist UNEP-WCMC staff communicate with the data provider and external data reviewers to resolve any issue. Once the review process is complete the data is fully integrated into the published WDPAs.

### **Treatment of missing values**

Where the documented total and/or terrestrial area is unavailable the following rules are applied:

1. Where the documented terrestrial area of the site is unavailable but the spatial (GIS) boundary is present in the WDPAs, the total terrestrial area is calculated from the GIS.
2. Where a site transcends both the marine and terrestrial environment and no documented areas are available, but spatial (GIS) boundaries exist, it is possible (using spatial analysis) to calculate the area of the marine and terrestrial parts of the site from the GIS.
3. Where the total documented area is available and no spatial (GIS) boundaries are present in the WDPAs but the site is indicated to contain both marine and terrestrial environments, the total terrestrial area becomes 50% of the total documented area.
4. Where the documented total area and marine area are the same, the site is assumed to be 100% marine so no terrestrial area is recorded.
5. Where spatial (GIS) boundaries are not available and there is no documented size given, the site is excluded from the statistics.

Additionally, sites with missing establishment/designation dates are included in country level time series and in world and regional totals but are excluded from regional and world time series. Also, where the documented area and spatial (GIS) boundary from national sources is unavailable UNEP-WCMC works with collaborating NGOs to help

source this information. Where no additional information, either from national sources or NGOs, can be found then the site is excluded from the statistics.

Where no update is received for the following year the total number and area protected is assumed to be equal to the previous year. Countries or territories (e.g. Antarctica) that do not fall into MDG Millennium Development Goals regions are added to the world total.

### **Data availability**

Data are available for 233 countries and territories, including marine and coastal areas and can be aggregated and presented in many ways (e.g. by country or region). Explicit quality control criteria are applied to ensure consistency and comparability between national datasets.

The lag between the reference year and actual production of data series is up to one year.

All these data are stored and managed in the World Database on Protected Areas (WDPA), and made available online for users to view and download through the UNEP-WCMC website (<http://www.unep-wcmc.org/wdpa>) once the integration and review process is complete. The GIS data is freely available to download (for non-commercial use only) on an annual basis. Information to support the UN MDG Indicator 7.6 is also available on the UNEP-WCMC website on an annual basis.

### **Regional and Global estimates**

Regional estimates of protected area ratios are calculated by UNEP-WCMC. Estimates are based on the following 4 assumptions:

1. Once a protected area has been designated as protected it is not removed from the list of protected areas. New areas can be added and therefore data have been accumulated over time.
2. Sites with no establishment date are excluded for regional and world time series but are included in world and regional totals.
3. When gaps appear in a time series, data for those years are assumed equal to previous years and filled accordingly.
4. MDG regions are used in the aggregation process. Any countries or areas (e.g. Antarctica) not falling into one of these regions are only added to the total aggregate of the world.

### **Expected time of release**

Estimates are published annually, in January, and are available through the online World Database on Protected Areas. Information in the WDPA is freely available for non-commercial use and available for download from <http://www.unep-wcmc.org/wdpa/> .

Data formatted specifically for the Millennium Development Goals can be found at:  
<http://www.unep-wcmc.org/wdpa/mdgs/index.cfm>

## Terrestrial areas protected to total surface area, percentage

### Contact point in international agency

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### Definition

The unit of measure in this indicator is the definition of a "protected area" as adopted by the International Union for Conservation of Nature (IUCN). The definition of a protected area is "an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means".<sup>1</sup>

Only protected areas that are "nationally designated" are included in this indicator. The status "designated" is attributed to a protected area: when the authority that corresponds, according to national legislation or common practice (e.g. by means of an executive decree or the like), officially endorses a document of designation.

1 *IUCN 1994. Guidelines for Protected Areas Management Categories. IUCN; Gland; Switzerland and Cambridge; UK.*

### Method of computation

The total terrestrial protected area extent by country/territory is divided by the area of total surface area (includes total land area and inland waters). Protected areas increase with time and are not deleted from subsequent years.

The size of the protected area (its "extent") is the officially documented total area provided by the national authority, unless otherwise stated. Many protected areas can

contain proportions of both the marine and terrestrial environment, and the size of the protected area extent that falls into each environment is not always available.

The data source for this indicator is the World Database on Protected Areas (WDPA). The WDPA is held within a Geographical Information System (GIS), which can store information about a protected area such as its name, designation, total documented area geographic location and/or delineated spatial boundary.

### **Comments and limitations**

The ratio of total terrestrial surface area protected is a useful indicator of Government's will to protect biodiversity. However it neither indicates how well managed the area is, nor confirms that protection measures are actually enforced. Further, the indicator does not provide information on non-designated protected areas that may also be important for conserving biodiversity.

There are known data and knowledge gaps that exist in some countries/regions due to difficulties in: reporting capacities; measuring the proportion of a protected area within the terrestrial and/or marine environment; and determining whether a site conforms to the IUCN definition of a protected area/MPA.

### **Sources of discrepancies between global and national figures**

The national figures are aggregated to produce the global statistics for this indicator. The Antarctic land mass is added to ensure the global protection levels are not inflated.

### **Process of obtaining data**

The World Database on Protected Areas (WDPA) is compiled from multiple sources and is the most comprehensive global dataset on marine and terrestrial protected areas available. It is a joint project of UNEP-WCMC and the IUCN World Commission on Protected Areas working with governments and collaborating non-governmental organizations (NGOs).

A major source of information is through the UN List process, which takes place every 4-5 years. As part of this process, key stakeholders review and provide information to assist in the compilation of the UN List of Protected areas.

In the intervening period between UN Lists, UNEP-WCMC works closely with national authorities and NGOs continually updating the WDPA as new information becomes available.

Partnerships such as the one between UNEP-WCMC and the European Environment Agency have aided the collection of information on a regional scale. Collaborative projects such as the 'MPA Global' project, undertaken through the Sea Around Us Project and the University of British Columbia, with the support of WWF and UNEP-WCMC, have enhanced the amount and quality of marine protected areas data for the WDPA. Early 2008 will see a transition of MPA Global back into the WDPA, which includes the data and the mechanisms for data collection, ready for the re-launch of the redeveloped online WDPA system in 2008.

Through the UN List process, every 4 – 5 years, UNEP-WCMC requests national agencies to review current lists (including GIS) of protected areas for their country as well as to provide updated information. Additionally UNEP-WCMC works closely with national agencies, NGOs and protected areas experts (through the IUCN WCPA) around the world to review, update and acquire new protected areas data. Once at UNEP-WCMC the data is processed and validated through a number of spatial (GIS) and database tools, developed by UNEP-WCMC, to project and translate the data into the standard WDPA data structure to enable integration into the database. Once the data has been converted it is also compared to the existing information within the WDPA. Where discrepancies or gaps in the dataset exist UNEP-WCMC staff communicate with the data provider and external data reviewers to resolve any issue. Once the review process is complete the data is fully integrated into the published WDPA.

### **Treatment of missing values**

Where the documented total and/or terrestrial area is unavailable the following rules are applied:

1. Where the documented terrestrial area of the site is unavailable but the spatial (GIS) boundary is present in the WDPA, the total terrestrial area is calculated from the GIS.
2. Where a site transcends both the marine and terrestrial environment and no documented areas are available, but spatial (GIS) boundaries exist, it is possible (using spatial analysis) to calculate the area of the marine and terrestrial parts of the site from the GIS.
3. Where the total documented area is available and no spatial (GIS) boundaries are present in the WDPA but the site is indicated to contain both marine and terrestrial environments, the total terrestrial area becomes 50% of the total documented area.
4. Where the documented total area and marine area are the same, the site is assumed to be 100% marine so no terrestrial area is recorded.
5. Where spatial (GIS) boundaries are not available and there is no documented size given, the site is excluded from the statistics.

Additionally, sites with missing establishment/designation dates are included in country level time series and in world and regional totals but are excluded from regional and world time series. Also, where the documented area and spatial (GIS) boundary from national sources is unavailable UNEP-WCMC works with collaborating NGOs to help source this information. Where no additional information, either from national sources or NGOs, can be found then the site is excluded from the statistics.

Where no update is received for the following year the total number and area protected is assumed to be equal to the previous year. Countries or territories (e.g. Antarctica) that do not fall into MDG Millennium Development Goals regions are added to the world total.

### **Data availability**

Data are available for 233 countries and territories, including marine and coastal areas and can be aggregated and presented in many ways (e.g. by country or region). Explicit quality control criteria are applied to ensure consistency and comparability between national datasets.

The lag between the reference year and actual production of data series is up to one year.

All these data are stored and managed in the World Database on Protected Areas (WDPA), and made available online for users to view and download through the UNEP-WCMC website (<http://www.unep-wcmc.org/wdpa>) once the integration and review process is complete. The GIS data is freely available to download (for non-commercial use only) on an annual basis. Information to support the UN MDG Indicator 7.6 is also available on the UNEP-WCMC website on an annual basis.

### **Regional and Global estimates**

Regional estimates of protected area ratios are calculated by UNEP-WCMC. Estimates are based on the following 4 assumptions:

1. Once a protected area has been designated as protected it is not removed from the list of protected areas. New areas can be added and therefore data have been accumulated over time.
2. Sites with no establishment date are excluded for regional and world time series but are included in world and regional totals.
3. When gaps appear in a time series, data for those years are assumed equal to previous years and filled accordingly.
4. MDG regions are used in the aggregation process. Any countries or areas (e.g. Antarctica) not falling into one of these regions are only added to the total aggregate of the world.

### Expected time of release

Estimates are published annually, in January, and are available through the online World Database on Protected Areas. Information in the WDPA is freely available for non-commercial use and available for download from <http://www.unep-wcmc.org/wdpa/>. Data formatted specifically for the Millennium Development Goals can be found at: <http://www.unep-wcmc.org/wdpa/mdgs/index.cfm>

### Marine areas protected, sq. km.

#### Contact point in international agency

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Websites: <http://www.unep-wcmc.org/wdpa>

#### Definition

The unit of measure in this indicator is the definition of a "marine protected area (MPA)" as adopted by the International Union for Conservation of Nature (IUCN). The definition of a MPA is *"Any area of intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment".*<sup>1</sup>

Only protected areas that are "nationally designated" are included in this indicator. The status "designated" is attributed to a protected area: when the authority that corresponds, according to national legislation or common practice (e.g. by means of an executive decree or the like), officially endorses a document of designation. The designation must be for conservation of biodiversity, not single species and not fortuitous *de facto* protection arising because of some other activity (e.g. military). Hence, a number of United States Marine Managed Areas as well as permanent fisheries closures are excluded.

1 IUCN 1988. *Resolution 17.38 of the 17th General Assembly of the IUCN*. IUCN; Gland; Switzerland and Cambridge; UK

### **Method of computation**

The total marine protected area extent by country/territory is divided by the area of territorial waters (up to 12 nautical miles). Protected areas increase with time and are not deleted from subsequent years.

The size of the protected area (its “extent”) is the officially documented total and/or marine area provided by the national authority, unless otherwise stated. Many protected areas can contain proportions of both the marine and terrestrial environment, and the size of the protected area extent that falls into each environment is not always available.

The data source for this indicator is the World Database on Protected Areas (WDPA). The WDPA is held within a Geographical Information System (GIS), which can store information about a protected area such as its name, designation, total documented area, geographic location and/or delineated spatial boundary.

### **Comments and limitations**

The ratio of total territorial waters protected is a useful indicator of a Government’s will to protect biodiversity. However it is neither an indication of how well managed the area is, nor confirmation that protection measures are actually enforced. Further, the indicator does not provide information on non-designated protected areas that may also be important for conserving biodiversity.

There are known data and knowledge gaps that exist in some countries/regions due to difficulties in: reporting capacities; measuring the proportion of a protected area within the terrestrial and/or marine environment; and determining whether a site conforms to the IUCN definition of a protected area/MPA.

### **Sources of discrepancies between global and national figures**

The national figures are aggregated to produce the global statistics for this indicator. For this indicator, the figures are calculated using both total territorial waters and total ocean area to take account of where marine protected areas extend beyond a country’s territorial waters (12 nautical mile limit).

### **Process of obtaining data**

The World Database on Protected Areas (WDPA) is compiled from multiple sources and is the most comprehensive global dataset on marine and terrestrial protected areas available. It is a joint project of UNEP-WCMC and the IUCN World Commission on Protected Areas working with governments and collaborating non-governmental organizations (NGOs).

A major source of information is through the UN List process, which takes place every 4-5 years. As part of this process, key stakeholders review and provide information to assist in the compilation of the UN List of Protected areas.

In the intervening period between UN Lists, UNEP-WCMC works closely with national authorities and NGOs continually updating the WDPA as new information becomes available.

Partnerships such as the one between UNEP-WCMC and the European Environment Agency have aided the collection of information on a regional scale. Collaborative projects such as the 'MPA Global' project, undertaken through the Sea Around Us Project and the University of British Columbia, with the support of WWF and UNEP-WCMC, have enhanced the amount and quality of marine protected areas data for the WDPA. Early 2008 will see a transition of MPA Global back into the WDPA, which includes the data and the mechanisms for data collection, ready for the re-launch of the redeveloped online WDPA system in 2008.

Through the UN List process, every 4 – 5 years, UNEP-WCMC requests national agencies to review current lists (including GIS) of protected areas for their country as well as to provide updated information. In addition to this process UNEP-WCMC works closely with national agencies, NGOs and protected areas experts (through the IUCN WCPA) around the world to review, update and acquire new protected areas data. Once at UNEP-WCMC the data is processed and validated through a number of spatial (GIS) and database tools, developed by UNEP-WCMC, to project and translate the data into the standard WDPA data structure to enable integration into the database. Once the data has been converted it is also compared to the existing information within the WDPA. Where discrepancies or gaps in the dataset exist UNEP-WCMC staff communicate with the data provider and external data reviewers to resolve any issues. Once the review process is complete the data is fully integrated into the published WDPA.

### **Treatment of missing values**

Where the documented total and/or marine area is unavailable the following rules are applied:

1. Where the documented marine area of the site is unavailable but the spatial (GIS) boundary is present in the WDPA, the marine area is calculated from the GIS.
2. Where a site transcends both the marine and terrestrial environment and no documented areas are available, but spatial (GIS) boundaries exist, it is possible (using spatial analysis) to calculate the area of the marine and terrestrial parts of the site from the GIS.

3. Where the total documented area is available and no spatial (GIS) boundaries are present in the WDPA, but the site is indicated to contain both marine and terrestrial environments, the total marine area becomes 50% of the total documented area.
4. Where the documented marine area exceeds the total documented area by more than 100 km<sup>2</sup>, and spatial (GIS) boundaries are present in the WDPA, the areas calculated from the GIS are used.
5. Where the documented total area and marine area are the same, the site is assumed to be 100% marine.
6. Where spatial (GIS) boundaries are not available and no documented areas are given, the site is excluded from the statistics.

Additionally, sites with missing establishment/designation dates are included in country level time series and in world and regional totals, but are excluded from regional and world time series. Also where the documented area and spatial (GIS) boundary from national sources is unavailable UNEP-WCMC works with collaborating NGOs to help source this information. Where no additional information, either from national sources or NGOs, can be found then the site is excluded from the statistics.

Where no update is received for the following year the total number and area protected is assumed to be equal to the previous year. Countries/territories (e.g. Antarctica) that do not fall into Millennium Development Goals (MDG) regions are added to the world total.

### **Data availability**

Data are available for 233 countries and territories, including marine and coastal areas and can be aggregated and presented in many ways (e.g. by country or region). Explicit quality control criteria are applied to ensure consistency and comparability between national datasets.

The lag between the reference year and actual production of data series is up to one year.

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## Regional and Global estimates

Regional estimates of protected area ratios are calculated by UNEP-WCMC. Estimates are based on the following 4 assumptions:

1. Once a protected area has been designated as protected it is not removed from the list of protected areas. New areas can be added and therefore data have been accumulated over time.
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## Marine areas protected to territorial waters, percentage

### Contact point in international agency

Lucy Fish

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### Definition

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### **Method of computation**

The total marine protected area extent by country/territory is divided by the area of territorial waters (up to 12 nautical miles). Protected areas increase with time and are not deleted from subsequent years.

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The data source for this indicator is the World Database on Protected Areas (WDPA). The WDPA is held within a Geographical Information System (GIS), which can store information about a protected area such as its name, designation, total documented area, geographic location and/or delineated spatial boundary.

### **Comments and limitations**

The ratio of total territorial waters protected is a useful indicator of a Government’s will to protect biodiversity. However it is neither an indication of how well managed the area is, nor confirmation that protection measures are actually enforced. Further, the indicator does not provide information on non-designated protected areas that may also be important for conserving biodiversity.

There are known data and knowledge gaps that exist in some countries/regions due to difficulties in: reporting capacities; measuring the proportion of a protected area within

the terrestrial and/or marine environment; and determining whether a site conforms to the IUCN definition of a protected area/MPA.

### **Sources of discrepancies between global and national figures**

The national figures are aggregated to produce the global statistics for this indicator. For this indicator, the figures are calculated using both total territorial waters and total ocean area to take account of where marine protected areas extend beyond a country's territorial waters (12 nautical mile limit).

### **Process of obtaining data**

The World Database on Protected Areas (WDPA) is compiled from multiple sources and is the most comprehensive global dataset on marine and terrestrial protected areas available. It is a joint project of UNEP-WCMC and the IUCN World Commission on Protected Areas working with governments and collaborating non-governmental organizations (NGOs).

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## Data availability

Data are available for 233 countries and territories, including marine and coastal areas and can be aggregated and presented in many ways (e.g. by country or region). Explicit quality control criteria are applied to ensure consistency and comparability between national datasets.

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## Regional and Global estimates

Regional estimates of protected area ratios are calculated by UNEP-WCMC. Estimates are based on the following 4 assumptions:

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## Expected time of release

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## Indicator Metadata

### Indicator 1.1 Proportion of population below \$1 (PPP) per day

#### Contact point in international agency

Data Help Desk

Development Data Group

The World Bank

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#### Definition

The poverty rate at \$1.25 a day is the proportion of the population living on less than \$1.25 a day, measured at 2005 international prices, adjusted for purchasing power parity (PPP).

Purchasing power parities (PPP) conversion factor, private consumption, is the number of units of a country's currency required to buy the same amount of goods and services in the domestic market as a U.S. dollar would buy in the United States. This conversion factor is applicable to private consumption.

#### Method of computation

The formula for calculating the proportion of the population living below the poverty line, or headcount index, is as follows:

$$P_0 = \frac{1}{N} \sum_{i=1}^N I(y_i \leq z) = \frac{N_p}{N}$$

Where  $I(\cdot)$  is an indicator function that takes on a value of 1 if the bracketed expression is true, and 0 otherwise. If individual consumption or income ( $y_i$ ) is less than the poverty line ( $z$ ), then  $I(\cdot)$  is equal to 1 and the individual is counted as poor.  $N_p$  is the total number of the poor.  $N$  is the total population.

Consumption or income data are gathered from nationally representative household surveys, which contain detailed responses to questions regarding spending habits and sources of income. Whenever possible, consumption is preferred to income for

measuring poverty. When consumption data are not available, income is used. Income is generally more difficult to measure accurately, and consumption accords better with the idea of the standard of living than income, which can vary over time even if the standard of living does not. Nevertheless, consumption data are not always available, and when they are not there is little choice but to use income.

Consumption, including consumption from own production (or income when unavailable), is calculated for the entire household and then divided by the number of persons living in the household to derive a per capita measure.

Poverty measures based on an international poverty line attempt to hold the real value of the poverty line constant across countries, as is done when making comparisons over time. The poverty line used is based on the conversion of the \$1.25 a day international poverty line into the national currency using the latest PPP exchange rates for consumption.<sup>1</sup> The \$1.25 a day poverty line measured in 2005 prices replaces the \$1.08 a day poverty line measured in 1993 prices. Often described as “\$1 a day,” \$1.08 has been widely accepted as the international standard for extreme poverty. The new poverty line maintains the same standard for extreme poverty—the poverty line typical of the poorest countries in the world—but updates it using the latest information on the cost of living in developing countries. Local consumer price surveys are then used to adjust the international poverty line in local currency to prices prevailing along the time of the surveys.

Households are ranked by either consumption or income per person. The distributions are weighted by household size and sample expansion factors so that a given fractile (such as the poorest decile) should have the same share of the country-specific population across the sample. This generates an estimate of the number of people living in households with per capita consumption or income below the poverty line. The total number of poor is divided by the total population to estimate the proportion of the population that is poor. This number is multiplied by 100 to derive a percentage.<sup>2</sup>

- 1 In the early 1990s, 1985 PPP exchange rates from the Penn World tables were used to estimate global poverty. Since 2000, estimates are based on 1993 PPP estimates produced by the World Bank. The current poverty estimates use consumption PPPs from the 2005 round of the International Comparison Program.
- 2 For details on data sources and methods used in deriving the World Bank’s latest estimates, and further discussion of the results, see Chen and Ravallion’s “The developing world is poorer than we thought, but no less successful in the fight against poverty?” (2008), available at: <http://iresearch.worldbank.org/PovcalNet>

## Comments and limitations

International comparisons of poverty estimates entail both conceptual and practical problems. A key building block in developing income and consumption measures of poverty is the poverty line—the critical threshold value below which an individual or household is determined to be poor. Countries set their poverty lines at different thresholds, making consistent international comparisons of poverty difficult. The \$1.25 a day poverty line corresponds to the value of the poverty lines used in some of the poorest countries. Local poverty lines tend to have higher purchasing power in rich countries, where more generous standards are used, than in poor countries.

The internationally comparable lines are useful for producing global aggregates of poverty. In principle, they test for the ability to purchase a basket of commodities that is roughly similar across the world. But such a universal line is generally not suitable for the analysis of poverty within a country. For that purpose, a country-specific poverty line needs to be constructed, reflecting the country's economic and social circumstances. Similarly, the poverty line may need to be adjusted for different locations (such as urban and rural areas) within the country, if prices or access to goods and services differs.

An important step in the process of compiling global poverty estimates is the conversion of the \$1.25 a day international poverty line into respective national currency units. PPP exchange rates, such as those from the International Comparison Program or the Penn World Tables, are used because they take into account the local prices of goods and services not traded internationally. Although PPP rates were designed for comparing aggregates from national accounts, they were not intended for making international poverty comparisons. PPPs are based on prices of goods and services that may not be representative of the consumption baskets of the poor, so they may not fully reflect the relative price level faced by very poor consumers. As a result, there is no certainty that an international poverty line measures the same degree of need or deprivation across countries.

The reliability of the poverty estimates may be affected by the quality of the PPPs and price indexes used. Although the 2005 International Comparison Program was the most comprehensive international price survey ever undertaken and employed more advanced methods than previous rounds, the resulting estimates may be affected by differences in sampling procedures, measurement errors, assumptions and approximations made in estimating prices that could not be obtained from price surveys, and the form of the multilateral price index. All of this notwithstanding, the 2005 International Comparison Program provides our best estimates of the comparative purchasing power of currencies.

Similarly, the quality of consumer price indexes around the world varies widely, which may affect the reliability of extrapolations over long periods and comparisons across countries. Consumer price indexes can be particularly problematic when the specification of goods included in consumer price surveys and the expenditure weights used to aggregate prices have not been updated in a long time. Furthermore, unlike the International Comparison Program price surveys, products priced in the consumer price index may be loosely defined and may differ in characteristics from one part of the country to another.

The price data from which the PPPs are calculated are supposed to reflect national average prices in each country. However, in many countries, the price surveys were carried out entirely, or in large part, in urban areas. In China, for example, the International Comparison Program surveys were conducted in 11 highly urbanized provinces. Based on International Comparison Program sampling information, Ravallion, Chen, and Sangraula (2008) treated the 2005 consumption PPPs from Argentina, Brazil, Bolivia, Cambodia, Chile, China, Colombia, Ecuador, Pakistan, Peru, Thailand, and Uruguay as representing urban price levels. For China differentials between the national urban and rural poverty lines were used to adjust the PPPs to correct for the putative "urban bias." Similar adjustments were made to the PPPs in India and Indonesia, although the International Comparison Program survey data for these countries covered both urban and rural areas.

In these cases urban and rural PPPs were derived from the ratio of the urban to rural poverty lines such that their expenditure-weighted average was equal to the national PPP. These PPPs were then used to convert the international poverty line to separate urban and rural lines in local currencies, which were applied to urban and rural consumption distributions.

This approach is only possible when countries maintain well defined urban and rural poverty lines and consumer price index series.

Comparisons of countries at different levels of development also pose a potential problem because of differences in the relative importance of consumption of nonmarket goods. The local market value of all consumption in kind (including own production, particularly important in underdeveloped rural economies) should be included in total consumption expenditure. Similarly, imputed profit from the production of nonmarket goods should be included in income. This is not always done, though such omissions were a far bigger problem in surveys before the 1980s. Most survey data now include valuations for consumption or income from own production. Nonetheless, valuation

methods vary. For example, some surveys use the price in the nearest market, while others use the average farmgate selling price.

There is also a problem with comparability of across surveys: household survey questionnaires can differ widely, and similar surveys may not be strictly comparable because of differences in quality. These problems are diminishing as survey methods improve and become more standardized, but achieving strict comparability is still impossible. Problems of survey design and data collection are discussed in detail in the metadata document for national poverty estimates.

The poverty rate, a “headcount” measure, is one of the most commonly calculated measures of poverty. Yet it has the drawback that it does not capture either income inequality among the poor or the depth of poverty; failing to account for the fact that some people may be living just below the poverty line while others experience far greater shortfalls. Policymakers seeking to make the largest possible impact on the headcount measure might be tempted to direct their poverty alleviation resources to those closest to the poverty line (and therefore least poor). Lastly, this indicator measures poverty based on household per capita income/consumption, ignoring intra-household inequality in the distribution of resources, and does not take into account other dimensions of poverty such as inequality, vulnerability, and lack of voice and power of the poor.

### **Sources of discrepancies between global and national figures**

Global poverty rates are based on the international poverty line of \$1.25 day measured at 2005 prices and cannot be directly compared with national level poverty rates, which are derived using country specific poverty lines estimated in local currencies.

### **Process of obtaining data**

The indicator is produced by the World Bank Development Research Group based on microlevel data from nationally representative household surveys, which are conducted by national statistical offices or by private agencies under the supervision of government or international agencies and obtained from government statistical offices and World Bank Group country departments.

Only nationally representative surveys that are of good quality, contain sufficient information to produce a comprehensive consumption or income aggregate, and allow for the construction of a correctly weighted distribution of per capita consumption or income are used.

As described above, global poverty indicators are produced for each country using an international comparable poverty line, enabling comparisons across countries.

## Treatment of missing values

In principle, there is no adjustment for missing data, as the indicator is calculated only in years and countries for which suitable survey data are available.

## Data availability

The World Bank has records from 675 household surveys covering 115 developing countries collected between 1979 and 2007. More than 1.2 million randomly sampled households were interviewed in these surveys, representing 96 percent of the population of developing countries. Not all these surveys are comparable in design and sampling methods. Nonrepresentative surveys, though useful for some purposes, are excluded from the calculation of international poverty rates. There are 508 surveys for 115 countries used for deriving poverty estimates.

The World Bank produced its first global poverty estimates for developing countries for *World Development Report 1990* using household survey data for 22 countries. Since 1979 there has been considerable expansion in the number of countries that field such surveys, and the number of data sets within two years of any given year rose dramatically, from 13 between 1978 and 1982 to 158 between 2001 and 2006.

Data coverage is improving in all regions, but the Middle East and North Africa and Sub-Saharan Africa continue to lag. The database, maintained by a team in the World Bank's Development Research Group, is updated annually as new survey data become available, and a major reassessment of progress against poverty is made about every three years. A complete overview of data availability by year and country is available at: <http://iresearch.worldbank.org/PovcalNet>.

Data are available for 115 countries.

International poverty estimates are available for low and middle-income countries only. Some high-income countries also report poverty indicators, but the \$1.25 day poverty line is not relevant. Therefore, the indicator is "not applicable" for high-income countries.

The lag between the reference year and actual production of data series depends on the availability and reliability of the household survey for each country. Lag between the latest available year for aggregate estimates and the actual production year is about 3 years.

Data are updated semi-annually in April and September of each year, but the availability of new estimate for a country will also depend on availability of new household surveys.

Household budget or income surveys are undertaken at different intervals in different countries. In developing countries they typically take place every three to five years.

### **Regional and Global estimates**

To compare the number of poor across different countries and compute regional aggregates, country estimates must first be “lined up” to a common reference year, interpolating for countries in which survey data are not available in the reference year but are available either before, after, or both. The more survey data available (that is, the more data for different years), the more accurate the interpolation. The process requires adjusting the mean income or expenditure observed in the survey year by a growth factor to infer the unobserved level in the reference year. Thus, two assumptions are required to implement this process: distribution-neutral growth and a conjectured real rate of growth between the survey and reference year. Distribution-neutral growth implies that income or expenditure levels are adjusted for growth assuming that the underlying distribution of income or expenditure observed in survey years remains unchanged. Under this assumption, it is straightforward to interpolate the poverty estimate in a given reference year implied by a given rate of growth in income or expenditure. Rate of change in real consumption per capita should be based on the change in real consumption measured by comparing country survey data across different years. In practice, however, survey data in most countries are not available on an annual basis. Therefore, the change in private consumption per capita as measured from the national accounts is used instead. While, there can be no guarantee that the survey-based measure of income or consumption change at exactly the same rate as private consumption in the national accounts, under certain circumstances and over short periods of time it can provide a reasonable approximation.

When the reference year falls between two survey years, an estimate of mean consumption at the reference year is constructed by extrapolating the means obtained from the surveys forward and backward to the reference year. The second step is to compute the headcount poverty rate at the reference year after normalizing the distributions observed in the two survey years by the reference year mean. This yields two estimates of the headcount poverty rates in the reference year. The final reported poverty headcount rate for the reference years is the average of the two. When data from only one survey year are available, the reference year mean is based on the survey mean by applying the growth rate in private consumption per capita from the national accounts. The reference year poverty estimate is then based on this mean and on the distribution observed in the one survey year. The better data coverage is in terms of number and frequency of available surveys, the more accurate this lining-up process is and the more reliable the regional estimates will be.<sup>1</sup>

- 1 For details see Chen and Ravallion's "The developing world is poorer than we thought, but no less successful in the fight against poverty?" (2008), available at: <http://iresearch.worldbank.org/PovcalNet>

### Expected time of release

The World Bank World Development Indicators (WDI) Online database, which contains this series, is updated semi-annually in April and September each year, but availability of a new estimate for a country will depend on availability of new suitable household surveys. International poverty estimates are also published in PovcalNet—an interactive analysis tool, available at: <http://iresearch.worldbank.org/PovcalNet>.

## Indicator 1.2 Poverty gap ratio

### Contact point in international agency

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### Definition

Poverty gap is the mean shortfall of the total population from the poverty line (counting the nonpoor as having zero shortfall), expressed as a percentage of the poverty line. This measure reflects the depth of poverty as well as its incidence.

The indicator is often described as measuring the per capita amount of resources needed to eliminate poverty, or reduce the poor's shortfall from the poverty line to zero, through perfectly targeted cash transfers.

In the database, data reported with a value of 0.5 signify a poverty gap of less than 0.5 percent.

### Method of computation

The poverty gap index which is related to the headcount index, is measured as follows:

$$P_1 = \frac{1}{N} \sum_{i=1}^M \left( \frac{G_n}{z} \right), G_n = (z - y_i) \cdot I(y_i \leq z).$$

where the poverty gap ( $G_n$ ) is the difference between the poverty line ( $z$ ) and income or consumption for those who are poor (the non-poor have a poverty gap of zero).  $I(\cdot)$  is an indicator function that equals 1 if the bracketed expression is true, and 0 otherwise.  $N$  is the total population.

Estimates are computed using data from nationally representative household surveys that are conducted by national statistical offices or by private agencies under the supervision of government or international agencies and obtained from government statistical offices and World Bank Group country departments.

Poverty measures based on an international poverty line attempt to hold the real value of the poverty line constant across countries, as is done when making comparisons over time. The poverty line used is based on the conversion of the \$1.25 a day international poverty line into respective national currency units the latest PPP exchange rates for consumption.<sup>1</sup> The \$1.25 a day poverty line measured in 2005 prices replaces the \$1.08 a day poverty line measured in 1993 prices. Often described as “\$1 a day,” \$1.08 has been widely accepted as the international standard for extreme poverty. The new poverty line maintains the same standard for extreme poverty—the poverty line typical of the poorest countries in the world—but updates it using the latest information on the cost of living in developing countries. Local consumer price surveys are then used to adjust the international poverty line in local currency to prices prevailing along the time of the surveys.

1 In the early 1990s, 1985 PPP exchange rates from the Penn World tables were used to estimate global poverty. For 2000-2007, estimates are based on 1993 PPP estimates produced by the World Bank. The current poverty estimates use consumption PPPs from the 2005 round of the International Comparison Program.

### Comments and limitations

A key building block in developing income and consumption measures of poverty is the poverty line—the critical threshold value below which an individual or household is determined to be poor. Countries set their poverty lines at different thresholds, making consistent international comparisons of poverty difficult.

In order to compare poverty across countries, a consistent international poverty line must be used to measure poverty. Using a single poverty line makes it possible to assess poverty incidence across countries and regions that is free from the influence of different country practices in setting poverty lines. The \$1.25 a day poverty line corresponds to the value of the poverty lines used in some of the poorest countries. National poverty lines tend to increase in purchasing power with the average level of income in a country.

The internationally comparable lines are useful for producing global aggregates of poverty. In principle, they test for the ability to purchase a basket of commodities that is roughly similar across the world. But such a universal line is generally not suitable for the analysis of poverty within a country. For that purpose, a country-specific poverty line needs to be constructed, reflecting the country's economic and social circumstances. Similarly, the poverty line may need to be adjusted for different locations (such as urban and rural areas) within the country, if prices or access to goods and services differs.

An important step in the process of compiling global poverty estimates is the conversion of the \$1.25 a day international poverty line into respective national currency units. PPP exchange rates, such as those from the Penn World Tables or the World Bank, are used because they take into account the local prices of goods and services not traded internationally. Although PPP rates were designed for comparing aggregates from national accounts, they were not intended for making international poverty comparisons. PPPs are based on prices of commodities that are not representative of the consumption baskets of the poor, so they may not fully reflect the comparative cost of goods typically consumed by the very poor. As a result, there is no certainty that an international poverty line measures the same degree of need or deprivation across countries. Further, any revisions in the PPP of a country to incorporate better price indexes can produce dramatically different poverty lines in local currency.

The reliability of the poverty estimates may be affected by the quality of the PPPs and price indexes used. Although the 2005 International Comparison Program was the most comprehensive international price survey ever undertaken and employed more advanced methods than previous rounds, the resulting estimates may be affected by differences in sampling procedures, measurement errors, assumptions and approximations made in estimating prices that could not be obtained from price surveys, and the form of the multilateral price index. All of this notwithstanding, the 2005 International Comparison Program provides our best estimates of the comparative purchasing power of currencies.

Similarly, the quality of consumer price indexes around the world varies widely, which may affect the reliability of extrapolations over long periods and comparisons across countries. Consumer price indexes can be particularly problematic when the specification of goods included in consumer price surveys and the expenditure weights used to aggregate prices have not been updated in a long time. Furthermore, unlike the International Comparison Program price surveys, products priced in the consumer price index may be loosely defined and may differ in characteristics from one part of the country to another.

The price data from which the PPPs are calculated are supposed to reflect national average prices in each country. However, in many countries, the price surveys were carried out entirely, or in large part, in urban areas. In China, for example, the International Comparison Program surveys were conducted in 11 highly urbanized provinces. Based on International Comparison Program sampling information, Ravallion, Chen, and Sangraula (2008) treated the 2005 consumption PPPs from Argentina, Brazil, Bolivia, Cambodia, Chile, China, Colombia, Ecuador, Pakistan, Peru, Thailand, and Uruguay as representing urban price levels. For China differentials between the national urban and rural poverty lines were used to adjust the PPPs to correct for the putative "urban bias." Similar adjustments were made to the PPPs in India and Indonesia, although the International Comparison Program survey data for these countries covered both urban and rural areas.

In these cases urban and rural PPPs were derived from the ratio of the urban to rural poverty lines such that their expenditure-weighted average was equal to the national PPP. These PPPs were then used to convert the international poverty line to separate urban and rural lines in local currencies, which were applied to urban and rural consumption distributions.

This approach is only possible when countries maintain well defined urban and rural poverty lines and consumer price index series.

Comparisons of countries at different levels of development also pose a potential problem because of differences in the relative importance of consumption of nonmarket goods. The local market value of all consumption in kind (including own production, particularly important in underdeveloped rural economies) should be included in total consumption expenditure. Similarly, imputed profit from the production of nonmarket goods should be included in income. This is not always done, though such omissions were a far bigger problem in surveys before the 1980s. Most survey data now include valuations for consumption or income from own production. Nonetheless, valuation methods vary. For example, some surveys use the price in the nearest market, while others use the average farmgate selling price.

There is also a problem with comparability of across surveys: household survey questionnaires can differ widely, and similar surveys may not be strictly comparable because of differences in quality. These problems are diminishing as survey methods improve and become more standardized, but achieving strict comparability is still impossible. Problems of survey design and data collection are discussed in detail in the metadata document for national poverty estimates.

Lastly, this indicator measures poverty based on household per capita income/consumption, ignoring intrahousehold inequality in the distribution of resources, and does not take into account other dimensions of poverty such as inequality, vulnerability, and lack of voice and power of the poor.

### **Sources of discrepancies between global and national figures**

Global poverty gap measures are based on the international poverty line of \$1.25 a day measured at 2005 prices and cannot be directly compared with national level poverty gap measures; which are derived using country specific poverty lines estimated in local currencies.

### **Process of obtaining data**

The indicator is produced by the World Bank Development Research Group, using nationally representative household surveys that are conducted by national statistical offices or by private agencies under the supervision of government or international agencies and obtained from government statistical offices and World Bank Group country departments.

Only nationally representative surveys that are of good quality, contain sufficient information to produce a comprehensive consumption or income aggregate, and allow for the construction of a correctly weighted distribution of per capita consumption or income are used.

As described above, poverty indicators are produced for each country based on an international comparable poverty line, enabling comparisons across countries.

### **Treatment of missing values**

In principle, there is not adjustment for missing data, as the indicator is calculated only in years and countries for which suitable survey data are available.

### **Data availability**

The World Bank has records from 675 household surveys covering 115 developing countries collected between 1979 and 2007. More than 1.2 million randomly sampled households were interviewed in these surveys, representing 96 percent of the population of developing countries. Not all these surveys are comparable in design and sampling methods. Nonrepresentative surveys, though useful for some purposes, are excluded from the calculation of international poverty rates. There are 508 surveys for 115 countries used for deriving poverty estimates.

The World Bank produced its first global poverty estimates for developing countries for *World Development Report 1990* using household survey data for 22 countries. Since 1979 there has been considerable expansion in the number of countries that field such surveys, and the number of data sets within two years of any given year rose dramatically, from 13 between 1978 and 1982 to 158 between 2001 and 2006.

Data coverage is improving in all regions, but the Middle East and North Africa and Sub-Saharan Africa continue to lag. The database, maintained by a team in the World Bank's Development Research Group, is updated annually as new survey data become available, and a major reassessment of progress against poverty is made about every three years. A complete overview of data availability by year and country is available at: <http://iresearch.worldbank.org/PovcalNet>.

Data are available for 115 countries.

International poverty estimates are available for low and middle-income countries only. Some high-income countries also report poverty indicators, but the \$1.25 day poverty line is not relevant. Therefore, the indicator is "not applicable" for high-income countries.

The lag between the reference year and actual production of data series depends on the availability and reliability of the household survey for each country. Lag between the latest available year for aggregate estimates and the actual production year is about 3 years.

Data are updated semi-annually in April and September of each year, but the availability of new estimate for a country will also depend on availability of new household surveys. Household budget or income surveys are undertaken at different intervals in different countries. In developing countries they typically take place every three to five years.

### **Regional and Global estimates**

To compare the number of poor across different countries and compute regional aggregates, country estimates must first be "lined up" to a common reference year, interpolating for countries in which survey data are not available in the reference year but are available either before, after, or both. The more survey data available (that is, the more data for different years), the more accurate the interpolation. The process requires adjusting the mean income or expenditure observed in the survey year by a growth factor to infer the unobserved level in the reference year. Thus, two assumptions are required to implement this process: distribution-neutral growth and a conjectured real rate of growth between the survey and reference year. Distribution-neutral growth implies that income or expenditure levels are adjusted for growth assuming that the

underlying distribution of income or expenditure observed in survey years remains unchanged. Under this assumption, it is straightforward to interpolate the poverty estimate in a given reference year implied by a given rate of growth in income or expenditure. Rate of change in real consumption per capita should be based on the change in real consumption measured by comparing country survey data across different years. In practice, however, survey data in most countries are not available on an annual basis. Therefore, the change in private consumption per capita as measured from the national accounts is used instead. While, there can be no guarantee that the survey-based measure of income or consumption change at exactly the same rate as private consumption in the national accounts, under certain circumstances and over short periods of time it can provide a reasonable approximation.

When the reference year falls between two survey years, an estimate of mean consumption at the reference year is constructed by extrapolating the means obtained from the surveys forward and backward to the reference year. The second step is to compute the headcount poverty rate at the reference year after normalizing the distributions observed in the two survey years by the reference year mean. This yields two estimates of the headcount poverty rates in the reference year. The final reported poverty headcount rate for the reference years is the average of the two. When data from only one survey year are available, the reference year mean is based on the survey mean by applying the growth rate in private consumption per capita from the national accounts. The reference year poverty estimate is then based on this mean and on the distribution observed in the one survey year. The better data coverage is in terms of number and frequency of available surveys, the more accurate this lining-up process is and the more reliable the regional estimates will be. Regional poverty gaps are estimated using the aforementioned formula.<sup>1</sup>

- 1 For details on data sources and methods used in deriving the World Bank's latest estimates, and further discussion of the results, see Chen and Ravallion's "The developing world is poorer than we thought, but no less successful in the fight against poverty?" (2008), available at: <http://iresearch.worldbank.org/PovcalNet>.

### **Expected time of release**

The World Bank World Development Indicators (WDI) Online database, which contains this series, is updated semi-annually in April and September each year, but availability of a new estimate for a country will depend on availability of new suitable household surveys. International poverty estimates are also published in PovcalNet—an interactive analysis tool, available at: <http://iresearch.worldbank.org/PovcalNet>.

## Indicator 1.3 Share of poorest quintile in national consumption

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### Definition

The poorest quintiles' percentage share of national income or consumption is the share that accrues to the bottom fifth (quintile) of the population.

### Method of computation

Inequality in the distribution of income is reflected in the percentage shares of income or consumption accruing to portions of the population ranked by income or consumption levels.

Data on the distribution of income or consumption come from nationally representative household surveys. Where the original data from the household survey are available, they can be used to directly calculate the income or consumption shares by quintile. Otherwise, shares have been estimated from the best available grouped data. Consumption, including consumption from own production, or income is calculated for the entire household, adjusted for household size, and then divided by the number of persons living in the household to derive a per capita measure. The population is then ranked by consumption or income; and then the bottom fifth of the population's consumption or income is expressed as a percentage of aggregate household income. The calculations are made in local currency, without adjustment for price changes or exchange rates or for spatial differences in the cost of living within countries are not made, because the data needed for such calculations are generally unavailable.

Income distribution for high-income countries are calculated directly from the Luxembourg Income Study database, using an estimation method consistent with that applied for developing countries.

## **Comments and limitations**

Because the underlying household surveys differ in method and type of data collected, the distribution data are not strictly comparable across countries. These problems are diminishing as survey methods improve and become more standardized, but achieving strict comparability is still impossible. Two sources of noncomparability should be noted in particular. First, the surveys can differ in many respects, including whether they use income or consumption expenditure as the living standard indicator. The distribution of income is typically more unequal than the distribution of consumption. In addition, the definitions of income used differ more often among surveys. Consumption is usually a much better welfare indicator, particularly in developing countries.

Second, households differ in size (number of members) and in the extent of income sharing among members. And individuals differ in age and consumption needs. Differences among countries in these respects may bias comparisons of distribution. World Bank staff has made an effort to ensure that the data are as comparable as possible. Wherever possible, consumption has been used rather than income.

## **Sources of discrepancies between global and national figures**

National figures might differ from the global estimates due to differences in computation method (adjusted vs. unadjusted for household size, income distribution used instead of consumption etc.) and the input surveys used.

## **Process of obtaining data**

The World Bank Development Research Group produces the indicator using nationally representative household surveys that are conducted by national statistical offices or by private agencies under the supervision of government or international agencies and obtained from government statistical offices and World Bank Group country departments. For most countries the income distribution indicators are based on the same data used to derive the \$1.25 a day poverty estimates. The Luxemburg Income Study provides data for high-income countries. The World Bank is developing a time series database of distributional information. At present, only data for the most recent year and for surveys determined to be nationally representative are reported in the World Bank database.

To allow comparability across countries, measures are estimated from the primary data source (tabulations or household level data) using a consistent method of estimation rather than relying on existing estimates. The estimation from tabulations requires an interpolation method. Parameterized Lorenz curves with flexible functional forms are mainly used.

### **Treatment of missing values**

In principle, there is no adjustment for missing data, as the indicator is calculated only in year for which a suitable survey data of group data are available.

### **Data availability**

Data are available for 130 countries.

Estimates are available only at the national level. In order to calculate distribution of income or consumption for a region (or income group), data collected through uniform surveys across all countries in the region (or income group) are needed. However, such data are not available at the moment. Methods for generating regional and global estimates are in development.

The lag between the reference year and actual production of data series depends on the availability and reliability of the household survey for each country. In developing countries they typically take place every three to five years. This series is updated semi-annually in April and September each year, but the availability of new estimates for countries depends on the availability of new suitable household surveys.

### **Regional and Global estimates**

Regional and global estimates are not available at the moment. Methods for generating regional and global estimates are in development.

### **Expected time of release**

The World Development Indicators (WDI) Online database, which contains this series, is updated semi-annually in April and September each year, but the availability of new estimates for countries depends on the availability of new suitable household surveys.

## **Indicator 1.8 Prevalence of underweight children under-five years of age**

**Please refer to series metadata**

## **Indicator 1.9 Proportion of population below minimum level of dietary energy consumption**

**Contact point in international agency**

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[http://www.fao.org/faostat/foodsecurity/index\\_fr.htm](http://www.fao.org/faostat/foodsecurity/index_fr.htm) (French) and

[http://www.fao.org/faostat/foodsecurity/index\\_es.htm](http://www.fao.org/faostat/foodsecurity/index_es.htm) (Spanish)

## Definition

The proportion of the population below the minimum level of dietary energy consumption referred to as the prevalence of undernourishment, is the percentage of the population that is undernourished or food deprived.

The undernourished or food deprived are those individuals whose food intake falls below the minimum level of dietary energy requirements.

## Method of computation

FAO's estimates of the prevalence of undernourishment are essentially a measure of food deprivation based on the calculation of three key parameters for each country: the average amount of food available for human consumption per person, the level of inequality in access to that food and the minimum number of calories required for an average person.

Average food available for human consumption comes from national "food balance sheets" compiled by FAO every year which estimate how much of each food commodity a country produces, imports and withdraws from stocks for other non-food purposes. FAO then divides the energy equivalent of all the food available for human consumption by the total population to come up with average daily energy consumption.

Data from household surveys are used to derive a coefficient of variation to account for the degree of inequality in access to food. Similarly, since a large adult needs almost twice as much dietary energy as a three-year-old child, the minimum energy requirement per person for each country takes into account its mix of age, gender and body sizes.

The minimum level of dietary energy requirement is derived from the FAO/WHO/UNU Expert Consultation in 2001, which established energy standards, published in 2004, for different sex and age groups performing sedentary physical activity and with a minimum acceptable body-weight for attained heights.

The average energy requirement is the amount of food energy needed to balance energy expenditure in order to maintain body-weight, body composition and a level of necessary and desirable physical activity consistent with long-term good health. This includes the energy needed for the optimal growth and development of children, for the deposition of tissues during pregnancy, and for the secretion of milk during lactation consistent with the good health of mother and child. The recommended level of dietary energy intake for a population group is the mean energy requirement of the healthy, well-nourished individuals who constitute that group.

FAO reports the proportion of the population whose daily food intake falls below that minimum energy requirement as undernourished. Trends in undernourishment are mainly driven by:

- Changes in food consumption as measured by country Food Balance Sheets;
- Changes in the variance of the distribution of dietary energy consumption in the population, induced by changes in both the distribution of dietary energy consumption due to income levels, and the distribution of dietary energy requirements based on weight for attained heights by sex and age; and
- Changes in the minimum level of dietary energy consumption, induced by changes attained heights and the sex-age population structure.

This indicator has been defined within a probability distribution framework as follows:

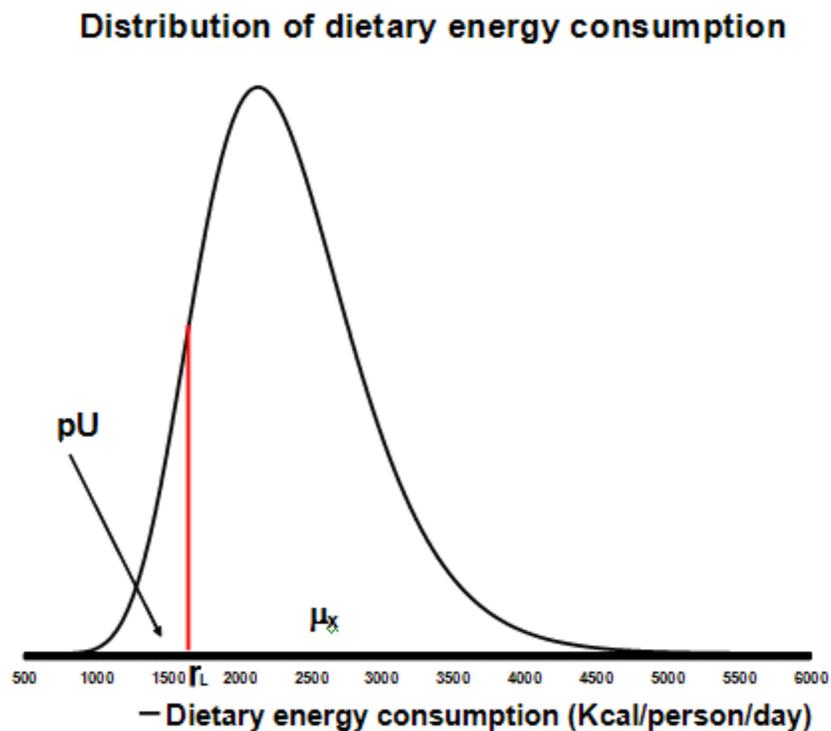
$$P(U) = P(x < r_L) = \int_{x < r_L} f(x) dx = F_x(r_L)$$

where:

- P(U) is the proportion of undernourished in total population;
- (x) refers to the dietary energy consumption or intake;
- rL is a cut-off point reflecting the minimum acceptable dietary energy consumption;
- f(x) is the density function of dietary energy intake; and,
- Fx is the cumulative distribution function.

In developing the methodology for estimating the prevalence of undernourishment, a basic problem concerns the use of energy requirement norms and energy consumption for individuals. Even after taking into account the most influential factors such as age, sex, body weight and activity, differences exist in the energy requirement of individuals. As it is not feasible to determine energy consumption of individuals, the estimate of the proportion of individuals with insufficient energy consumption is defined within a probability distribution framework.

The graph below illustrates the methodological framework for the estimation procedures of the proportion of population who are undernourished.



In the graph above, the curve  $f(x)$  depicts the proportion of the population corresponding to different per person dietary energy consumption levels ( $x$ ) represented by the horizontal line. The area under the curve up to the minimum acceptable dietary energy consumption,  $r_L$ , represents the proportion of the population below minimum level of dietary energy consumption or the proportion of the population undernourished, i.e. prevalence of undernourishment,  $p_U$ .

### Comments and limitations

The monitoring of the hunger reduction target is based on two related problems: food deprivation and child malnutrition. The prevalence of undernourishment is based on food deprivation within the whole population. Underweight prevalence is based on anthropometry within the child population. Each indicator targets different population groups and aims to measure different dimensions of hunger. In this sense, the indicator of undernutrition in children (inadequate weight for a given age) is an effect of not only food deprivation but of other multiple factors such as infections, adverse environmental conditions and inadequate care. Therefore, the combined use of both indicators would enhance the understanding of the changes in the food and nutrition situation.

The FAO methodology suffers from several obvious limitations. For one thing, the estimates it produces are only as reliable and accurate as the data used to calculate the food balance sheets, levels of inequality and daily energy requirement cut-off points. For many countries, the reliability of the underlying food balance sheet data and measures of inequality is uncertain. A relatively small variation in just one of these parameters can make a big difference in a country's estimated level of hunger. Furthermore, estimates based on national production and trade figures cannot be used to pinpoint where hunger has become increasingly concentrated in specific geographic areas and socio-economic groups.

However national institutions in some countries have been successful in estimating the prevalence of undernourishment in the population at subnational levels, in particular countries participating in the FAO Household Survey Programme for estimating food security statistics.

### **Sources of discrepancies between global and national figures**

The indicator is not typically available for individual countries. But where national figures do exist, global and national estimates may vary based on the source of the estimates of food consumption data.

When food available for human consumption data are derived from national food balances, global and national figures should not differ as they refer to food consumption in the total population (private and public). However, in countries with a small resident population compared to the non-resident population (tourist population, for example), there may be discrepancies if national food balances include food consumed by the non-resident population.

When food consumption data are derived from national household surveys, global and national figures may differ as the global figures refer to food consumption in the total population (private and public), while figures derived from national household surveys refer to private food consumption, that is, only the total population living in households and ignore the population in public establishment as prisons, military barracks, hospitals, residences and so forth.

### **Process of obtaining data**

Data are provided by National Statistical Offices, Ministries of Agriculture and other national institutions in charge of preparing national food balances or engaged in national food security.

Data for the calculation of the indicator consist of:

- Food production;
- Food trade;
- Other information within the framework of the food supply and utilization accounts for the preparation of food balance sheets to estimate of food availability for human consumption (private and public);
- Means of dietary energy consumption (private consumption) on per person per day basis by income or total expenditure levels (deciles of per person income or total expenditure) derived from National Household Surveys collecting food consumption data (private consumption);
- Means of attained heights by sex and age-groups derived from National Anthropometric Surveys;
- Population and sex and age population structure as compiled and disseminated by the UN Population Division using country data.

The accuracy of dietary energy consumption estimates varies from country to country. Evaluation of accuracy consists both of internal and external consistency checks, based on a complete revision of all related information (underlying concepts, definitions and methods of obtaining data comparisons with other related supplementary information).

Country data on changes of the variance of the distribution of dietary energy consumption in the population have been very limited during the last three decades due to the insufficient utilization of food consumption data in quantities collected in national household surveys which need to be converted to dietary energy consumption. The dietary energy consumption due to income levels may change over time; hence the variance of dietary energy consumption.

Data on height secular trends by sex and age-groups are scarce since countries are not conducting regular anthropometric surveys in the total population but are limited to the child population for nutritional status assessment so that publications are limited to estimates of the prevalence of undernutrition.

Data on sex and age group population structure is updated periodically on the basis of UN Population Division estimates so that changes in both the minimum dietary energy consumption and the variance of dietary energy consumption induced by changes in sex-age population structure are taken into account.

FAO has considered the estimate of the variance of the distribution of dietary energy consumption from two sources of variation: first the variation of energy consumption due to biological factors such as age, sex, height and physical activity level, and second, the variation energy consumption due to income levels.

## Treatment of missing values

In principle, there is not adjustment for missing data, as the indicator is calculated only in years and countries for which suitable data are available. When the information on food production and trade is not available, even if other input data are available, the prevalence of undernourishment is not estimated.

However, when information on heights is missing for individual countries, heights estimates from other similar countries are used. When household data on food consumption is missing the coefficient of variation due to income is estimated using regressive methods.

For additional details see:

<http://www.fao.org/docrep/005/Y4249E/Y4249E00.HTM> and  
<http://www.fao.org/docrep/005/Y4249E/y4249e06.htm#bm06>

## Data availability

Data are available for 151 countries from the 1990-92, the World Food Summit and Millennium Development Goals benchmark period, to the latest three-year period available.

Universe/population of interest: Total population in the world

The lag between the reference year and actual production of data series is 3-4 years.

Data are produced annually, but are under revision every two years.

## Regional and Global estimates

Data at the regional and sub regional level are aggregated by adding up the number of undernourished people of each country within a region or sub-region and dividing this by the total population of the same region or sub-region.

Aggregations are performed with country estimates published and rough country estimates for countries not published.

## Expected time of release

Estimates are released in October-November every year, by the FAO in the State of Food Insecurity in World (SOFI) publication, the FAOStat database (<http://faostat.fao.org/>) and the Food Security Statistics webpage at [http://www.fao.org/faostat/foodsecurity/index\\_en.htm](http://www.fao.org/faostat/foodsecurity/index_en.htm)

## Indicator 2.1 Net enrolment ratio in primary education

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### Definition

Net primary enrolment rate in primary education is the number of children of official primary school age (according to ISCED97<sup>1</sup>) who are enrolled in primary education as a percentage of the total children of the official school age population. Total net primary enrolment rate also includes children of primary school age enrolled in secondary education. Where more than one system of primary education exists within the country the most widespread or common structure is used for determining the official school age group.

<sup>1</sup> *International Standard Classification of Education (ISCED 97)*. Primary education is defined by ISCED97 as programmes normally designed on a unit or project basis to give pupils a sound basic education in reading, writing and mathematics along with an elementary understanding of other subjects such as history, geography, natural science, social science, art and music.

### Method of computation

To calculate the indicator one must first determine the population of official school age by reference to the theoretical starting age and duration of ISCED97 Level 1 (primary education) as reported by the country.

Then, the number of pupils enrolled in primary (or secondary) education who are of the official primary school age is divided by the population for the same age-group and the result is multiplied by 100. This method requires information on the structure of education (i.e. theoretical entrance age and duration of ISCED97 Level 1), enrolment by single years of age and population of the age-group corresponding to the given level of education.

## Comments and limitations

A high Net Enrolment Rate (NER) denotes a high degree of enrolment in education by the official school-age population. The NER is the number of pupils of the theoretical school-age group for a given level of education, expressed as a percentage of the total population in that age group. The theoretical maximum value is 100%. Total NERs below 100 percent provide a measure of the proportion of primary school age children who are out of school. When the NER is compared with the Gross Enrolment Rate (GER) the difference between the two ratios highlights the incidence of under-aged and over-aged enrolment. The GER is the number of pupils 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.

Net Enrolment Rates may exceed 100% due to inconsistencies between population and enrolment data. In this case the indicator is adjusted by the Unesco Institute for Statistics (UIS) using a capping factor so that the Gender Parity Index<sup>1</sup> of the new set of values remains the same as for the original values but setting the higher of the male and female NERs to 100% and adjusting the other values proportionately.

Administrators may report exaggerated enrolments, especially if there is a financial incentive to do so. Children's ages may be inaccurately estimated or misstated. Census data may be out of date or unreliable.

<sup>1</sup> Gender parity index is the ratio of female to male values of a given indicator. A GPI of 1 indicates parity between sexes.

## Sources of discrepancies between global and national figures

Nationally-published figures may differ from the international ones because of differences between national education systems and ISCED97; or differences in coverage (i.e. the extent to which different types of education – e.g. private or special education – or different types of programmes e.g. adult education or early childhood care and education - are included in one rather than the other) and/or between national and the United Nations Population Division (UNPD) population data.

## Process of obtaining data

The UIS produces time series based on enrolment data reported by education ministries or national statistical offices and UN population estimates. These data are gathered through questionnaires sent annually to countries which are typically completed by ministries of education and/or national statistical offices. Countries are asked to report

data according to the levels of education defined in ISCED97 to ensure international comparability of resulting indicators.

The data received by UIS are validated using electronic error detection systems that check for arithmetic errors & inconsistencies and trend analysis for implausible results. Queries are taken up with the country representatives reporting the data so that corrections can be made (of errors) or explanations given (of implausible but correct results).

In addition, countries also have an opportunity to see and comment on the main indicators the UIS produces in an annual “country review” of indicators.

National data derived from administrative records are not necessarily based on the same classification over time and may not be comparable with data for other countries, unless exactly the same classification is used. Enrolments data compiled by UNESCO are then adjusted to be consistent with the ICSCED1997 and are therefore comparable across countries.

The UIS also, if necessary, adjusts nationally reported data in order to take account either of under-reporting (i.e. data gaps) or over-reporting (i.e. inclusion of education programmes not covered by its surveys) before calculating indicators. In such cases, the results – if published – will normally be designated as UIS estimates (denoted by \*\* in UIS publications).

### **Treatment of missing values**

The UIS estimates certain key items of data that may be missing or incomplete. Where data for a country are entirely missing or where an estimate is not based on evidence from or about the country directly, the UIS does not publish the resulting country-level estimates. They are used only for the purposes of calculating regional or global aggregates or averages.

For the purposes of calculating the primary Net Enrolment Rate, the UIS may make one or more of the following:

- An adjustment to account for over- or under-reporting, for example:
  - To exclude enrolments in other programmes which have been reported together with enrolments at the primary level (very rare – and does not usually result in a country level publishable estimate);
  - To include enrolments in a type of education – such as private education or special education – not reported by the country; and/or
  - To include enrolments in a part of the country not reported by the country.

- An estimate of the number of enrolments in the official age group for primary education (as distinct from total enrolments in primary education)
- A redistribution of enrolments of unknown age (across known ages including the official age group for primary education)
- An estimate of the population in the official age group for primary education for small countries (if neither UNPD nor the country itself can provide estimates of their own).

In all cases there is an attempt, in the first instance, to base estimates on evidence from the country itself (eg information from the data provider on the size of the missing component, via correspondence, publications or data on the ministry's or National Statistical Offices (NSO's) Webpage, or via surveys conducted by other organisations). These figures may be published: as observed data (if the missing items are found in national source or the country submits them as national estimates) (if the country is persuaded to produce estimates and submit them in place of missing data); as UIS estimates (if the estimates are made by the UIS) or occasionally as inputs for regional and global aggregates and averages (if the evidence on which the estimates are based is weak or unsubstantiated).

Where no evidence is available for the reporting year from the country, estimates may be based on data already reported by the country in a previous year or on another data item which is available (eg total enrolments in primary education) and clearly linked to the missing item. These figures may be published as UIS estimates or, if the data reported are very old or the links with other available data are weak, they may only be used for the construction of regional or global aggregates and averages.

Where there is neither evidence from the country nor data available in previous years, the estimates are based on a similar country. Such figures will only be used for regional or global aggregates and averages.

Over-reporting is corrected for first, then under-reporting before estimating more detailed breakdowns of data such as age distributions or the redistribution of enrolments of unknown age.

Over- and under-reporting are typically adjusted by adding or subtracting a given percentage of enrolments thus assuming the same age, grade and sex distribution as for the reported enrolments. (If more detailed evidence is available this will be used but that is typically not the case.)

The number of enrolments in the official age group for primary education is derived from estimates of the total enrolments by single year of age. If the country has never reported these data, they are most commonly based on the age distribution reported in a previous

year. If the country has never reported the age distribution of enrolments, we use the age distribution reported in another survey (if available such as the Multiple Indicator Cluster Survey (MICS) or Demographic Health Survey (DHS))

Enrolments of unknown age are redistributed across known ages if they constitute more than 5% of the total enrolments in that level of education. No estimation is made if they are 5% or less.

Population estimates by age for countries with small population – produced only where there are no other suitable estimates available either from UNPD or from the country itself – are made only for countries which have reported education data to the UIS and for which population estimates from a reliable source are available in some years.

### **Data availability**

The primary NER is available for around 140 countries.

Data are published for most countries approximately 15 months after the end of the school year, and 21 months for countries with split school year. A few countries, mainly from the second group, report more up-to-date data to the Institute and these are published more quickly (9 months after the end of the school year).

Net enrolment rates produced by UIS are available on an annual basis. The UNPD estimates of population by individual years of age are revised biennially, although estimates may be based on population censuses conducted every 10 years in most countries. Enrollment data are recorded regularly by ministries of education and are available on a yearly basis.

### **Regional and Global estimates**

Regional and global averages are calculated on the basis of the data published by the UIS and using the best possible non-publishable estimates where no publishable data exist. Averages are produced using the appropriate school-age populations.

### **Expected time of release**

The UIS disseminates Education data twice a year: country data and regional averages are released in April each year, and country data (only) are updated with new countries' submissions in September.

## **Indicator 2.2 Proportion of pupils starting grade 1 who reach last grade of primary**

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### **Definition**

The proportion of pupils starting grade 1 who reach last grade of primary education, known as the Survival Rate to last Grade of primary, is the percentage of a cohort of pupils enrolled in grade 1 of the primary level of education in a given school year who are expected to reach the last grade of primary school, regardless of repetition.

Primary education is defined by International Standard Classification of Education (ISCED97) as programmes normally designed on a unit or project basis to give pupils a sound basic education in reading, writing and mathematics along with an elementary understanding of other subjects such as history, geography, natural science, social science, art and music.

### **Method of computation**

The indicator is typically estimated from data on enrolment and repetition by grade for two consecutive years, in a procedure called the reconstructed cohort method. This method makes three assumptions: drop-outs never return to school; the promotion, repetition and drop-out rates observed in the last two years remain constant over the entire period in which the cohort is enrolled in school; and the same rates apply to all pupils enrolled in a given grade, regardless of whether they previously repeated a grade.

This method requires data on the number of enrolments and repeaters in each grade of primary education in two consecutive school years.

$$SR_{g,i}^k = \frac{\sum_{t=1}^m P_{g,i}^t}{E_g^k} * 100$$

Where:

$$P_{g,i}^t = E_{g,i+1}^{t+1} - R_{g,i+1}^{t+1}$$

$i$  - grade (1, 2, 3, ...);  $t$  - year (1, 2, 3, ...);  $g$  - pupil cohort.

$SR_{g,i}^k$  = Survival Rate of pupil-cohort  $g$  at grade  $i$  for a reference year  $k$

$E_g^k$  = Total number of pupils belonging to a cohort  $g$  at a reference year  $k$

$P_{g,i}^t$  = Promotees from  $E_g^k$  who would join successive grades  $i$  throughout successive years  $t$ .

$R_i^t$  = Number of pupils repeating grade  $i$  in school-year  $t$ .

The calculation is made by dividing the total number of pupils belonging to a school cohort who reach each successive grade of the specified level of education by the number of pupils in the school cohort (in this case the students originally enrolled in grade 1 of primary education) and multiplying the result by 100.

### Comments and limitations

The indicator measures an education system's success in retaining students from one grade to the next as well as its internal efficiency. It illustrates the situation regarding retention of pupils from grade to grade in schools, and conversely the magnitude of dropout by grade. Survival Rates approaching 100% indicate a high level of retention and low incidence of dropout. It is important to note that it does not imply that all children of school age complete primary education. The Survival Rate is a percentage of a cohort of pupils (i.e. children who have already entered school) and not a percentage of children of school age.

Various factors account for poor performance on this indicator, including low quality of schooling, high levels of grade repetition and the direct and indirect costs of schooling. Students' progress to higher grades may also be limited by the availability of teachers, classrooms and/or educational materials.

Since the calculation of this indicator is based on pupil-flow rates, the reliability of the Survival Rate depends on the consistency of data on enrolment and repeaters in terms of coverage over time and across grades.

Given that this indicator is usually estimated using cohort analysis models that are based on a number of assumptions, care should be taken in using the results in comparisons. The method of computation has limitations in measuring the true degree to which school

entrants survive through primary education because flows caused by re-entrants, grade skipping, migration or transfers during the school year are not adequately captured.

To complete the picture of primary completion, the indicator should be complemented by the intake rate to grade 1, because together these two indicators give a much better sense of the proportion of children in the population who complete primary education.

### **Sources of discrepancies between global and national figures**

Country figures may differ from the international ones because of differences between the national education system and ISCED97; or differences in coverage (i.e. the extent to which different types of education – e.g. private or special education – or different types of programmes e.g. adult education or early childhood care and education - are included in one rather than the other).

### **Process of obtaining data**

The UNESCO Institute for Statistics (UIS) produces time series on school enrolment and repeaters based on data reported by education ministries or national statistical offices. These data are gathered through questionnaires sent annually to countries which are typically completed by ministries of education and/or national statistical offices. Countries are asked to report data according to the levels of education defined in ISCED97 to ensure international comparability of resulting indicators.

The data received by UIS are validated using electronic error detection systems that check for arithmetic errors & inconsistencies and trend analysis for implausible results. Queries are taken up with the country representatives reporting the data in order that corrections can be made (of errors) or explanations given (of implausible but correct results).

In addition, countries also have an opportunity to see and comment on the main indicators the UIS produces in an annual “country review” of indicators.

The UIS also, if necessary, adjusts nationally reported data in order to take account either of under-reporting (i.e. data gaps) or over-reporting (i.e. inclusion of education programmes not covered by its surveys) before calculating indicators. In such cases, the results – if published – will normally be designated as UIS estimates (denoted by \*\* in UIS publications).

### **Treatment of missing values**

For the purposes of calculating the primary Net Enrolment Rate, the UIS estimates certain key items of data that may be missing or incomplete

The UIS may need to make one or more of the following:

- In all cases, in the first instance, estimates are based on evidence from the country itself (e.g. information from the data provider on the size of the missing component, via correspondence, publications or data on the ministry's or National Statistical Office's (NSO's) Webpage, or via surveys conducted by other organisations). These figures may be published: as observed data (if the missing items are found in national source or the country submits them); or as national estimates (if the country is persuaded produce estimates and submit them in place of missing data); and
- Where no evidence is available for the reporting year from the country, estimates may be based on data already reported by the country in a previous year or on another data item which is available (e.g. total enrolments and repeaters in primary education) and clearly linked to the missing item. These figures are published as UIS estimates.

Over-reporting is corrected first, then under-reporting before estimating more detailed breakdowns of data such as the distributions of enrolments or repeaters by grade. Over- and under-reporting are typically adjusted by adding or subtracting a given percentage of enrolments thus assuming the same grade and sex distribution as for the reported enrolments.

### **Data availability**

The Survival Rate to last Grade of primary is available for around 125 countries.

Survival rates produced by the UIS are available on an annual basis. Data are published 27 months after the end of the school reference year for countries with calendar school year and 33 months for countries with split school year, as the indicator is referenced to the earlier of the two years on which the reconstructed cohort method is based. A few countries, mainly from the second group, report more up-to-date data to the Institute and these are published more quickly (21 months after the end of the school year).

### **Regional and Global estimates**

No regional and global averages are calculated for this indicator.

### **Expected time of release**

The UIS Education data is disseminated twice a year: country data are released in April and are updated with new countries' submission on September.

## Indicator 2.3 Literacy rate of 15-24 year-olds, women and men

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### Definition

Literacy rate of 15–24 year-olds, or the youth literacy rate, is the percentage of the population aged 15–24 years who can both read and write with understanding a short simple statement on everyday life.

### Method of computation

Literacy rates are computed by dividing the number of people aged 15–24 years who are literate by the total population in the same age group, the result is then multiplied by 100.

$$LR_a^t = \frac{L_a^t}{P_a^t} * 100 \quad \text{or} \quad IR_a^t = \frac{IL_a^t}{P_a^t} * 100$$

Where:

$LR_a^t$  = Literacy rate of age group  $a$  in year  $t$        $IR_{15+}^t$  = Illiteracy rate of age group  $a$  in year  $t$

$L_a^t$  = Literate population of age group  $a$  in year  $t$        $IL_{15+}^t$  = Illiterate population of age group  $a$  in year  $t$

$P_a^t$  = Population of age group  $a$  in year  $t$

and:

$$LR_a^t + ILR_a^t = 100\%$$

## **Comments and limitations**

The Youth Literacy Rate reflects the outcomes of primary education over the previous 10 years or so. As a measure of the effectiveness of the primary education system, it is often seen as a proxy measure of social progress and economic achievement. The literacy rate for this analysis is simply the complement of the illiteracy rate. It is not a measure of the quality and adequacy of the literacy level needed for individuals to function in a society. Reasons for failing to achieve the literacy standard may include low quality of schooling, difficulties in attending school or dropping out before reaching grade 5.

Literacy is measured crudely in population censuses, either through self or household declaration or by assuming that people with no schooling are illiterate. This causes difficulty for international comparisons. Comparability over time, even for the same survey, may also be a problem because definitions of literacy used in the surveys are not standardized. These data must be used and interpreted in conjunction with the Table of Literacy Metadata Information.

The latest revision of Principles and Recommendations for the Population and Housing Censuses advises countries against adopting a proxy measurement based on educational attainment. It recommends that literacy questions be administered as part of national census and household surveys, or as part of post-census sample enumeration.

Shortcomings in the definitions of literacy, measurement problems and infrequency of censuses and household surveys weaken this indicator as a means of the annual monitoring of education outcomes related to the goal of achieving universal primary education.

## **Sources of discrepancies between global and national figures**

Literacy rates published by the UNESCO Institute of Statistics (UIS) are based on national level population censuses and household surveys. Discrepancies may arise when countries derive projected figures using methods that differ from those used by the UIS.

## **Process of obtaining data**

The UIS collects global literacy data on an annual basis and updates its statistics twice a year, in April and September. These data are based on observed data reported by countries and territories. Countries and territories are asked to respond to a questionnaire that collects information and data on literacy. The survey package typically consists of the literacy questionnaire and supporting documentation. The primary

respondent is the National or Territorial Statistical Office (or equivalent agency) within each respective country and territory.

**Data collected:** these consist of the counts of the literacy status (total, literate, illiterate and not specified) for the population 10 years of age and older by geography (national, urban, and rural), age group (five-year age groups and age unknown) and sex (total, male and female). The questionnaire also includes a set of metadata questions that are asked in order for the UIS and data users to better understand and interpret the literacy data provided as well as forming part of the basis for the selection criteria. In order for the UIS to evaluate the quality and format of the data for inclusion in the UIS database, it is necessary for countries to provide metadata information corresponding to the data set. In addition, much of this information is made available to data users in order to facilitate its interpretation and use.

Population and housing censuses are the primary source of basic literacy data. These data are usually collected together with other household characteristics concerning an individual's educational, demographic and socio-economic status. These literacy data are generally based on self-declaration (i.e. one person, usually the head of the household, indicates whether each member of the household is literate or not). The literacy definition may vary from one country to another.

National sample surveys are a second source of literacy data and involve the use of a literacy variable in a household or individual sample survey. These surveys are often designed to meet immediate data needs and do not always include systematic strategies for future repeats. So even though they may provide timely data, they may not always be a consistently reliable source over time.

International sample surveys, such as UNICEF's Multiple Indicator Cluster Surveys (MICS) are a third source and involve the use of a literacy variable in a household or individual sample survey. These surveys are designed to meet commonly agreed upon international data needs while also providing data for national policy purposes. These surveys are implemented on a regular basis in selected countries globally. They aim to assure cross-national comparability although they often integrate national modules to suit specific country data needs. Modules from international surveys are sometimes added to other on-going national sample surveys.

In its efforts to improve the international comparability of literacy data, the UIS has developed the following to help determine the suitability of national data for reporting at the international level:

- i. It must incorporate a “direct question” to assess literacy as part of its methodology. In many instances, the question(s) take the form “Can [Name] read and write a simple sentence in [Language(s)]”.
- ii. It must receive a satisfactory evaluation by the UIS that is based on the responses to the questionnaire’s metadata section.
- iii. It must be able to provide data in the format required by the UIS.

At the minimum, the source must be able to provide literacy counts according to the following characteristics:

1. Geography: National, Urban and Rural if available
2. Age group: five-year age cohorts for the population aged 10 years and over (10-14, 15-19... 80-84, 85+).
3. Sex (Total, Male and Female).
4. Educational attainment or other data will not be used as a proxy for literacy.
5. Data based solely on literacy projection and estimate models will not be used.

Internal consistency checks are conducted in order to ensure the accuracy of the data provided. When counts of the population are reported by literacy status as age unknown, these data will be removed during the processing of the questionnaire and not included in the calculation of literacy and illiteracy rates.

When counts of the population by age group are reported by literacy status as not specified, these data will be removed during the processing of the questionnaire and not included in the calculation of literacy and illiteracy rates.

The international comparability of literacy statistics has been improved in two ways by the UIS. First, by the fact that the data being reported are from data sources that have a similar methodology. Second, UN population estimates are used to calculate the number of literates and illiterates. These estimates are used because they are produced by UNPD using the same methodology and assumptions across countries. When UN population estimates are not available, national population estimates are used.

UNPD provides population estimates by single years of age for countries and territories with populations of 80,000 persons and greater. For countries or territories having a population of less than 80,000 persons, national country population data, when available, are used.

### **Treatment of missing values**

The UIS publishes national observed literacy rates as provided by countries to UIS. The counts of literates and illiterates however are derived using UN Population estimates. Countries for which no observed literacy data are available are indicated as “data not available”. The UIS uses a new Global Age-specific Literacy Projections Model

methodology to produce estimates and forecasts of literacy/illiteracy rates. Reference should be made to the UIS website for further information regarding this methodology.

The UIS produces estimates, both publishable and non-publishable, in order to improve its regional estimates. In many cases, data for an individual country or territory have not been available for many years, yet to simply ignore representation of the country in the calculation of the regional average may produce a figure that is not representative of the region. UIS develops appropriate methodologies as necessary in order to provide representative regional average figures.

Although research indicates that primary education is not always a reliable predictor of literacy levels, educational attainment data is sometimes used as a proxy to impute literacy rates for countries for which the regular "dichotomous" literacy data are not available. These data are typically available from censuses and most household surveys. In many countries, the Labour Force Survey (LFS) is the most frequently used source for educational attainment data. The UIS defines "illiterates" as those persons who reported their educational attainment level as having "no schooling", "some primary school" or having "not completed primary school". Data that are based on a proxy of educational attainment are used only for estimating purposes and are not disseminated at the individual country or territory level.

### **Data availability**

Youth literacy rates are available for around 130 countries.

Youth literacy rates may change more quickly than adult literacy rates and therefore need to be measured more often. Since population censuses normally occur only every 10 years input from more frequently administered labour force and household surveys are used for annual estimates. Household surveys are generally conducted every three to five years in most developing countries.

Estimates produced by UIS are available on an annual basis. The United Nations Population Division estimates population by individual years of age biennially, although estimates may be based on population censuses conducted every 10 years in most countries.

All literacy data available from UIS beginning from 1975 to the most recent year are available and published. Data and estimates are updated annually.

## Regional and Global estimates

Regional and global literacy indicators are produced in order to meet the needs of data users and, in particular, for the purposes of global monitoring for the Education for All (EFA) and MDG initiatives. Groupings based on three monitoring initiatives are produced: EFA, MDG and UNESCO regions, as well as other regions such as World Bank income regions. Custom country groupings are also possible.

Regional and global averages are calculated on the basis of the published data and when data are not available, imputations are made using secondary data sources. An average, weighted by the population aged 15-24 of the country or territory within the region, is used to calculate a regional figure. All countries and territories with UN population or national population estimates are included in the regional figure. All countries and territories with UNPD population or national population estimates have a literacy rate and count of illiterates that is either observed or imputed. The formulas described below are applicable to Total (T), Male (M) and Female (F) populations.

$$\text{Regional average literacy rate } \tau_t = \sum_{i=1}^n LTR_{i,t} * \frac{Pop_{i,t}^p}{\sum_{i=1}^n Pop_{i,t}^p}$$

Where:

$LTR_{i,t}$  = Literacy rate for country "i" for year "t"

$Pop_{i,t}^p$  = Total population aged "p" for country i for year "t"

p = population of age cohort

n = number of countries in the region

t = year of data

The UIS literacy projection model can provide some estimates of literacy/illiteracy rates and counts of literates/illiterates for years for which data are not available if an older observed data point is projected for any given country. Estimates produced from this model are still based on observed data that has been projected from a reference year in

the past. For more information about GALP, please refer to the UIS document "*Global Age-Specific Literacy Projection Model: Rationale, Method and Software*" UIS: Montreal, 2006.

**Expected time of release**

UIS Literacy data are disseminated in April of each year. An update of the data is also released in September if new data are received by UIS.

## **Indicator 3.1 Ratio of girls to boys in primary, secondary and tertiary education**

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### **Definition**

Ratio of girls to boys (gender parity index) in primary, secondary and tertiary education is the ratio of the number of female students enrolled at primary, secondary and tertiary levels of education to the number of male students in each level. To standardise the effects of the population structure of the appropriate age groups, the Gender Parity Index (GPI) of the Gross Enrolment Ratio (GER) for each level of education is used.

The GER is the number of pupils 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.

### **Method of computation**

To calculate the Gross Enrolment Ratio one must first determine the population of official school age for each level of education by reference to the theoretical starting ages and durations of the International Standard Classification of Education (ISCED97) Level 1 (primary education) and Levels 2 and 3 (secondary education) as reported by the country. The population of the official age for tertiary education is the 5-year age group immediately following the end of secondary education.

Then, the number of pupils or students enrolled in each level of education is divided by the population of official school age for that level of education, and the result is multiplied by 100. The Gross Enrolment Ratios for males and females are calculated separately.

The Gender Parity Index (GPI) is then calculated by dividing the female Gross Enrolment Ratio by the male Gross Enrolment Ratio for the given level of education.

This method requires information on the structure of education (i.e. theoretical entrance age and duration of ISCED97 Level 1 and Levels 2 and 3), enrolments in each level of education and the populations of the age-groups corresponding to the given levels of education. Separate figures for males and females are required.

### **Comments and limitations**

A GPI of 1 indicates parity between the sexes; a GPI that varies between 0 and 1 typically means a disparity in favour of males; whereas a GPI greater than 1 indicates a disparity in favour of females.

The indicator is an imperfect measure of the accessibility of schooling for girls because it does not allow a determination of whether improvements in the ratio reflect increases in girls' school enrolment (desirable) or decreases in boys' enrolment (undesirable). It also does not show whether the overall level of participation in education is low or high.

### **Sources of discrepancies between global and national figures**

Country figures may differ from the international ones because of differences between national education systems and ISCED97; or differences in coverage (i.e. the extent to which different types of education – e.g. private or special education – or different types of programmes e.g. adult education or early childhood care and education - are included in one rather than the other) and/or between national and UNPD population data.

### **Process of obtaining data**

The UNESCO Institute for Statistics (UIS) produces time series based on enrolments reported by education ministries or national statistical offices and UN population estimates. These data are gathered through questionnaires sent annually to countries which are typically completed by ministries of education and/or national statistical offices. Countries are asked to report data according to the levels of education defined in ISCED97 to ensure international comparability of resulting indicators.

The data received by UIS are validated using electronic error detection systems that check for arithmetic errors & inconsistencies and trend analysis for implausible results. Queries are taken up with the country representatives reporting the data in order that corrections can be made (of errors) or explanations given (of implausible but correct results).

In addition, countries also have an opportunity to see and comment on the main indicators the UIS produces in our annual "country review" of indicators.

The UIS also, if necessary, adjusts nationally reported data in order to take account either of under-reporting (i.e. data gaps) or over-reporting (i.e. inclusion of education programmes not covered by its surveys) before calculating indicators. In such cases, the results – if published – will normally be designated as UIS estimates (denoted by \*\* in UIS publications).

### Treatment of missing values

The UIS estimates certain key items of data that may be missing or incomplete. Where data for a country are entirely missing or where an estimate is not based on evidence from or about the country directly, the UIS does not publish the resulting country-level estimates. They are used only for the purposes of calculating regional or global aggregates or averages.

For the purposes of calculating the primary Gross Parity Index, the UIS may need to make one or more of the following types of estimate:

- An adjustment to account for over- or under-reporting, for example:
  - To exclude enrolments in other programmes which have been reported together with enrolments at the primary level (very rare and does not usually result in a country level publishable estimate);
  - To include enrolments in a type of education – such as private education or special education – not reported by the country; and/or
  - To include enrolments in a part of the country not reported by the country.
- An estimate of the number of enrolments by sex
- An estimate of the population in the official age group for primary education (if neither UNPD nor the country itself can provide estimates of their own)

In all cases, in the first instance, estimates are based on evidence from the country itself (e.g. information from the data provider on the size of the missing component, via correspondence, publications or data on the ministry's or National Statistical Office's (NSO's) Webpage, or via surveys conducted by other organisations). These figures may be published: as observed data (if the missing items are found in national source or the country submits them); as national estimates (if the country is persuaded to produce estimates and submit them in place of missing data); as UIS estimates (if the estimates are made by the UIS); or, occasionally, as inputs for regional and global aggregates and averages (if the evidence on which the estimates are based is weak or unsubstantiated).

Where no evidence is available for the reporting year from the country, estimates may be based on data already reported by the country in a previous year or on another data item which is available (e.g. total enrolments in primary education) and clearly linked to the missing item. These figures may be published as UIS estimates or, if the data

reported are very old or the links with other available data are weak, they may only be used for the construction of regional or global aggregates and averages.

Where there is neither evidence from the country, nor data available in previous years, estimates are based on a similar country. Such figures will only be used for regional or global aggregates and averages.

Over- and under-reporting are typically adjusted by adding or subtracting a given percentage of enrolments thus assuming the same sex distribution as for the reported enrolments.

Over- and under-reporting are typically adjusted by adding or subtracting a given percentage of enrolments thus assuming the same age, grade and sex distribution as for the reported enrolments. (If more detailed evidence is available this will be used but that is typically not the case).

Population estimates – produced only where there are no other suitable estimates available either from UNPD or from the country itself – are produced only for countries which have reported education data to the UIS and for which population estimates from a reliable source are available in some years.

### **Data availability**

The GPI of the Gross Enrolment Ratio is available for around 180 countries for primary education, 160 for secondary education and 135 for tertiary education. It should be noted that there is no tertiary education provision in about twenty countries worldwide and hence, no tertiary GER.

Data are published 15 months after the end of the school reference year for countries with calendar school year, and 21 months for countries with split school year. A few countries, mainly from the second group, report more up-to-date data to the Institute and these are published more quickly (9 months after the end of the school year).

Gender parity indices of the Gross enrolment ratios produced by UNESCO Institute for Statistics are available on an annual basis. The United Nations Population Division estimates population by individual years of age biennially, although estimates may be based on population censuses conducted every 10 years in most countries.

### **Regional and Global estimates**

Regional and global averages are calculated on the basis of the data published by the UIS and using the best possible non-publishable estimates where no publishable data

exist. Averages are produced using the appropriate school-age populations as weights. At the tertiary level this is the five-year age group immediately following the theoretical end of secondary education.

### Expected time of release

The UIS Education data is disseminated twice a year: country data and regional averages are released in April, and country data (only) are updated with new countries' submissions in September.

## Indicator 3.2 Share of women in wage employment in the non-agricultural sector

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### Definition

*The share of women in wage employment in the non-agricultural sector* is the share of female workers in wage employment in the non-agricultural sector expressed as a percentage of total wage employment in that same sector.

The *non-agricultural sector* includes industry and services. 'Industry' includes mining and quarrying (including oil production), manufacturing, construction, electricity, gas, and water, corresponding to divisions 2-5 in the International Standard Industrial Classification of All Economic Activities (ISIC-Rev.2<sup>1</sup>) and to tabulation categories C-F in ISIC-Rev. 3<sup>1</sup>. 'Services' include wholesale and retail trade and restaurants and hotels; transport, storage, and communications; financing, insurance, real estate, and business services; and community, social, and personal services, corresponding to divisions 6-9 in ISIC-Rev. 2, and to tabulation categories G-Q in ISIC-Rev. 3.

*Employment* refers to people above a certain age who worked or held a job during a specified reference period (according to the ILO *Resolution concerning statistics of the economically active population, employment, unemployment and underemployment*,<sup>2</sup>

adopted by the Thirteenth International Conference of Labour Statisticians (ICLS), October 1982).

*Wage employment* refers only to wage earners and salaried employees, or "persons in paid employment jobs". Employees are typically remunerated by wages and salaries, but may be paid by commission from sales, piece-rates, bonuses or payments in kind such as food, housing, training, etc. These persons are in wage employment as opposed to self-employment – that is employers, own-account workers, members of producers' cooperatives and contributing family workers. The different statuses in employment are defined according to the ILO *Resolution concerning the International Classification of Status in Employment* (ICSE),<sup>3</sup> adopted by the 15th ICLS (1993).

- 1 <http://laborsta.ilo.org/>
- 2 <http://www.ilo.org/public/english/bureau/stat/download/res/ecacpop.pdf> and ILO 2000: *Current international recommendations on labour statistics*, 2000 edition (Geneva).
- 3 <http://www.ilo.org/public/english/bureau/stat/download/res/icse.pdf> and ILO 2000: *Current international recommendations on labour statistics*, 2000 edition (Geneva).

## Method of computation

The indicator is calculated as the number of women in non-agricultural paid employment divided by the total number of persons in paid employment in the non-agricultural sector. This is the proportion of women in "paid employment jobs" (in other words "women employees") in the non-agricultural sector.

$$\begin{array}{l} \text{Share of} \\ \text{women in wage} \\ \text{employment in} \\ \text{the non-} \\ \text{agricultural} \\ \text{sector} \end{array} = \frac{\text{Number of women in paid employment in non-} \\ \text{agricultural sector}}{\text{Total number of persons in paid employment in} \\ \text{non-agricultural sector}} * 100$$

## Comments and limitations

### Comparability and availability of data

As all other indicators, this one faces the problem of availability and comparability of country-level data.

**Comparability:** There are a number of reasons why the indicator may not be strictly comparable across countries:

*Conceptual variation* – Although there are clear international standards for the relevant concepts, countries may use different definitions for employment status, especially for part-time workers, students, members of the armed forces, and household or contributing family workers. National statistical offices, even when using ILO conceptual guidelines, do not necessarily follow the same definitions or classifications. Also the coverage of paid employment may differ from one country to another and within one country over time.

*Different sources* – National estimates are based on information from different sources, namely population censuses, labour force/household surveys, establishment surveys, administrative sources (mostly social security records) and official estimates that are based on results from several sources. Each source has its own characteristics and provides certain types of data. The first two and the last source may cover the whole relevant population. Results from establishment surveys and administrative records are likely to cover only large private and public sector employers, in particular in developing countries.

Depending on the source, the measurement and coverage may differ between countries and within countries over time.

**Availability of data over time** – Only about half of the countries provide the data necessary for estimating the indicator with more or less regular frequency.

**Comments and limitations of the indicator:**

The indicator shows the extent to which women have access to paid employment, which will affect their integration into the monetary economy. It also indicates the degree to which labour markets are open to women in industry and services sectors which affects not only equal employment opportunity for women, but also economic efficiency through flexibility of the labour market and the economy's capacity to adapt to changes over time.

The indicator has a number of limitations, the main one being its volume factor which does not fully reflect quality, especially the economic benefits of such employment. The examples of limitations are the following:

- (a) In many countries (especially developing countries), non-agricultural wage employment represents only a small portion of total employment. As a result the contribution of women to the national economy is underestimated and therefore misrepresented.
- (b) The indicator is difficult to interpret, unless additional information is available on the share of women in total employment, which would allow an assessment to be made of whether women are under- or over-represented in non-agricultural wage employment.
- (c) The indicator does not reveal any differences in the quality of the different types of non-agricultural wage employment (that apply also to all jobs), regarding earnings, conditions of work, or the legal and social protection, which they offer. The indicator cannot reflect whether women are able to reap the economic benefits of such employment, either.
- (d) It should be noted that the extent of female employment of any kind tends to be underreported in all kinds of surveys. In addition, the employment share of the agricultural sector, for both men and women, is severely underreported.

### **Sources of discrepancies between global and national figures**

In principle, there is no discrepancy between global and national figures as national data are not modified.

### **Process of obtaining data**

Comprehensive, detailed statistics on total and paid employment disaggregated by sex, by branch of economic activity, occupation and status in employment are collected annually through a specialised questionnaire for the Yearbook of Labour Statistics sent directly to the official national authorities (ministries responsible for labour, central statistical services, etc.) in all member States and Territories. Statistics are also gleaned from national publications and websites.

These statistics are published, respectively, in the ILO *Yearbook of Labour Statistics and the Bulletin of Labour Statistics*, and are also available online in LABORSTA.

In addition to the statistics, the Bureau also collects and disseminates the relevant national methodological information used to produce these statistics. The methodological information on national practices is available for consultation at <http://laborsta.ilo.org/>, under "Sources and Methods". To improve country coverage a special action inquiry to national statistical offices was sent out in 2003. It consisted of a questionnaire requesting data, as of 1990, on Paid Employment in Non Agricultural Activities, and Unemployment by Age Group, for totals, women and men separately, from all available data sources (i.e. labour force survey, establishment survey, administrative records, official estimates).

A number of validation and consistency tests are executed on the data received. These include qualitative as well as quantitative checks. All departures from the international standards or classifications are indicated with footnotes. Where necessary, countries are contacted for further clarifications.

The annual questionnaire is pre-filled with the statistics provided in the previous years (maximum of ten), so that when countries update their series they also have the possibility to review, verify and, where needed, modify the data previously provided.

In principle, the data are not adjusted, as they are collected through a standard questionnaire, and reported in line with the international classifications. All departures from the international standard definitions and classifications are indicated in notes.

### **Treatment of missing values**

Where country data are not available, and there is no an auxiliary variable that can be used as a proxy indicator, the values are imputed. These imputed values are used solely for the production of the regional and global estimates of the indicator. Their use for monitoring at the national level may not be the most appropriate.

In order to impute the missing values for the indicator, various multilevel modelling techniques (5 basic models and their variants) have been developed and tested. The model adopted was selected on the basis of its goodness-of-fit to the existing data as well as its predictive power, as determined through a jack-knife procedure. The model is fitted separately for each region and takes into account the variation over time within and between countries. The missing values are predicted on the assumption that the data that are available for a given country are representative of that country's deviation from the average trend across time, which is estimated based on the whole sample in the region.

### **Data availability**

As of the beginning of 2008, the ILO database on this indicator covers statistics for 218 countries and territories. The indicator at the country level is calculated only on the basis of observed values provided by the countries.

- (a) 122 countries provide data on paid employment in the non-agricultural sector
  - 14 countries provide data on total paid employment
  - 45 countries provide data on total employment in the non-agricultural sector
  - 27 countries provide data on total employment
  - 2 countries provide data on economically active population in non-agriculture
  - 8 countries do not provide data but the information on the economically active

population (estimates).

- (b) For 157 countries the data are available for at least two points in time over the period 1990-2005
  - For 42 countries the data are available for two to five points in time
  - For 21 countries the data are available for six to nine points in time
  - For 93 countries the data are available for 10 to 17 years over the period 1990-2005.

Not all available data perfectly match the indicator as defined above. Where paid employment data do not exist, a proxy series (total employment rather than paid employment) has been used. This is on the expectation that the share of women for total employment is not much different from that for paid employment. For 35 out of 198 countries there are no employment data available at all. For these countries, information on the economically active population has been used as a proxy for employment, on the assumption that the shares for employment and unemployment do not differ greatly. Sensitivity analysis conducted on a selected number of countries have shown that there is strong correlation between the indicator and the auxiliary variable.

The data are submitted to the ILO at least 6 months after the end of the reference period. It takes another 3 months before the ILO disseminates them on its website <http://laborsta.ilo.org/>

### **Regional and Global estimates**

Regional and global estimates are calculated as weighted averages of the country level indicator where the weights correspond to each country's share in the total economically active population in the non-agricultural sector in the region/world in the benchmark year 1990(a). The total economically active population in the non-agricultural sector in the region/world is estimated on the basis of the same concept in the countries for which the indicator (observed or imputed) is available. As the estimates of economically active population in the non-agricultural sector are not available for about 20 countries and territories (mainly small islands with population of less than 30,000), their weights are estimated by assuming that about one third of the total population is active in the non-agricultural sector.

The formula used to estimate the indicator at the regional and global level is as follows:

$$I_i = \frac{\sum_{i=1}^n w_i I_i}{\sum_{i=1}^n w_i}$$

Where  $I_i$  is the indicator for country  $i$  and  $w_i$  is the share of country  $i$  in the total economically active population in non-agricultural sector in the world.

(a)Economically Active Population: Estimates and projections, 1950-2010 (4th edition), ILO, Geneva, 1996

### Expected time of release

The data used to calculate the indicator are collected and disseminated annually, usually in September/October of each year for the year  $t-1$ . They are published in the ILO Yearbook of Labour Statistics and disseminated on the ILO website <http://laborsta.ilo.org/>

## Indicator 3.3 Proportion of seats held by women in national parliament

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### Definition

The proportion of seats held by women in national parliaments is the number of seats held by women members in single or lower chambers of national parliaments, expressed as a percentage of all occupied seats.

National parliaments can be bicameral or unicameral. This indicator covers the single chamber in unicameral parliaments and the lower chamber in bicameral parliaments. It does not cover the upper chamber of bicameral parliaments. Seats are usually won by members in general parliamentary elections. Seats may also be filled by nomination, appointment, indirect election, rotation of members and by-election.

Seats refer to the number of parliamentary mandates, or the number of members of parliament.

### **Method of computation**

The proportion of seats held by women in national parliament is derived by dividing the total number of seats occupied by women by the total number of seats in parliament.

There is no weighting or normalising of statistics.

### **Comments and limitations**

- The number of countries covered varies with suspensions or dissolutions of parliaments. As of 1 November 2007, 189 countries are included.
- There can be difficulties in obtaining information on by-election results and replacements due to death or resignation. These changes are ad hoc events which are more difficult to keep track of. By-elections, for instance, are often not announced internationally as general elections are.
- The data excludes the numbers and percentages of women in upper chambers of parliament. The information is available on the IPU website at <http://www.ipu.org/wmn-e/classif.htm>.
- Parliaments vary considerably in their internal workings and procedures, however, generally legislate, oversee government and represent the electorate. In terms of measuring women's contribution to political decision making, this indicator may not be sufficient because some women may face obstacles in fully and efficiently carrying out their parliamentary mandate.

### **Sources of discrepancies between global and national figures**

Not applicable.

### **Process of obtaining data**

- The data used are official statistics received from parliaments.
- IPU member parliaments provide information on changes and updates to the IPU secretariat. After each general election or renewal a questionnaire is dispatched to parliaments to solicit the latest available data. If no response is provided, other methods are used to obtain the information, such as from the electoral management body, parliamentary web sites or Internet searches. Additional information gathered from other sources is regularly crosschecked with parliament.
- Data are not adjusted for international comparability. Though, for international comparisons, generally only the single or lower house is considered in calculating the indicator.

### **Treatment of missing values**

No adjustments are made for missing values.

## Data availability

Data are available for 189 countries.

Information is available in all countries where a national legislature exists and therefore does not include parliaments that have been dissolved or suspended for an indefinite period.

The data are provided by national parliaments and updated after an election or parliamentary renewal. National parliaments also transmit their data to the IPU at least once a year and when the numbers change significantly.

Data are collated and updated on a monthly basis, and are available on the IPU website at <http://www.ipu.org/wmn-e/classif.htm>

## Regional and Global estimates

Regional averages are determined by dividing the total number of women members by the total number of seats filled in single or lower chambers of parliament per region.

World average percentage is determined by dividing the total number of women members divided by the total number of seats filled in single or lower chambers in all national parliaments.

## Expected time of release

Data are updated on a monthly basis, up to the last day of the month.

## Indicator 4.1 Under-five mortality rate

### Contact point in international agency

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### Definition

The under-five mortality rate (U5MR) is the probability (expressed as a rate per 1,000 live births) of a child born in a specified year dying before reaching the age of five if subject to current age-specific mortality rates.

A live birth is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life—such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles—whether or not the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered a live birth.

### **Method of computation**

The methods used to calculate the under-five mortality rate (U5MR) depend on the type of data available. In practice, data can be obtained from vital registration systems, sample registration systems, national population censuses, and/or household surveys. When data collected via vital registration systems is of good quality, the U5MR can be directly estimated by observing the survival status of different cohorts along time and to specific ages since the moment of birth. U5MR can be derived from household survey data using direct or indirect methods.

The direct method uses data collected on birth histories of women of childbearing age and produces the probability of dying before age five for children born alive, among women of childbearing age, during five year periods before the survey (0-4, 5-9, etc.). Direct methods require each child's date of birth, survival status, and date or age at death. This information is typically found in vital registration systems and in household surveys that collect complete birth histories from women of childbearing age. Birth histories include a series of detailed questions on each child a woman has given birth to during her lifetime, including the date the child was born, whether or not the child is still alive, and if the child has died, the age at death.

The indirect method uses the Brass method, named after its original developer, William Brass, which converts the proportion of dead children ever born reported by women in age groups 15-19, 20-24,... 45-49 into estimates of probability of dying before attaining certain exact childhood ages. Brass's method assumes that the age of the mother can serve as a proxy for the age of her children and thus for how long they have been exposed to the risk of dying.

Indirect methods require less detailed information that is available in censuses and general surveys, including the total number of children a woman has ever borne, the number who survive and the woman's age (or the number of years since she first gave birth). However, indirect methods require model life tables to adjust the data for the age pattern of mortality in the general population. Finding an appropriate model life table can

be challenging, since the Coale and Demeny model life tables are derived largely from the European experience.

Different data sources and calculation methods often yield widely differing estimates of child mortality for a given time and place. In order to reconcile these differences, UNICEF developed, in coordination with WHO, the WB and UNPD<sup>1</sup>, an estimation methodology that minimizes the errors embodied on each estimate and harmonize trends along time.<sup>2</sup> Since the estimates are not necessarily the exact values used as inputs for the model, they are often not recognized as the official U5MR estimates used at the country level. However, as mentioned before, these estimates minimize errors and maximize the consistency of trends along time. Applying a consistent methodology also allows comparisons between countries, despite the varied number and types of data sources.

After plotting all available values for infant and under-five mortality, analysts use weighted least squares to fit a multi-spline regression line to the data points and extrapolate the trend to the present. The use of weights allows analysts to make a judgment about the relative quality of each data set and how representative it is likely to be of the population. The last step is to decide which set of estimates (infant mortality or under-five mortality) is more consistent and to use a model life table to derive the other set of estimates from it.

Additional details of the methodology are available in the following working paper: UNICEF, WHO, The World Bank and UN Population Division, 'Levels and Trends of Child Mortality in 2006: Estimates developed by the Inter-agency Group for Child Mortality Estimation', New York, 2007: <http://mdgs.un.org/unsd/mdg/Resources/Attach/Capacity/Ind%204-1.pdf>

- 1 These agencies have created the Inter Agency Group for Mortality Estimation (IGME).
- 2 This methodology is better described in: K. Hill, R. Pande and G. Jones, *Trends in child mortality in the developing world: 1990 to 1995*, UNICEF staff working papers, Evaluation, Policy and Planning Series, UNICEF, New York, 1997.

### Comments and limitations

Vital registration systems are the preferred source of data on under-five mortality because they collect information prospectively and cover the entire population. However, many developing countries lack fully functioning vital registration systems that accurately record all births and deaths. Thus, household surveys, such as Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS), have become the primary

source of data on child mortality in developing countries; but there are some limits to their quality.

Estimates obtained from household surveys have attached confidence intervals that need to be considered when comparing values along time or across countries. Similarly, these estimates are often affected by no-sampling errors that may affect equally recent levels and trends of U5MR.

Like census data, survey data on child mortality may omit births and deaths, include stillbirths along with live births, and suffer from survivor selection bias and age truncation. Direct estimates of child mortality based on survey data may also suffer from mothers misreporting their children's birth dates, current age or age at death —perhaps more so if the child has died. The heaping of deaths at age 12 months is especially common. Age heaping may transfer deaths across the one-year boundary and lead to underestimates of infant mortality rates. However, it has little effect on under-five mortality rates; making the U5MR a more robust estimate than the infant mortality rate if the information is drawn from household surveys.

### **Sources of discrepancies between global and national figures**

Global figures as produced by the inter-agency group for child mortality estimation (IGME) may differ from the one produced at the country level for different reasons. The global estimates use all available data obtained from different sources (vital registration, census, and household surveys) to produce estimates that represent trends and levels of child mortality in the country. This is done by applying a regression model as explained before. Country estimates on the other hand can be obtained from just one specific source (more often from household surveys such as DHS), a combination of data sources, or from using different estimation methods.

### **Process of obtaining data**

The first step in the process is to proactively seek out all possible sources of data, including vital registration systems, national censuses, household surveys conducted by global programmes, and multi-purpose surveys conducted without international sponsorship.

To seek out national data sources that might be overlooked, UNICEF conducts an annual exercise called the Country Reports on Indicators for the Goals (CRING)<sup>1</sup>. CRING gathers recent information for all indicators regularly reported on by UNICEF, including the infant and under-five mortality rates.

- 1 CRING is the Country Reports on Indicators for the Goals and is produced at the country level every year to update UNICEF's data base. Each year, UNICEF's executive director sends out a request for information to all of the organization's regional directors and country representatives, who are stationed in over 150 countries around the world. They are asked to update the data already available at headquarters by submitting new values for each indicator along with copies of the original source documents, such as survey reports.

### **Treatment of missing values**

The most recent U5MR estimates produced by the IGME are based on the extrapolation of observed trends obtained from observed U5MR values derived from different data sources and methods. This process is described in the "Process of obtaining data" section, above.

### **Data availability**

Current estimates of U5MR are generally based on empirical data from several or even many years before. Vital registration data are available on a yearly basis but often are published at the country level with a lag of 2 or more years. Unfortunately, vital statistics are unreliable in most developing countries. Population censuses are regularly conducted every ten years and results are published within 1-3 years after the population count. Household surveys, such as DHS and MICS, are in general implemented every 3-5 years with results published within a year of field data collection. On average, the most recent U5MR estimates from household surveys refer to 2.5 years before the time of the survey or 3.5 years at the moment of publication of findings.

The lag time between the collection and publication of data is generally two years for vital registration, one year for surveys, and one to three years for censuses (Child Mortality Coordination Group, 2006). U5MR estimates from the IGME refer to the year before the year the respective agency publishes (in the case of UNICEF for example, the 2008 State of the World's Children published in November 2007 includes U5MR estimates corresponding to the year 2006). Recent estimates are consistent with the trend observed during the last 30 years.

IGME estimates are updated annually.

### **Regional and Global estimates**

U5MR estimates are produced and presented by region and globally only if data are available for at least 50% of the region or the total population of the countries considered. Estimates are not included if this rule is not accomplished.

### **Expected time of release**

Yearly estimates U5MR rates are published, late in the calendar year, in UNICEF's *The State of the World's Children*, in the World Bank's World Development Indicators, and in the World Health Organization's digest of World Health Statistics.

## **Indicator 4.2 Infant mortality rate**

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### **Definition**

The infant mortality rate is the probability (expressed as a rate per 1,000 live births) of a child born in a specified year dying before reaching the age of one if subject to current age-specific mortality rates.

A live birth is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life—such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles—whether or not the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered a live birth.

### **Method of computation**

The methods used to calculate the infant mortality rate (IMR) depend on the type of data available. In practice, data can be obtained from vital registration systems, sample registration systems, national population censuses, and/or household surveys. When data collected via vital registration systems is of good quality, the IMR can be directly estimated by observing the survival status of different cohorts along time and to specific ages since the moment of birth. IMR can be derived from household survey data using direct or indirect methods.

The direct method uses data collected on birth histories of women of childbearing age and produces the probability of dying before age one for children born alive, among

women of childbearing age, during five year periods before the survey (0-4, 5-9, etc.). Direct methods require each child's date of birth, survival status, and date or age at death. This information is typically found in vital registration systems and in household surveys that collect complete birth histories from women of childbearing age. Birth histories include a series of detailed questions on each child a woman has given birth to during her lifetime, including the date the child was born, whether or not the child is still alive, and if the child has died, the age at death.

The indirect method uses the Brass method, named after its original developer, William Brass, which converts the proportion dead of children ever born reported by women in age groups 15-19, 20-24,... 45-49 into estimates of probability of dying before attaining certain exact childhood ages. Brass's method assumes that the age of the mother can serve as a proxy for the age of her children and thus for how long they have been exposed to the risk of dying.

Indirect methods require less detailed information that is available in censuses and general surveys, including the total number of children a woman has ever borne, the number who survive and the woman's age (or the number of years since she first gave birth). However, indirect methods require model life tables to adjust the data for the age pattern of mortality in the general population. Finding an appropriate model life table can be challenging, since the Coale and Demeny model life tables are derived largely from the European experience.

### **Comments and limitations**

Vital registration systems are the preferred source of data on infant mortality because they collect information prospectively and cover the entire population. However, many developing countries lack fully functioning vital registration systems that accurately record all births and deaths. Thus, household surveys, such as Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS), have become the primary source of data on infant and child mortality in developing countries; but there are some limits to their quality.

Estimates obtained from household surveys have attached confidence intervals that need to be considered when comparing values along time or across countries. Similarly, these estimates are often affected by no-sampling errors that may affect equally recent levels and trends of IMR.

Like census data, survey data on infant mortality may omit births and deaths, include stillbirths along with live births, and suffer from survivor selection bias and age truncation. Direct estimates of infant mortality based on survey data may also suffer

from mothers misreporting their children's birth dates, current age or age at death—perhaps more so if the child has died. The heaping of deaths at age 12 months is especially common. Age heaping may transfer deaths across the one-year boundary and lead to underestimates of infant mortality rates.

### **Sources of discrepancies between global and national figures**

Global figures produced by the inter-agency group for infant mortality estimation (IGME) may differ from the ones produced at the country level for different reasons. The global estimates use all available data obtained from different sources (vital registration, census, and household surveys) to produce estimates that represent trends and levels of infant mortality in the country. This is done by applying a regression model, described in the section below. Country estimates, on the other hand, can be obtained from just one specific source (more often from household surveys such as DHS), a combination of data sources, or from using different estimation methods.

### **Process of obtaining data**

The first step in the process is to proactively seek out all possible sources of data, including vital registration systems, national censuses, household surveys conducted by global programmes, and multi-purpose surveys conducted without international sponsorship.

To seek out national data sources that might be overlooked, UNICEF conducts an annual exercise called the Country Reports on Indicators for the Goals (CRING)<sup>1</sup>. CRING gathers recent information for all indicators regularly reported on by UNICEF, including the infant and under-five mortality rates.

Different data sources and calculation methods often yield widely differing estimates of infant mortality for a given time and place. In order to reconcile these differences, UNICEF developed, in coordination with WHO, the WB and UNPD,<sup>2</sup> an estimation methodology that minimizes the errors embodied on each estimate and harmonize trends along time.<sup>3</sup> Since the estimates are not necessarily the exact values used as inputs for the model, they are often not recognized as the official IMR estimates used at the country level. However, as mentioned before, these estimates minimize errors and maximize the consistency of trends along time. Applying a consistent methodology also allows comparisons between countries, despite the varied number and types of data sources.

After plotting all available values for infant and under-five mortality, analysts use weighted least squares to fit a multi-spine regression line to the data points and extrapolate the trend to the present. The use of weights allows analysts to make a

judgment about the relative quality of each data set and how representative it is likely to be of the population. The last step is to decide which set of estimates (for infant mortality or under-five mortality) is more consistent and to use a model life table to derive the other set of estimates from it.

Additional details of the methodology are available in the following working paper: UNICEF, WHO, The World Bank and UN Population Division, 'Levels and Trends of Child Mortality in 2006: Estimates developed by the Inter-agency Group for Child Mortality Estimation', New York, 2007.

<http://mdgs.un.org/unsd/mdg/Resources/Attach/Capacity/Ind%204-1.pdf>

- 1 CRING is the Country Reports on Indicators for the Goals and is produced at the country level every year to update UNICEF's database. Each year, UNICEF's executive director sends out a request for information to all of the organization's regional directors and country representatives, who are stationed in over 150 countries around the world. They are asked to update the data already available at headquarters by submitting new values for each indicator along with copies of the original source documents, such as survey reports.
- 2 These agencies have created the Inter Agency Group for Mortality Estimation (IGME).
- 3 This methodology is better described in: K. Hill, R. Pande and G. Jones, Trends in child mortality in the developing world: 1990 to 1995, UNICEF staff working papers, Evaluation, Policy and Planning Series, UNICEF, New York, 1997.

### **Treatment of missing values**

The most recent IMR estimates produced by the IAGME are based on the extrapolation of observed trends obtained from observed IMR values derived from different data sources and methods. This process is described in the "Process of obtaining data" section, above.

### **Data availability**

Current estimates of IMR are generally based on empirical data from several or even many years before. Vital registration data are available on a yearly basis but often are published at the country level with a lag of 2 or more years. Unfortunately, vital statistics are unreliable in most developing countries. Population censuses are regularly conducted every ten years and results are published within 1-3 years after the population count. Household surveys, such as DHS and MICS, are in general implemented every 3-5 years with results published within a year of field data collection. On average, the most recent IMR estimates from household surveys refer to 2.5 years before the time of the survey or 3.5 years at the moment of publication of findings.

The lag time between the collection and publication of data is generally two years for vital registration, one year for surveys, and one to three years for censuses (Child Mortality Coordination Group, 2006). IMR estimates from the IGME refer to the year before the year the respective agency publishes (in the case of UNICEF for example, the 2008 State of the World's Children published in November 2007 includes IMR estimates corresponding to the year 2006). Recent estimates are consistent with the trend observed during the last 30 years.

IGME estimates are updated annually.

### **Regional and Global estimates**

IMR estimates are produced and presented by region and globally only if data are available for at least 50% of the region or the total population of the countries considered. Estimates are not included if this rule is not accomplished.

### **Expected time of release**

Yearly estimates of infant mortality rates are published in annual reports, at the end of the calendar year, by UNICEF in *The State of the World's Children* and by The World Bank, in *World Development Indicators*. They are also included in the World Health Organization's digest of World Health Statistics.

## **Indicator 4.3 Proportion of 1 year-old children immunized against measles**

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### **Definition**

Proportion of 1 year olds children immunized against measles is the percentage of children under one year of age who have received at least one dose of a measles vaccine. It is generally recommended for children to be immunized against measles at

the age of 9 months. In certain countries in Latin America and the Caribbean it is recommended for children to be immunized between the ages of 12 and 15 months.

### Method of computation

Estimates of immunization coverage are generally based on two sources of empirical data: national level reports of vaccinations performed by service providers (administrative data) and household surveys containing information on children's vaccination history (coverage surveys). For estimates based on administrative data immunization coverage is generally computed as follows:

$$\text{Proportion of 1 year-olds immunized against measles} = \frac{\text{Number of doses administered}}{\text{Number of children in target group}} * 100$$

The numerator and denominator are drawn from administrative data and checked against other sources, if available. When determining the coverage rate, credence is given to the administrative and official country reports unless there is a reason to believe they are inaccurate (such as internal inconsistency or reliable survey data).

### Comments and limitations

For estimates based on administrative data, biases occur when intermediate sites fail to report. A similar bias can occur when the data collection/reporting system excludes part of the population. The most common example is when a significant proportion of vaccinations are performed in the private sector and not reported to the public health authorities. If the denominator is derived from the total population and the numerator is based only on children receiving vaccination in the public sector this will lead to an underestimation of the actual coverage. Biased estimates of coverage can also be the results of an inaccurate denominator – the size of the target group. An overestimate of the denominator will bias coverage low while an underestimate will inflate the estimate of coverage. This bias can most readily be seen when coverage is high and the denominator has been underestimated. In this case immunization coverage estimates can exceed 100%. Errors in estimating the denominator can result from population projections based on old censuses or can be due to sudden shifts in populations – internal migration for example.

While it is theoretically possible to immunize 100% of the target population, especially in small countries, in reality a true immunization level of 100% is unlikely. In cases where coverage levels in excess of 100% are encountered, these are represented as 99%.

These levels are most likely to be the result of a systematic error ascertainment of the numerator or the denominator, a mid-year change in target age groups, or inclusion of children outside the target age group in the numerator.

Estimates based on surveys also have advantages and disadvantages. The principal advantages of surveys are that an estimate of immunization coverage can be obtained even if the denominator is unknown and vaccinations given by the private sector are included. In addition, because they include individuals who have not been vaccinated, reasons for not vaccinating can be identified. The principle disadvantage of surveys is that they provide information on the previous birth year's cohort (making it difficult to use for timely programme intervention). In addition, the survey methodology may entail a wider than desired confidence interval, interviewers may be poorly trained, and the implementation and supervision may be less than desired. In some instances the length or complexity of the survey may compromise the accuracy of the responses. As always, care should be taken to not generalize survey results beyond the population represented in the survey. For example, a survey on urban populations will, in general, not be representative of the entire country. In summary both sources of empirical data are potentially subject to a variety of biases. The challenge is to interpret the data available, attempt to ascertain and adjust for possible biases and arrive at the most accurate estimate of immunization coverage.

### **Sources of discrepancies between global and national figures**

The estimates are based on an appraisal of individual data points, patterns and trends in the data, and information on local circumstances affecting service delivery. In instances where alternative data are not available, estimates are based solely on officially reported data. In cases where alternative sources of data are available, there is an attempt to distinguish whether the data accurately reflect immunization system performance, or whether the data are compromised and present a misleading view of coverage achievements. If adjustments are proposed, they are made in consultation with the individual countries, as described in the section below. Discrepancies may also occur when a country has more recent results from a survey before the estimates are finalized before August of each year.

### **Process of obtaining data**

Data are collected through the WHO UNICEF Joint Reporting Form. This form is sent out by both organizations to the Ministries of Health with expected completion by April 15 of each year.

The World Health Organization (WHO) and the United Nation's Children's Fund (UNICEF) compile country data series based on both types of data gathered through the WHO/UNICEF Joint Reporting Form (JRF) on Vaccine-Preventable Diseases.

There are three types of data requested and collected through the JRF:

1. Administrative coverage data.
  - o The number of doses administered as recorded by the health providers;
  - o The number of children in the target population, usually live births or infants surviving to the age of one year; and
  - o An estimate of completeness of reporting, e.g., percentage of districts in the country that reported their data.
2. Survey data (national surveys conducted by DHS, MICS, EPI Cluster or other valid instruments).
3. Official national estimate (the estimate of coverage that the Ministry of Health believes to be correct; which may or may not coincide with the administrative or national survey data).

For additional details, see: [http://whqlibdoc.who.int/hq/2007/WHO\\_IVB\\_2007\\_eng.pdf](http://whqlibdoc.who.int/hq/2007/WHO_IVB_2007_eng.pdf)

The content of the Joint Reporting Form was developed through a consensus process by staff from UNICEF, WHO and selected ministries of health. Data collected in the Joint Reporting Form constitute the major source of information on estimates of national immunization coverage, reported cases of vaccine-preventable diseases (VPDs), and immunization schedules, as well as indicators of immunization system performances. Surveys are frequently used in conjunction with administrative data; in other instances they constitute the sole source of information on immunization coverage levels. The principle types of surveys are the Expanded Programme on Immunization (EPI) 30-cluster survey, the Multiple Indicator Cluster Survey (MICS), and the Demographic and Health Survey (DHS).

EPI 30-cluster surveys are frequently conducted by national EPI staff, are designed specifically for measuring immunization coverage, are simple to administer and easy to conduct, but have a precision plus or minus 10% points at 50% coverage. The MICS and DHS are more extensive surveys covering a variety of indicators, have a more rigorous design, and typically have a higher degree of precision, but are more expensive, logistically more complex and the questionnaire is longer and more difficult to administer.

Draft reports produced by the WHO UNICEF working group are sent to each country for review, comment, contribution and final approval.

Country correspondence adjustments are made to the estimates with consultation to the WHO UNICEF working group upon which final reports are completed. This collaboration

prior to the public release of the final estimates is important not only to inform national authorities of the results of the review before its general release, but also to take advantage of local expertise and knowledge. The consultations with local experts attempt to put the data in the context of local events, both those occurring in the immunization system (e.g. vaccine shortage for parts of the year, donor withdrawal, etc.) and more widely occurring events (e.g. international incidences, civil unrest, heightened political commitment to immunization, etc.).

As mentioned previously, there are no adjustments made to reported data in cases where data for a country was available from a single source, usually the national reports to WHO. There is also no attempt to group countries based on income, development levels, population size or geographic location. The resulting estimates are based only on data from that country.

Immunization coverage levels vary over time, and while there are frequently general trends, there is attempt to fit the data points to curve using smoothing techniques.

### **Treatment of missing values**

When coverage figures have not been reported, i.e. the vaccine is routinely scheduled but no figure was reported to WHO, a statistical method has been used to estimate the most likely coverage, and this estimate is used in the global and regional calculations.

There are three types of missing data.

Type A: Missing prior to the first-ever reported coverage. In these instances, it is assumed that coverage is 0%.

Type B: Missing between two years, where coverage was reported. In these instances the coverage estimate is derived using a linear interpolation of the two reported coverage rates.

Type C: Missing after the last reported coverage value. If coverage has ceased to be reported, it is assumed that coverage in the years following the last report will remain at the same level as the last reported coverage.

### **Data availability**

Estimates represent national coverage and are finalized by the 8-month following the year of the data.

Estimates are produced annually.

## Regional and Global estimates

Once national coverage estimates have been produced, each organization computes its own set of regional estimates. Note that UNICEF and the WHO group their member states into slightly different regions.

A UNICEF regional estimate is a target-population-weighted average of national estimates of coverage for the countries inside the region. In a given year, UNICEF only computes a regional estimate if in that year there is data available for countries comprising more than 50% of the region's population.

Both UNICEF and the WHO produce a global coverage estimate. It is the target-population-weighted average of all national (not regional) estimates of coverage.

Global and regional coverage is calculated using the estimated and reported coverage figures together with estimates of the target population sized from the World Population Prospects of the Population Division. The formula for aggregating coverage for a region (and globally) is:

$$\text{Percentage of coverage} = \frac{\sum [(\% \text{ reported or estimated coverage})(\text{size of target population})]}{\sum(\text{size of target population})} * 100$$

## Expected time of release

Global estimates are released each third week of August.

## Indicator 5.1 Maternal mortality ratio

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## Definition

The maternal mortality ratio (MMR) is the annual number of female deaths from any cause related to or aggravated by pregnancy or its management (excluding accidental or incidental causes) during pregnancy and childbirth or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, for a specified year (expressed per 100,000 live births).

## Method of computation

The maternal mortality ratio can be calculated by dividing recorded (or estimated) maternal deaths by total recorded (or estimated) live births in the same period and multiplying by 100,000.

Measurement requires information on pregnancy status, timing of death (during pregnancy, childbirth, or within 42 days of termination of pregnancy), and cause of death.

Maternal deaths can be divided into two groups, namely direct and indirect obstetric deaths. Direct obstetric deaths result from obstetric complications of the pregnant state (pregnancy, labour and puerperium); from interventions, omissions or direct treatment; or from a chain of events resulting in any of these. Indirect deaths result from previously existing disease or disease that developed during pregnancy and was not directly due to obstetric causes but was aggravated by the physiologic effects of pregnancy.

The maternal mortality ratio can be calculated directly from data collected through vital registration systems, household surveys or other sources. However, those sources all have data quality problems, particularly related to the underreporting and misclassification of maternal deaths (see "comments and limitations" section). The World Health Organization (WHO), United Nation's Children's Fund (UNICEF), United Nations Population Fund (UNFPA), The World Bank (WB), and United Nations Population Division (UNPD) have developed a method to adjust existing data in order to take into account these data quality issues. This method involves a dual approach whereby existing data are adjusted for underreporting and misclassification of deaths and model-based estimates are made for countries with no reliable national level data.

## Comments and limitations

Maternal mortality is difficult to measure. Vital registration and health information systems in most developing countries are weak, and thus, cannot provide an accurate assessment of maternal mortality. Even estimates derived from complete vital

registration systems, such as those in developed countries, suffer from misclassification and underreporting of maternal deaths.

Because maternal mortality is a relatively rare event, large sample sizes are needed if household surveys are used. This is very costly and may still result in estimates with large confidence intervals. To reduce sample size requirements, the sisterhood method measures maternal mortality by asking respondents about the survivorship of sisters. While this method reduces sample size requirements, it produces estimates covering some 6-12 years before the survey, which renders data problematic for monitoring progress or observing the impact of interventions. The direct sisterhood method asks respondents to provide date of death, which permits the calculation of more recent estimates, but even then the reference period tends to center on 0-6 years before the survey.

In addition, owing to the very large confidence limits around these estimates, they are not suitable for assessing trends over time or for making comparisons between countries. As a result, it is recommended that process indicators, such as attendance by skilled health personnel at delivery and use of health facilities for delivery, be used to assess progress toward the reduction in maternal mortality. The ability to generate country, regional, and global estimates with higher precision and accuracy would be greatly facilitated if country civil registration systems were further improved. This improvement would reduce the need to conduct special maternal mortality studies (which are time-consuming, expensive, and of limited use in monitoring trends).

The maternal mortality ratio should not be confused with the maternal mortality rate (whose denominator is the number of women of reproductive age), which measures the likelihood of both becoming pregnant and dying during pregnancy or the puerperium (six weeks after delivery). The maternal mortality ratio (whose denominator is the number of live births) takes fertility levels (likelihood of becoming pregnant) into consideration).

### **Sources of discrepancies between global and national figures**

As detailed above, WHO, UNICEF, UNFPA, WB, and UNPD have developed a method to adjust existing data in order to produce better quality estimates. Thus, if a national figure is derived directly from the civil registration system or from survey data, global and national estimates may differ.

Depending on the type of the data source used, primary data for individual countries may be adjusted for specific characteristics. These characteristics include the extent of potential underreporting of maternal deaths (which is an issue even in highly developed civil registration systems), to obtain MMR estimates that are comparable across study

designs. Such adjustment allows the calculation of regional and global aggregates. For this reason, global estimates are usually different from the country-reported figures.

### **Process of obtaining data**

Data on maternal mortality and other relevant variables are obtained through databases maintained by WHO, UNPD, UNICEF, and WB. Data available from countries varies in terms of the source and methods. Primary sources of data include vital registration systems, household surveys (direct and indirect methods), reproductive age mortality studies, disease surveillance or sample registration systems, special studies on maternal mortality, and national population censuses.

Given the variability of the sources of data, different methods are used for each data source in order to arrive at country estimates that are comparable and permit regional and global aggregation. For a detailed description of the methodology please refer to the following, forthcoming publication: Hill K, Thomas K, AbouZahr C, Walker N, Say L, Inoue M, Suzuki E on behalf of the Maternal Mortality Working Group. Estimates of maternal mortality worldwide 1990 to 2005: an assessment of available data (*Lancet, 2007*).

Figures for countries with generally complete civil registration systems and good attribution of cause of death are not adjusted. However, only one third of all countries/territories fall into this group. For another third of countries/territories, country-reported estimates of maternal mortality are adjusted for the purposes of comparability of the methodologies. For the final third of countries/territories—those with no appropriate maternal mortality data—a statistical model is employed to predict maternal mortality levels.

Despite being based on established demographic techniques and empirical data from other countries, there is no guarantee that the country specific point estimates obtained through the statistical model represent the true levels of maternal mortality. Estimated uncertainty margins are not confidence intervals in the epidemiological and statistical sense. Because these margins are extremely wide, one must be wary of interpreting small numerical differences in countries as representing real differences in maternal mortality levels. The wide lower and upper margins around the estimated figures reflect such uncertainty.

### **Treatment of missing values**

For information on methods see: WHO, UNICEF, UNFPA and The World Bank. 2007. Maternal Mortality in 2005. Geneva. Available at: [http://www.who.int/reproductive-health/publications/maternal\\_mortality\\_2005/mme\\_2005.pdf](http://www.who.int/reproductive-health/publications/maternal_mortality_2005/mme_2005.pdf)

## Data availability

Data are available for 171 countries and territories and exclude countries and territories with populations under 250,000. Adjusted estimates of MMR are calculated every 5 years and are published a year or two after the reference year to allow time for data compilation and analysis. Both the adjusted estimates from interagency work, as well as the unadjusted estimates reported by governments are published annually by UNICEF in *The State of the World's Children report*.

## Regional and Global estimates

Regional and global estimates are based on population-weighted averages weighted by the total number of live births. These estimates are presented only if available data cover at least 50% of total births in the regional or global groupings.

## Expected time of release

Global estimates are produced every five years, and are usually released in October. It should be noted that both the adjusted estimates from interagency work, as well as the unadjusted estimates reported by governments are also published annually, in December, by UNICEF in *The State of the World's Children report*, and are available at <http://www.childinfo.org>

## Indicator 5.2 Proportion of births attended by skilled health personnel

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## Definition

Percentage of births attended by skilled health personnel (doctors, nurses or midwives) is the percentage of deliveries attended by personnel trained in providing life saving obstetric care, including giving the necessary supervision, care 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, even if they receive a short training course, are not included.

### **Method of computation**

The number of women aged 15-49 with a live birth attended by skilled health personnel (doctors, nurses or midwives) is expressed as a percentage of women aged 15-49 with a live birth in the same period.

### **Comments and limitations**

The indicator is a measure of a health system's ability to provide adequate care for pregnant women. Concerns have been expressed that the term skilled attendant may not adequately capture women's access to good quality care, particularly when complications arise.

In addition, standardization of the definition of skilled health personnel is sometimes difficult because of differences in training of health personnel in different countries. Although efforts have been made to standardize the definitions of doctors, nurses, midwives and auxiliary midwives used in most household surveys, it is probable that many skilled attendants' ability to provide appropriate care in an emergency depends on the environment in which they work.

### **Sources of discrepancies between global and national figures**

Discrepancies are possible if there are national figures compiled at the health facility level. These would differ from the global figures, which are based on survey data collected at the household level.

In terms of survey data, some survey reports may present a total percentage of births attended by a skilled health professional that does not conform to the MDG definition (e.g., total includes provider that is not considered skilled, such as a community health worker). In that case, the percentage delivered by a physician, nurse, or a midwife are totalled and entered into the global database as the MDG estimate.

In some countries where skilled attendant at birth is not available, institutional birth is used instead. This is frequent among Latin American countries, where the proportion of institutional births is very high. Nonetheless, it should be noted that institutional deliveries may underestimate the percentage of births with skilled attendant.

### **Process of obtaining data**

Data are collected through national-level household surveys, including Multiple Indicator Cluster Survey (MICS) and Demographic Health Surveys (DHS). These surveys are generally conducted every 3-5 years.

Before acceptance into the global databases, UNICEF and WHO undergo a verification process that includes correspondence with field offices to clarify any questions regarding estimates.

### **Treatment of missing values**

There is no treatment of missing values. When the information needed to calculate the indicator is not available, the indicator is not estimated.

### **Data availability**

Data are available for 140 countries.

The lag between the reference year and actual production of data series depends on the availability of the household survey for each country. In developing countries they typically take place every three to five years, with results published within a year of field data collection.

Data from national-level household surveys are compiled in the UNICEF global database. Latest available estimates of skilled health personnel at delivery are published annually, in December, by UNICEF in *The State of the World's Children* report, and are available on [www.childinfo.org](http://www.childinfo.org)

### **Regional and Global estimates**

Regional and global estimates are based on population-weighted averages weighted by the total number of births. These estimates are presented only if available data cover at least 50% of total births in the regional or global groupings.

### **Expected time of release**

Estimates are published annually in UNICEF's State of the World's Children, which is typically launched in December.

## **Indicator 6.1 HIV prevalence among population aged 15-24 years**

**Please refer to series metadata**

## **Indicator 6.4 Ratio of school attendance of orphans to school attendance of non-orphans aged 10-14 years**

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### **Definition**

The impact of the AIDS epidemic on orphans is measured through the ratio of the current school attendance rate of children aged 10–14 both of whose biological parents have died to the current school attendance rate of children aged 10–14 both of whose parents are still alive and who currently live with at least one biological parent.

### **Method of computation**

The current school attendance rate of children ages 10–14 both of whose biological parents have died is divided by the current school attendance rate of children ages 10–14 whose parents are both still alive and who live with at least one biological parent.

Orphan school attendance (1)

**Numerator:** Number of children who have lost both parents and attend school.

**Denominator:** Number of children who have lost both parents.

Non-orphan school attendance (2)

**Numerator:** Number of children, both of whose parents are still alive, who live with at least one parent and who attend school.

**Denominator:** Number of children both of whose parents are still alive and who live with at least one parent.

Calculate the ratio of (1) to (2). Indicator scores are estimated for all children aged 10–14 years.

The data from household surveys used to produce the indicator are weighted according to the survey design to create a nationally representative indicator. No additional alterations are made to the data.

### **Comments and limitations**

AIDS is claiming the lives of ever-growing numbers of adults just when they are forming families and bringing up children. As a result, orphan prevalence is rising steadily in many countries, while fewer relatives within the prime adult ages mean that orphaned children face an increasingly uncertain future. They are likely to drop out of school owing to discrimination, emotional distress, inability to pay school fees, and/or the need to care for parents or caretakers infected with HIV or for younger siblings. It is important to monitor the extent to which AIDS support programmes succeed in securing educational opportunities for orphaned children.

The indicator is confined to children ages 10–14 for comparability, as age at school entry varies across countries. Household surveys can miss children in unstable households, and orphaned children are disproportionately likely to be in such households. The indicator is not a direct measure of the number of children orphaned by AIDS, despite the wording. The indicator does not directly distinguish the cause of orphanhood. However, it is believed that high proportions of deaths of adults with school-age children in areas of HIV epidemics are likely to be related to AIDS.

### **Sources of discrepancies between global and national figures**

In principle, there is no discrepancy between global and national figures, as national data are not modified.

### **Process of obtaining data**

These data are collected through household surveys, such as Demographic and Health Surveys (DHS), Multiple Indicator Cluster Surveys (MICS), behavioural surveillance surveys, and other nationally representative surveys. The results are reported regularly in the final reports of these surveys. In addition the data are available at : [www.childinfo.org](http://www.childinfo.org). and [www.measuredhs.com/hivdata](http://www.measuredhs.com/hivdata).

Nationally representative population-based surveys, such as DHS and MICS, are conducted by national statistical offices or other relevant government offices under the supervision of government or international agencies.

As part of routine data quality control, survey results are checked for inconsistencies and to ensure that data are collected using a clearly defined population-based sampling frame, permitting inferences to be drawn for the entire population. UNICEF also conducts an annual exercise called the Country Reports on Indicators for the Goals (CRING), in which data maintained in the global databases at UNICEF for all regularly reported indicators are sent to countries for validation and updating. Updates from countries must be accompanied by original source documentation, e.g. survey reports.

No adjustments are made to the data compiled from DHS, MICS and other surveys that are statistically sound and nationally representative.

### **Treatment of missing values**

There is no treatment of missing values. When the information needed to calculate the indicator is not available, the indicator is not estimated.

### **Data availability**

Data are available from approximately 70 countries.

The universe/population interest is comprised of children aged 10-14 years.

The lag between the reference year and actual production of data series depends on the availability and reliability of the survey for each country. Household surveys, such as Demographic and Health Surveys, reproductive and health surveys and Behavioural Surveillance Surveys, are generally conducted every three to five years.

Household surveys, such as DHS and MICS, are in general implemented every 3-5 years with results published within a year of field data collection. Data from national-level household surveys are compiled in the UNICEF global databases and are published annually by UNICEF in *The State of the World's Children* report, and are available at [www.childinfo.org](http://www.childinfo.org).

### **Regional and Global estimates**

Regional and global estimates are based on population-weighted averages weighted by the total number of young women and men 10-14 years of age. These estimates are presented only if available data cover at least 50% of total young men and women 10-14 years of age in the regional or global groupings.

### **Expected time of release**

Available data are published in annual reports, at the end of the calendar year, by UNICEF in *The State of the World's Children, Children and AIDS Stock Taking Report* and are available at : [www.childinfo.org](http://www.childinfo.org).

## **Indicator 6.7 Proportion of children under 5 sleeping under insecticide-treated bednets**

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### **Definition**

Percentage of children aged 0-59 months who slept under an insecticide treated mosquito net the night prior to the survey.

### **Method of computation**

The number of children aged 0-59 months who slept under an insecticide-treated mosquito net the night prior to the survey is expressed as a percentage of the total number of children aged 0-59 months included in the survey.

### **Comments and limitations**

Because of issues of date recall of last impregnation, this indicator may not provide reliable estimates of net retreatment status. Furthermore, the standard survey instrument does not collect information on whether the net was washed after treatment, which can reduce its effectiveness. Typically, estimates are provided for the national level, which may underestimate the level of coverage among subpopulations living in localized areas of malaria transmission.

### **Sources of discrepancies between global and national figures**

Because all nationally-representative data on insecticide treated mosquito net use are collected only through large-scale household surveys, and these figures are not modified, there would normally be no discrepancies between global and national figures. However,

there could be discrepancies if national figures are calculated based on only those geographic areas with malaria transmission.

### **Process of obtaining data**

Data from national-level household surveys, including Multiple Indicator Cluster Surveys (MICS), Demographic Health Surveys (DHS) and Malaria Indicator Surveys (MIS), are compiled in the UNICEF global databases.

The data are reviewed in collaboration with Roll Back Malaria (RBM) partnership, launched in 1998 by the World Health Organization (WHO), the United Nations Children's Fund (UNICEF), the United Nations Development Programme (UNDP) and the World Bank. The RBM Partnership has expanded exponentially since its launch and is now made up of a wide range of partners — including malaria-endemic countries, their bilateral and multilateral development partners, the private sector, nongovernmental and community-based organizations, foundations, and research and academic institutions — who bring a formidable assembly of expertise, infrastructure and funds into the fight against the disease.

### **Treatment of missing values**

There is no treatment of missing values. When the information needed to calculate the indicator is not available, the indicator is not estimated.

### **Data availability**

Data are available for nearly all malaria endemic countries between the period of 1998 and 2006, for children under five years of age. The lag between the reference year and actual production of data series differs between surveys. Household surveys, such as DHS and MICS, are in general implemented every 3-5 years with results published within a year of field data collection.

Data from national-level household surveys are compiled in the UNICEF global databases, which are reviewed in collaboration with Roll Back Malaria partners. Latest available estimates of these malaria prevention and treatment indicators are published annually by UNICEF in The State of the World's Children report, and are available at <http://www.childinfo.org>

### **Regional and Global estimates**

Regional and global estimates are based on population-weighted averages weighted by the total number of children under five years of age. These estimates are presented only

if available data cover at least 50% of total children under five years of age in the regional or global groupings.

### **Expected time of release**

Latest available estimates are published annually, in December, by UNICEF in The State of the World's Children report, and are available at [www.childinfo.org](http://www.childinfo.org)

## **Indicator 6.9 Incidence, prevalence and death rates associated with tuberculosis**

Please refer to series metadata

## **Indicator 6.10 Proportion of tuberculosis cases detected and cured under directly observed treatment short course**

Please refer to series metadata

## **Indicator 7.1 Proportion of land area covered by forest**

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### **Definition**

The indicator is defined as the proportion of forest area to total land area and expressed as a percentage.

Forest is defined in the Food and Agriculture Organization's (FAO) Global Forest Resources Assessment as land spanning more than 0.5 hectares with trees higher than 5 metres and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use.

Explanatory notes:

Forest is determined both by the presence of trees and the absence of other predominant land uses. The trees should reach a minimum height of 5 metres (m) in situ. Areas under reforestation that have not yet reached but are expected to reach a canopy cover of 10 percent and a tree height of 5 m are included, as are temporarily unstocked areas, resulting from human intervention or natural causes, which are expected to regenerate.

Includes: areas with bamboo and palms provided that height and canopy cover criteria are met; forest roads, firebreaks and other small open areas; forest in national parks, nature reserves and other protected areas such as those of specific scientific, historical, cultural or spiritual interest; windbreaks, shelterbelts and corridors of trees with an area of more than 0.5 ha and width of more than 20 m; plantations primarily used for forestry or protective purposes, such as rubber-wood plantations and cork oak stands.

Excludes: tree stands in agricultural production systems, for example in fruit plantations and agroforestry systems. The term also excludes trees in urban parks and gardens.

### **Method of computation**

The area of forest for three points in time (1990, 2000 and 2005) is used to establish estimation of trends over time. The proportion of forest area of total land area is calculated and changes in the proportion are computed to identify trends.

### **Comments and limitations**

National forest inventories are expensive and, as a result, they are carried out at infrequent intervals in many countries. On the other hand, easier access to remote sensing imagery has enabled recent assessments of forest and tree cover in some countries. The area weighted average reference year for the latest available information on the area of forest for FRA 2005 was 2000. Differences in methodologies and definitions over time make it difficult to compare the results of different assessments within a given country and to accurately estimate changes over time.

### **Sources of discrepancies between global and national figures**

The national figures in the database are reported by the countries themselves following standardized format, definitions and reporting years, thus eliminating any discrepancies between global and national figures. The reporting format ensures that countries provide the full reference for original data sources as well as national definitions and terminology. Separate sections in the reporting format (country reports) deal with the analysis of data

(including any assumptions made and the methods used for estimates and projections to the common reporting years); calibration of data to the official land area as held by FAO; and reclassification of data to the classes used in FAO's Global Forest Resources Assessments.

### **Process of obtaining data**

FAO has been collecting and analyzing data on forest area since 1946. This is done at intervals of 5-10 years as part of the Global Forest Resources Assessment (FRA). FRA 2005 contains information for 229 countries and territories on more than 40 variables related to the extent of forests, their conditions, uses and values for three points in time: 1990, 2000 and 2005.

All data are provided to FAO by the countries in the form of a country report following a standard format, which includes the original data and reference sources and descriptions of how these have been used to estimate the forest area for different points in time. (For definitions, reporting guidelines and format in English, French, Spanish, Arabic and Russian see <http://www.fao.org/forestry/site/32180/en>).

Officially nominated national correspondents and their teams prepared the country reports for the assessment. Some prepared more than one report as they also reported on dependent territories. For the few remaining countries and territories where no information is provided, a report is prepared by FAO using existing information and a literature search.

Once received, the country reports undergo a rigorous review process to ensure correct use of definitions and methodology as well as internal consistency. A comparison is made with past assessments and other existing data sources. Regular contacts between national correspondents and FAO staff by e-mail and regional/sub-regional review workshops form part of this review process. All country reports (including those prepared by FAO) are sent to the respective Head of Forestry for validation before finalization. The data are then aggregated at sub-regional, regional and global levels by the FRA team at FAO.

### **Treatment of missing values**

For the 56 countries and territories where no information was provided to FAO (mostly small islands states and territories), a report was prepared by FAO using existing information and a literature search. Four countries/territories did not provide information on the forest area in 1990 (Guam, Guyana, Lebanon and the Occupied Palestinian Territory). For these countries/territories, FAO estimated the 1990 area based on linear extrapolation of the figures provided for 2000 and 2005.

### **Data availability**

Data coverage on forest area as of 2005 is available from 228 countries and territories – the exception being the Marshall Islands where no quantitative estimate was available at the time of reporting. The lag between the reference year and the actual production of data series as well as the frequency of data production varies between countries.

### **Regional and Global estimates**

Since information is available for virtually all countries and territories, regional and global estimates are produced by straight summation.

### **Expected time of release**

The Global Forest Resources Assessment 2010 will be launched in March 2008. New data and the final report of FRA 2010 will be published/available in 2010.

## **Indicator 7.6 Proportion of terrestrial and marine areas protected**

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### **Definition**

The unit of measure in this indicator is a "protected area". The World Conservation Union - IUCN, defines a protected area as *an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.*

"Designated" is defined as: *the authority that corresponds according to national legislation or common practice (e.g. by means of an executive decree or the like) officially endorses a document of designation.*

### **Method of computation**

The size of the protected area is the officially documented extent provided by the national authority unless otherwise stated. The total protected area extent by country/territory is then divided by total territorial area of the country/territory (includes total land area, inland waters and territorial waters up to 12 nautical miles) Protected areas increase with time and are not deleted from subsequent years.

### **Comments and limitations**

The ratio of territorial area protected is a useful indicator of Government's will to protect biodiversity. However it is not an indication of how well managed the area is nor confirmation that protection measures are actually in force. The indicator provides no information on areas that are not designated as protected but may also be important for conserving biodiversity. In addition, there are known data gaps that exist in some countries/regions resulting from a lack of reporting capacity.

### **Process of obtaining data**

A major source of information is through the UN List process that takes place every 4-5 years; the last one conducted in 2003. The World Database on Protected Areas (WDPA) Consortium established in 2002 brought together a number of international conservation organizations to ensure protected areas information are maintained on a cooperative basis. Collaborative projects such as 'Seas Around Us – MPA Global' have served to improve the collection and quality of marine protected areas data. Partnerships such as the one between UNEP-WCMC and the European Environment Agency have aided the collection of information on a regional scale. Data are constantly updated in the WDPA as new information is received from national authorities and NGOs.

### **Treatment of missing values**

Where the size of the protected area has not been provided by the national authority and polygon boundaries exist it is possible to calculate the GIS area. Where boundaries are not present and no size given, the site is included in statistics. Sites with missing establishment dates are included in country level time series and in world and regional totals but are excluded from regional and world time series. Where no update is received for the following year the total number and area protected is assumed to be equal to previous year. Countries (e.g. Antarctica) that do not fall into MDG regions have been added to the world total.

### **Data availability**

Geographic information systems (GIS) and other attribute data on all the world's protected areas are freely available for non-commercial use and available for download

from <http://www.unep-wcmc.org/wdpa/>. Data formatted specifically for the Millennium Development Goals can be found at: <http://www.unep-wcmc.org/wdpa/mdgs/index.cfm>

## Regional and Global estimates

Regional estimates of protected area ratios are calculated by UNEP-WCMC. Estimates are based on the following 4 assumptions:

1. Once a protected area has been designated as protected it is not removed from the list of protected areas. New areas can be added and therefore data have been accumulated over time.
2. Sites with no establishment date are excluded for regional and world time series but included in world and regional totals.
3. When gaps appear in a time series, data for those years are assumed equal to previous years and filled accordingly.
4. MDG regions have been used in the aggregation process. Any countries or areas (e.g. Antarctica) not falling into one of these regions have only been added to the total aggregate of the world.

## Expected time of release

A yearly release of the World Database on Protected Areas is available online in December.

## Indicator [non-MDG] Energy use (kg oil equivalent) per \$1,000 GDP (PPP)

### Definition

Energy use (kilogram oil equivalent) per \$1000 GDP (PPP) is commercial energy use measured in units of oil equivalent per \$1,000 of GDP converted from national currencies using purchasing power parity (PPP) conversion factors.

### Method of computation

Total commercial energy consumption is converted to metric ton oil equivalence using standard tables. GDP data must be converted using PPP tables so that real output is compared with real energy input. National total GDP is deflated (currently to 1995 US PPP dollars) by reference to PPP tables derived from the International Comparisons Program. Energy input is divided by GDP to derive the ratio.

### Process of obtaining data

Energy consumption is calculated from national energy balance sheets. Real GDP comes from the national income accounts deflated by reference to PPP tables prepared by the International Comparisons Program. Traditional fuels, such as animal and vegetable waste, fuel wood and charcoal, are excluded.

Energy use data are provided by the International Energy Agency (IEA). Data are collected by IEA through questionnaires sent out by IEA or other agencies and through published country sources. In some cases IEA may substitute its own estimates for components of the energy production data set. (Metadata maintained by the IEA detailing country sources have not been reviewed). The GDP (PPP) is based on country reported GDP data adjusted by the World Bank. Conversion to international dollars is done using PPP estimates produced by the World Bank.

### **Treatment of missing values**

Gap filling is done for countries without data for a specific time period. For example, the energy use of former Soviet Union is distributed among the various republics when data are not available for each of them. This procedure ensures comparability of the aggregate data over time. However, the gap filled data for each country are not reported as they are not actual data.

### **Data availability**

Currently, there is no country data verification process for this indicator. However, regarding the numerator (energy use), IEA notes in its "Energy and Balance of Non-OECD countries 2002-2003 (2005 edition)" that the data coverage goal set by the OECD Secretariat "has often required estimations prepared after consultation with national statistical offices, oil companies, electricity utilities and national energy experts." As for the denominator (GDP (PPP)), any concerns that countries may have about the data are expressed and discussed at the regional International Comparison Program meeting.

### **Regional and Global estimates**

Gap filled data for each country are only used for the aggregation purpose. The indicator the World Bank uses for its reporting purpose is "GDP (PPP) per unit of energy use" (the inverse of the MDG indicator). The aggregation is made, therefore, by using energy use as weights and the inverse of the results are reported to the UN.

## **Indicator 7.2 Carbon dioxide emissions, total, per capita and per \$1 GDP (PPP)**

**Please refer to series metadata**

### **Indicator [non-MDG] Proportion of population using solid fuels**

#### **Contact point in international agency**

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## Definition

The percentage of population using solid fuels is the percentage of the population that relies on solid fuels as the primary source of domestic energy for cooking and heating. Solid fuels include biomass fuels, such as wood, charcoal, crops or other agricultural waste, dung, shrubs and straw, and coal.

## Method of computation

This indicator is calculated as follows: The numerator is the number of people using solid fuels (in nationally representative sample) as the main cooking fuel, multiplied by 100. The denominator is the total population (in nationally representative sample).

## Comments and limitations

Limitations of the indicator:

- The indicator uses solid fuel use as a proxy for indoor air pollution, as it is not currently possible to obtain nationally representative samples of indoor concentrations of criteria pollutants, such as small particles and carbon monoxide.
- The indicator is based on the main type of fuel used for cooking as cooking occupies the largest share of overall household energy needs. However, many households use more than one type of fuel for cooking and, depending on climatic and geographical conditions, heating with solid fuels can also be a contributor to indoor air pollution levels.

## Sources of discrepancies between global and national figures

In principle, there is no discrepancy between global and national figures, as national data are not modified. However, values above 95% solid fuel use are reported as ">95%", and values below 5% as "<5%" to avoid misinterpretation of the precision of the estimates.

## Process of obtaining data

Solid fuel use data are routinely collected at the national and sub national levels in most countries using censuses and surveys. Household surveys used include: United States

Agency for International Development (USAID)-supported Demographic and Health Surveys (DHS); United Nations Children's Fund (UNICEF)-supported Multiple Indicator Cluster Surveys (MICS); WHO-supported World Health Surveys (WHS); and other reliable and nationally representative country surveys.

The indicator draws on already published data sources and WHO therefore does not rely on country counterparts for obtaining data.

Until 2004, national data were not modified and reported as such. For the 2009 reporting (2007 being the year reported), as the number of nationally representative data has increased, the methods developed and implemented by the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (WHO & UNICEF 2006) were followed:

- Where solid fuel use information is available for a single year, a horizontal line is drawn six years into the past and six years into the future;
- Where solid fuel use information is available for two or more years that are spaced four or fewer years apart, an average is calculated. This average is extrapolated six years into the past and six years into the future.
- Where solid fuel use information is available for two or more years that are spaced at least five years apart, linear regression is performed. The linear regression line is extrapolated up to two years after the latest survey point and up to two years before the earliest survey point. Outside of these time limits, the extrapolated regression line is flat for four years in either direction. Where coverage reaches 0% or 100%, a horizontal line is drawn from the year before coverage reaches 0% or 100%.

### **Treatment of missing values**

Missing data are estimated based on the following criteria:

- All countries with a Gross National Income (GNI) per capita above USD 10,500 are assumed to have made a complete transition to using non-solid fuels as the primary source of domestic energy for cooking and heating.
- Missing data are not estimated for countries with a GNI per capita below USD 10,500, and for which no household solid fuel use data are available.

### **Data availability**

The indicator is currently reported for 186 countries with the number of countries for which data are obtained from nationally representative surveys increasing every year.

The population of interest includes the entire population of countries that have a relatively low national income (typically below USD 10,500).

The time lag between the reference year and actual availability of data series is often about 1-2 years, the time to analyze and publish the data.

The frequency of data production depends on the country; often, new data on use of solid fuels are only assessed once every few years.

### **Regional and Global estimates**

Countries are population-weighted to obtain regional aggregates; for countries with no data, the regional mean exposure is assumed; for countries with less than 5% of solid fuel use (SFU), 0% is assumed for the calculation of regional or global means; for countries with more than 95% of SFU, 95% is assumed in the calculation of the mean.

### **Expected time of release**

Reporting of estimates by WHO is variable. Updates are produced approximately every two years and made available at: [www.who.int/indoorair/mdg/en/](http://www.who.int/indoorair/mdg/en/).

## **Indicator 7.8 Proportion of population using an improved drinking water source**

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## Definition

The proportion of the population using an improved drinking water source, total, urban, and rural, is the percentage of the population who use any of the following types of water supply for drinking: piped water into dwelling, plot or yard; public tap/standpipe; borehole/tube well; protected dug well; protected spring; rainwater collection and bottled water (if a secondary available source is also improved). It does not include unprotected well, unprotected spring, water provided by carts with small tanks/drums, tanker truck-provided water and bottled water (if secondary source is not an improved source) or surface water taken directly from rivers, ponds, streams, lakes, dams, or irrigation channels. Definitions and a detailed description of these facilities can be found at the website of the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation at [www.wssinfo.org](http://www.wssinfo.org).

## Method of computation

The indicator is computed as the ratio of the number of people who use an improved drinking water source to the total population, expressed as a percentage. The same method applies for the urban and rural breakdown. Coverage estimates are based on data from nationally representative household surveys and national censuses, which in some cases are adjusted to improve comparability among data over time. Survey and census data for urban and rural areas are then plotted on a time scale from 1980 to present. A linear trend line, based on the least-squares method, is drawn through these data points to estimate urban and rural coverage for the baseline year 1990 and for the year of most recent estimate. A linear regression line is drawn only if at least two survey data points are available, and they are spaced five or more years apart. The linear regression line may be extrapolated up to two years after, or before, the latest or earliest survey data point. Outside of these time limits, the extrapolated regression line is flat for up to four years, as necessary. If the extrapolated regression line would reach 100% coverage or beyond, or 0%, a flat line is drawn from the year prior to the year where coverage would reach 100% (or 0%). Total coverage estimates are computed from the urban and rural coverage estimates using the latest population estimates and distribution of urban and rural population provided by the United Nations Population Division <http://www.un.org/esa/population/unpop.htm> More information on this methodology is available at <http://www.childinfo.org> and <http://www.wssinfo.org>.

## Comments and limitations

Use of an improved drinking water source is a proxy for access to safe drinking water. Improved drinking water sources are more likely to be protected from external

contaminants than unimproved sources either by intervention or through their design and construction. The indicator does not take actual drinking water quality into account, nor does it reflect the time spent on getting water from improved sources, which are not on premises. Both these determinants though are important parameters of access. Given the lack of comparable historic and current data on these parameters, these determinants are not reflected in the global indicator to measure progress towards MDG 7, Target 7C.

Sustainable access is currently not measured for reasons of a lack of common understanding what constitutes sustainable access and how to reliably measure it at global scale.

### **Sources of discrepancies between global and national figures**

The origins of the most common discrepancies between internationally reported and nationally reported figures are:

- Use of different definitions of what constitutes access to safe drinking water.
- Use of different total population estimates and different estimates for the distribution of the population among urban and rural areas.
- Use of population as the denominator for coverage as per the MDG indicator vs. the use of households as the denominator as was routinely done by DHS.
- Use of an estimate for coverage as is done internationally vs. the reporting of the latest survey or census findings, which is often done nationally.

Often discrepancies are found between survey and census findings and routinely reported data. Surveys and censuses provide a net estimate of facilities that are in use, including those constructed by different actors and excluding those facilities that have fallen in disrepair and which are no longer in use.

Routinely reported data from line Ministries, also known as administratively reported data, often only record cumulative totals of facilities constructed based on records from government-supported programs and/or data reported by water utilities. Administrative data often do not take into account facilities constructed under NGO supported programs or facilities constructed by individual households without outside support. For these reasons administrative data are not used at international level for tracking progress towards the MDG drinking water and sanitation target.

### **Process of obtaining data**

Primary data sources used for international monitoring include nationally representative household surveys, including Multiple Indicator Cluster Surveys (MICS), Demographic Health Surveys (DHS), World Health Surveys (WHS), Living Standards and Measurement Surveys (LSMS), Core Welfare Indicator Questionnaires (CWIQ), (Pan Arab Project for

Family Health Surveys (PAPFAM), and population censuses. Most of the survey data can be downloaded from the organizations that supported these surveys through the Internet. Census data are often obtained directly from National Statistics Offices.

The use of drinking water sources and sanitation facilities is part of the wealth-index used by household surveys to divide the population into wealth quintiles. As a result, most nationally representative household surveys include information about water and sanitation.

To seek out these national data sources that might otherwise be overlooked, UNICEF conducts an annual exercise called the Country Reports on Indicators for the Goals (CRING). CRING gathers recent information for all indicators regularly reported on by UNICEF, including the water supply and sanitation indicators. Surveys found through CRING include Household Budget Surveys, Reproductive Health Surveys, Labour Force Surveys, and Welfare Monitoring Surveys, etc.

The WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP) is charged with international monitoring of the MDG drinking water and sanitation target. When the JMP receives new survey or census data, its staff assesses the validity of the data by review, using a set of objective criteria. New survey data are entered into the JMP database only when the accompanying survey documentation is available to JMP. Provider-based (reported) data are only used when there are no survey or census data available for a country for the period going back to 1980.

The survey questions and response categories pertaining to access to drinking water are fully harmonized between MICS and DHS – which make up over 70 percent of all survey data in the JMP database. The same standard questions are being promoted for inclusion into other survey instruments and can be found at [www.wssinfo.org](http://www.wssinfo.org).

### **Treatment of missing values**

Countries with missing data are assigned regional averages when generating regional and global estimates.

### **Data availability**

Data are available for approximately 160 countries. National-level household surveys are generally conducted every 3-5 years in most developing countries, while censuses are generally conducted every 10 years. The latest data on which the estimates are based generally stem from surveys and censuses conducted up to two years ago. This is a common lead-time required to conduct the surveys, analyze them and report on the

findings. On average, the results of 25 - 40 new surveys or censuses emerge every year with peak years of up to 80 surveys when a round of MICS has been conducted.

The WHO/UNICEF Joint Monitoring Programme updates global, regional, and country estimates for Water Supply and Sanitation (JMP), every 2 years, as global estimates of water and sanitation coverage do not change significantly on an annual basis. JMP publishes coverage estimates on a biennial basis.

### **Regional and Global estimates**

Regional and global estimates are based on population-weighted averages weighted by the total population. These estimates are presented only if available data cover at least 50% of the total population in the regional or global groupings.

### **Expected time of release**

Biennial coverage updates are typically released in the first half of every even second year. Reports, tables, graphs, and data files are available at [www.wssinfo.org](http://www.wssinfo.org) (the JMP website) or at [www.childinfo.org](http://www.childinfo.org) (UNICEF's statistics website).

## **Indicator 7.9 Proportion of population using an improved sanitation facility**

### **Contact point in international agency**

#### **UNICEF**

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### **Definition**

The proportion of the population using an improved sanitation facility, total, urban, rural, is the percentage of the population with access to facilities that hygienically separate human excreta from human contact. Improved facilities include flush/pour flush toilets or latrines connected to a sewer, -septic tank, or -pit, ventilated improved pit latrines, pit latrines with a slab or platform of any material which covers the pit entirely, except for the drop hole and composting toilets/latrines. Unimproved facilities include public or shared facilities of an otherwise acceptable type, flush/pour-flush toilets or latrines which discharge directly into an open sewer or ditch, pit latrines without a slab, bucket latrines, hanging toilets or latrines which directly discharge in water bodies or in the open and the practice of open defecation in the bush, field or bodies or water. Definitions and a detailed description of these facilities can be found at the website of the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation at [www.wssinfo.org](http://www.wssinfo.org).

## Method of computation

The indicator is computed as the ratio of the number of people using improved sanitation facilities, to the total population, expressed as a percentage. The same method applies to the rural and urban estimates.

Coverage estimates are based on data from nationally representative household surveys and national censuses, which in some cases are adjusted to improve comparability among data over time. Survey and census data for urban and rural areas are then plotted on a time scale from 1980 to present. A linear trend line, based on the least-squares method, is drawn through these data points to estimate urban and rural coverage for the baseline year 1990 and for the year of most recent estimate. A linear regression line is drawn only if at least two survey data points are available, and they are spaced five or more years apart. The linear regression line maybe extrapolated up to two years after, or before, the latest or earliest survey data point. Outside of these time limits, the extrapolated regression line is flat for up to four years, as necessary. If the extrapolated regression line would reach 100% coverage or beyond, or 0%, a flat line is drawn from the year prior to the year where coverage would reach 100% (or 0%).

Total coverage estimates are computed from the urban and rural coverage estimates using the latest population estimates and distribution of urban and rural population provided by the United Nations Population Division

<http://www.un.org/esa/population/unpop.htm>

More information on this methodology is available at <http://www.childinfo.org> and <http://www.wssinfo.org>.

## Comments and limitations

The indicator records the proportion of the population using an improved sanitation facility. The collection of data on the proportion of the population using shared or public sanitation facilities, unimproved sanitation facilities and those practising open defecation, however is also important to track behavioral changes in sanitation practices.

Though there is a demand for information on the use of improved sanitation facilities disaggregated by sex and age – this information is currently not routinely collected by the globally used monitoring instruments.

## Sources of discrepancies between global and national figures

The origins of the most common discrepancies between global and national figures are:

- Use of different definitions of what constitutes access to sanitation.

- Use of different total population estimates and different estimates for the distribution of the population among urban and rural areas.
- Use of population as the denominator for coverage as per the MDG indicator vs. the use of households as the denominator as was routinely done by DHS.
- Use of an estimate for coverage as is done internationally vs. the reporting of the latest survey or census findings, which is often done nationally.

Often discrepancies are found between survey and census findings and routinely reported data. Surveys and censuses provide a net estimate of facilities that are in use, including those constructed by different actors and those facilities that have fallen in disrepair and which are no longer in use.

Routinely reported data from line Ministries, also known as administratively reported data often only record cumulative totals of facilities constructed based on records from government-supported programs. Administrative data often do not take into account facilities constructed under NGO supported programs or facilities constructed by individual households without outside support. For these reasons administrative data are not used at international level for tracking progress towards the MDG drinking water and sanitation target.

### **Process of obtaining data**

Primary data sources used for international monitoring include nationally representative household surveys, including Multiple Indicator Cluster Surveys (MICS), Demographic Health Surveys (DHS), World Health Surveys (WHS), Living Standards and Measurement Surveys (LSMS), Core Welfare Indicator Questionnaires (CWIQ), (Pan Arab Project for Family Health Surveys (PAPFAM), and population censuses. Most of the survey data can be downloaded from the organizations that supported these surveys through the Internet. Census data are often obtained directly from National Statistics Offices. The use of drinking water sources and sanitation facilities is part of the wealth-index used by household surveys to divide the population into wealth quintiles. As a result, most nationally representative household surveys include information about water and sanitation. To seek out these national data sources that might otherwise be overlooked, UNICEF conducts an annual exercise called the Country Reports on Indicators for the Goals (CRING). CRING gathers recent information for all indicators regularly reported on by UNICEF, including the water supply and sanitation indicators. Surveys found through CRING include Household Budget Surveys, Reproductive Health Surveys, Labour Force Surveys, and Welfare Monitoring Surveys, etc.

The WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP) is charged with international monitoring of the MDG drinking water and sanitation target. When the JMP receives new survey or census data, its staff assesses the validity of the

data by review, using a set of objective criteria. New survey data are entered into the JMP database only when the accompanying survey documentation is available to JMP. Provider-based (reported) data are only used when there are no survey or census data available for a country for the period going back to 1980.

The survey questions and response categories pertaining to access to drinking water are fully harmonized between MICS and DHS – which make up over 70 percent of all survey data in the JMP database. The same standard questions are being promoted for inclusion into other survey instruments and can be found at [www.wssinfo.org](http://www.wssinfo.org).

### **Treatment of missing values**

Countries with missing data are assigned regional averages when generating regional and global estimates.

### **Data availability**

Data are available for approximately 160 countries.

National-level household surveys are generally conducted every 3-5 years in most developing countries, while censuses are generally conducted every 10 years. The latest data on which the estimates are based generally stem from surveys and censuses conducted up to two years ago. This is a common lead-time required to conduct the surveys, analyze them and report on the findings.

The WHO/UNICEF Joint Monitoring Programme updates global, regional and country estimates for Water Supply and Sanitation (JMP), every 2 years, as global estimates of water and sanitation coverage do not change significantly on an annual basis. JMP publishes coverage estimates on a biennial basis.

### **Regional and Global estimates**

Regional and global estimates are based on population-weighted averages weighted by the total population. These estimates are presented only if available data cover at least 50% of the total population in the regional or global groupings.

### **Expected time of release**

Biennial coverage updates are typically released in the first half of every even second year. Reports, tables, graphs, and data files are available at [www.wssinfo.org](http://www.wssinfo.org) (the JMP website) or at [www.childinfo.org](http://www.childinfo.org) (UNICEF's statistics website).

## Indicator 7.10 Proportion of urban population living in slums

### Contact point in international agency

Gora Mboup

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### Definition

The Proportion of urban population living in slums is the proportion of urban population living in slum households. A slum household is defined as a group of individuals living under the same roof lacking *one or more*<sup>1</sup> of the following conditions:

- Access to improved water
- Access to improved sanitation
- Sufficient-living area
- Durability of housing
- Security of tenure

However, since information on secure tenure is not available for most of the countries, only the first four indicators are used to define slum household, and then to estimate the proportion of urban population living in slums.

#### Access to improved water:

Improved drinking water technologies are more likely to provide safe drinking water than those characterized as unimproved. A household is considered to have access to an improved water supply if it uses improved drinking water sources or delivery points (listed below).

Improved drinking water sources include: piped water into dwelling, plot or yard; public tap/standpipe; tube well/borehole; protected dug well; protected spring; and rainwater collection.

Unimproved drinking water sources include: unprotected dug well; unprotected spring; cart with small tank/drum; bottled water<sup>2</sup>; tanker-truck; and surface water (river, dam, lake, pond, stream, canal, irrigation channels).

### **Access to improved sanitation:**

Improved sanitation facilities are more likely to prevent human contact with human excreta than unimproved facilities. A household is considered to have access to improved sanitation if it uses improved sanitation facilities (listed below).

Improved sanitation facilities<sup>3</sup> include: flush or pour-flush to piped sewer system, septic tank or pit latrine; ventilated improved pit latrine; pit latrine with slab; and composting toilet.

Unimproved sanitation facilities include: flush or pour-flush to elsewhere<sup>4</sup> ; pit latrine without slab or open pit; bucket; hanging toilet or hanging latrine; no facilities or bush or field.

**Durability of housing:** A house is considered “durable” if it is built on a non-hazardous location and has a structure permanent and adequate enough to protect its inhabitants from the extremes of climatic conditions, such as rain, heat, cold and humidity.

**Sufficient living area:** A house is considered to provide a sufficient living area for the household members if *not more than three people* share the same habitable (minimum of four square meters) room.

**Secure tenure:** Secure tenure is the right of all individuals and groups to effective protection by the State against arbitrary unlawful evictions. People have secure tenure when there is *evidence of documentation* that can be used as proof of secure tenure status or when there is either *de facto or perceived protection against forced evictions*.

- 1 *According to the situation in a specific city this definition may be locally adapted. For example, in Rio de Janeiro living area is insufficient for both the middle classes and the slum population and is not a good discriminator. It could either be omitted, or it could be formulated as **two or more** of the conditions such as overcrowding and durability of housing.*
- 2 *Bottled water is considered improved only when the household uses water from an improved source for cooking and personal hygiene.*
- 3 *Only facilities, which are not shared or are not public are considered improved.*
- 4 *Excreta are flushed to the street, yard or plot, open sewer, a ditch, a drainage way or other location.*

### **Method of computation**

Household survey data is preferred when available, such as the Demographic and Health Surveys (DHS), Multiple Indicator Cluster Surveys (MICS) as well as other household data (surveys or censuses), are the preferred sources of data. When household survey data

are available, the response categories for questions on access to water, access to sanitation, overcrowding, quality of dwelling and security of tenure are reviewed. Where possible, the response categories are grouped or interpreted according to Expert Group Meeting (EGM) definitions of slum dwellers (e.g., not all surveys or censuses use the same categories to define access to water and sanitation in the same way). Households that lack either of the above conditions are tallied ensuring that, a household lacking more than one condition is only counted once. Proportion of population living in these households is then estimated.

### **Comments and limitations**

Defining a slum at the household level presents a compromise between theoretical and methodological considerations. The agreed-upon definition is simple, operational and pragmatic: it can be easily understood and adapted by governments and other partners; it offers clear, measurable indicators, provided as a proxy to capture some of the essential attributes of slums; and it uses household-level data that is collected on a regular basis by governments and non-governmental organizations, that is accessible and available in most parts of the world. However, this definition lacks the spatial component of slum as well as the type of shelter deprivation.

Four out of five of the slum definition indicators measure physical expressions of slum conditions: lack of water, lack of sanitation, overcrowded conditions, and non-durable housing structures. These indicators focus attention on the circumstances that surround slum life, depicting deficiencies and casting poverty as an attribute of the environments in which slum dwellers live. The fifth indicator – security of tenure – has to do with legality, which is not as easy to measure or monitor, as the tenure status of slum dwellers often depends on *de facto* or *de jure* rights – or lack of thereof. There currently exists no mechanism to monitor secure tenure as part of target 7D, as household-level data on property entitlement, evictions, ownership, and other indicators of secure tenure is not uniformly available through mainstream systems of data collection, such as censuses and household surveys.

### **Sources of discrepancies between global and national figures**

Since the definition of slum was only adopted in 2002 and implemented in 2003 for global monitoring, national estimates are not available for comparison with global figures.

### **Process of obtaining data**

Estimated data for this indicator are obtained via the following process. Initially, a country Desk review of primary (published or electronic) sources is conducted. Data can then be obtained either from the country or from official international database

publication such as Demographic and Health Survey-DHS (<http://www.measuredhs.com>) or Multiple Indicators Clusters Survey – MICS (<http://www.childinfo.org>) or Integrated Public Use Micro data Series –IPUS (<http://www.ipums.org>), or national official database, or via CDs. Over 350 surveys and censuses have been obtained and used in the estimation of slum dwellers.

When household survey data were available the response categories for questions on access to water, access to sanitation, overcrowding, quality of housing and security of tenure are reviewed. In some instances it is possible to cross reference with alternative estimates or sources, or consult other countries with similar characteristics. Many countries in Africa and Asia have done DHS surveys more than once. When these data are available both data files are accessed as a confirmatory measure.

### **Treatment of missing values**

Estimations are produced only for countries with good quality household surveys or census data. Only those survey and census data that are well documented and considered valid are included in the estimation. Some surveys are not considered valid because their classification of facilities has inadequate detail or the categories are not comparable with other surveys. However, for global and regional estimates, missing data for countries are estimated based on the average of countries with data.

### **Data availability**

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### **Regional and Global estimates**

Regional and Global estimates are based on countries with available data. Individual country estimates are summed to regional and global totals.

### **Expected time of release**

Estimates are published in November 2008 in the UrbanInfor database that will be launched at the Fourth World Urban Forum.

## **Indicator 8.1 Net ODA, total and to the least developed countries, as percentage of OECD/DAC donors' gross national income**

### **Contact point in international agency**

E-mail: [DAC.contact@oecd.org](mailto:DAC.contact@oecd.org)

## Definition

Net Official development assistance (ODA) comprises grants or loans to developing countries and territories on the Organization For Economic Cooperation and Development/Development Assistance Committee (OECD/DAC) list of aid recipients that are undertaken by the official sector with promotion of economic development and welfare as the main objective and at concessional financial terms<sup>1</sup>. Technical cooperation is included. Grants, loans and credits for military purposes are excluded. Also excluded are aid to more advanced developing and transition countries as determined by the DAC. Donors' gross national income (GNI) at market prices is the sum of gross primary incomes receivable by resident institutional units and sectors. GNI at market prices was called gross national product (GNP) in the 1953 System of National Accounts. In contrast to gross domestic product (GDP), GNI is a concept of income (primary income) rather than value added. GNI is equal to GDP (which at market prices represents the final result of the production activity of resident producer units) less taxes (less subsidies) on production and imports, compensation of employees and property income payable to the rest of the world plus the corresponding items receivable from the rest of the world.

The list of least developed countries (LDCs) has been agreed by the General Assembly, on the recommendation of the Committee for Development Policy, Economic and Social Council. It includes the following 50 countries, classified by region: Africa: Angola, Benin, Burkina Faso, Burundi, Cape Verde, the Central African Republic, Chad, Comoros, the Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, the Gambia, Guinea, Guinea-Bissau, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Saõ Tomé and Príncipe, Senegal, Sierra Leone, Somalia, the Sudan, Togo, Uganda, the United Republic of Tanzania and Zambia; Asia and the Pacific: Afghanistan, Bangladesh, Bhutan, Cambodia, Kiribati, the Lao People's Democratic Republic, Maldives, Myanmar, Nepal, Samoa, Solomon Islands, Timor Leste, Tuvalu, Vanuatu and Yemen; Latin America and the Caribbean: Haiti.

1 If referring to a loan, this has to have a grant element of at least 25 percent.

## Method of computation

- a) Net ODA (US\$ million)
- b) Net ODA / donor's GNI (%)
- c) Net ODA to LDCs (US\$ million)
- d) Net ODA to LDCs / donor's GNI (%)

Components of Net ODA, GNI and the list countries that are LDCs are described in the "Definition" section, above.

## Comments and limitations

ODA to LDCs through multilateral institutions is estimated. Any methodology for imputing multilateral flows can only ever be an approximation. For more details on this see [www.oecd.org/dac/stats/dac/directives](http://www.oecd.org/dac/stats/dac/directives)

## Sources of discrepancies between global and national figures

The estimates used in the global-MDG database are national figures, reported according to internationally agreed guidelines, and are not modified.

## Process of obtaining data

All data on ODA are collected by the OECD/DAC Secretariat from its 23 members, then checked and aggregated by the OECD/DAC Secretariat. The DAC Secretariat collects two sets of data:

1. ***DAC Questionnaire***. A set of eight statistical tables completed annually in the Fall by DAC members, who report the amount and destination of their official and private flows made in the previous year. Detailed information is collected regarding the destination, form, terms, sector and tying status of official flows. A simplified form of the questionnaire is completed by multilateral agencies. Non-DAC donors also report on a voluntary basis on an abridged questionnaire. There is also a one-page "Advance Questionnaire on Main DAC Aggregates" completed by DAC members each April to give preliminary data on their ODA flows made in the previous year. See [www.oecd.org/dac/stats/dac/guide](http://www.oecd.org/dac/stats/dac/guide) for details.

2. ***Creditor Reporting System (CRS)***. A system for reporting individual official transactions (both ODA and other official flows) relevant to development. Reports are received directly from participating official agencies, including bilateral and multilateral aid agencies, development lending institutions, and export credit agencies. Follow up reports on the disbursement and repayment status of loans allow the Secretariat to calculate the debt burden of developing countries. See [www.oecd.org/dac/stats/dac/guide](http://www.oecd.org/dac/stats/dac/guide) for details.

Bilateral work with reporters is undertaken as necessary in order to resolve reporting issues.

## Treatment of missing values

There is no adjustment for missing data, as the indicator is calculated only for years and countries for which suitable data are available.

### **Data availability**

Data are available for the 22 DAC countries.

Data are collected in year Y for year Y-1. Complete data are available towards the end of the year Y. Data are produced annually.

### **Regional and Global estimates**

Regional and global aggregates are made by straight addition and do not involve any estimation for missing values.

### **Expected time of release**

Estimates are published annually at the end of the calendar year in International Development Statistics (IDS) database at the following address:  
[www.oecd.org/dac/stats/idsonline](http://www.oecd.org/dac/stats/idsonline)

## **Indicator 8.2 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)**

### **Contact point in international agency**

E-mail: [DAC.contact@oecd.org](mailto:DAC.contact@oecd.org)

### **Definition**

Official development assistance comprises grants or loans to developing countries and territories on the OECD Development Assistance Committee (DAC) list of aid recipients that are undertaken by the official sector with promotion of economic development and welfare as the main objective and at concessional financial terms. Technical cooperation is included. Grants, loans and credits for military purposes are excluded. Also excluded are aid to more advanced developing and transition countries as determined by the DAC.

Basic education comprises primary education, basic life skills for youth and adults and early childhood education. Primary health care includes basic health care, basic health infrastructure, basic nutrition, infectious disease control, health education and health personnel development. Population policies/programs and reproductive health includes population policy and administrative management, reproductive health care, family planning, sexually transmitted disease (STD) control including HIV/AIDS and personnel development (population & reproductive health). Basic social services (BSS) also include basic drinking water supply and basic sanitation, and multi-sector aid for BSS.

Bilateral official development assistance is from one country to another

### **Method of computation**

- a) ODA to basic social services (US\$ million)
- b) ODA to basic social services / total sector allocable ODA (%)

Components of ODA and basic social services are described in the "Definition" section, above.

### **Comments and limitations**

Data are compiled on project basis according to the most relevant sectors, so BSS expenditures in other sectors will not be captured.

### **Sources of discrepancies between global and national figures**

The estimates in the global-MDG database are national figures, reported according to internationally agreed guidelines, and are not modified.

### **Process of obtaining data**

All data on ODA are collected by the OECD/DAC Secretariat from its 23 members, then checked and aggregated by the OECD/DAC Secretariat. The DAC Secretariat collects two sets of data:

1. ***DAC Questionnaire***. A set of eight statistical tables completed annually in the Fall by DAC members, who report the amount and destination of their official and private flows made in the previous year. Detailed information is collected regarding the destination, form, terms, sector and tying status of official flows. A simplified form of the questionnaire is completed by multilateral agencies. Non-DAC donors also report on a voluntary basis on an abridged questionnaire. There is also a one-page "Advance Questionnaire on Main DAC Aggregates" completed by DAC members each April to give preliminary data on their ODA flows made in the previous year. See [www.oecd.org/dac/stats/dac/guide](http://www.oecd.org/dac/stats/dac/guide) for details.

2. ***Creditor Reporting System (CRS)***. A system for reporting individual official transactions (both ODA and other official flows) relevant to development. Reports are received directly from participating official agencies, including bilateral and multilateral aid agencies, development lending institutions, and export credit agencies. Follow up reports on the disbursement and repayment status of loans allow the Secretariat to calculate the debt burden of developing countries. See [www.oecd.org/dac/stats/dac/guide](http://www.oecd.org/dac/stats/dac/guide) for details.

The DAC Working Party on Statistics reviews the operation of the data collection system in annual formal meetings, and in informal meetings. The OECD/DAC Secretariat checks the data and their compliance with the methodology.

Bilateral work with reporters is undertaken as necessary in order to resolve reporting issues.

### **Treatment of missing values**

There is no adjustment for missing data, as the indicator is calculated only in years and countries for which suitable data are available.

### **Data availability**

Data are available for the 22 DAC countries.

Data are collected in year Y for year Y-1. Complete data are available towards the end of the year Y. Data are produced annually.

### **Regional and Global estimates**

Regional and global aggregates are made by straight addition and do not involve any estimation for missing values.

### **Expected time of release**

Estimates are published annually at the end of the calendar year in International Development Statistics (IDS) database at the following address:  
[www.oecd.org/dac/stats/idsonline](http://www.oecd.org/dac/stats/idsonline)

## **Indicator 8.3 Proportion of bilateral ODA of OECD/DAC donors that is untied**

### **Contact point in international agency**

E-mail: [DAC.contact@oecd.org](mailto:DAC.contact@oecd.org)

### **Definition**

Official development assistance (ODA) comprises grants or loans to developing countries and territories on the OECD Development Assistance Committee list of aid recipients that are undertaken by the official sector with promotion of economic development and welfare as the main objective and at concessional financial terms. Technical cooperation is included. Grants, loans and credits for military purposes are excluded. Also excluded are aid to more advanced developing and transition countries as determined by the DAC.

Untied bilateral official development assistance is assistance from country to country for which the associated goods and services may be fully and freely procured in substantially all countries.

### Method of computation

- a) Net bilateral ODA untied (US\$ million)
- b) Net bilateral ODA untied / total net bilateral ODA (%)

Components of bilateral untied and net ODA are described in the "Definition" section, above.

### Comments and limitations

Tying status of bilateral ODA excludes technical co-operation and administrative costs. The reporting rate, defined as the percentage of bilateral ODA covered by the tying status reporting (excluding technical co-operation and administrative costs) was 79.5% in 2006 for the total DAC.

### Sources of discrepancies between global and national figures

The estimates used in the global-MDG database are national figures, reported according to internationally agreed guidelines, and are not modified.

### Process of obtaining data

All data on ODA are collected by the OECD/DAC Secretariat from its 23 members, then checked and aggregated by the OECD/DAC Secretariat. The DAC Secretariat collects two sets of data:

1. **DAC Questionnaire.** A set of eight statistical tables completed annually in the Fall by DAC members, who report the amount and destination of their official and private flows made in the previous year. Detailed information is collected regarding the destination, form, terms, sector and tying status of official flows. A simplified form of the questionnaire is completed by multilateral agencies. Non-DAC donors also report on a voluntary basis on an abridged questionnaire. There is also a one-page "Advance Questionnaire on Main DAC Aggregates" completed by DAC members each April to give preliminary data on their ODA flows made in the previous year. See [www.oecd.org/dac/stats/dac/guide](http://www.oecd.org/dac/stats/dac/guide) for details.
2. **Creditor Reporting System (CRS).** A system for reporting individual official transactions (both ODA and other official flows) relevant to development. Reports are received directly from participating official agencies, including bilateral and multilateral aid agencies, development lending institutions, and export credit agencies. Follow up

reports on the disbursement and repayment status of loans allow the Secretariat to calculate the debt burden of developing countries. See [www.oecd.org/dac/stats/dac/guide](http://www.oecd.org/dac/stats/dac/guide) for details.

The DAC Working Party on Statistics reviews the operation of the data collection system in annual formal meetings, and in informal meetings. The OECD/DAC Secretariat checks the data and their compliance with the methodology. Bilateral work with reporters is undertaken as necessary in order to resolve reporting issues.

### **Treatment of missing values**

There is no adjustment for missing data, as the indicator is calculated only for years and countries for which suitable data are available.

### **Data availability**

Data are available for approximately 21 countries. Data are not available for the United States. Data are collected in year Y for year Y-1. Complete data are available towards the end of the year. Data are produced annually.

### **Regional and Global estimates**

Regional and global aggregates are made by straight addition and do not involve any estimation for missing values.

### **Expected time of release**

Estimates are published annually at the end of the calendar year in International Development Statistics (IDS) database at the following address: [www.oecd.org/dac/stats/idsonline](http://www.oecd.org/dac/stats/idsonline)

## **Indicator 8.4 ODA received in landlocked developing countries as a proportion of their gross national incomes**

### **Contact point in international agency**

E-mail: [DAC.contact@oecd.org](mailto:DAC.contact@oecd.org)

### **Definition**

Official development assistance comprises grants or loans to developing countries and territories on the OECD Development Assistance Committee (DAC) List of ODA recipients that are undertaken by the official sector with promotion of economic development and welfare as the main objective and at concessional financial terms. Technical cooperation

is included. Grants, loans and credits for military purposes are excluded. Also excluded are aid to more advanced developing and transition countries as determined by the DAC.

Recipient countries' gross national income (GNI) at market prices is the sum of gross primary incomes receivable by resident institutional units and sectors. GNI at market prices was called gross national product (GNP) in the 1953 System of National Accounts. In contrast to gross domestic product (GDP), GNI is a concept of income (primary income) rather than value added. . GNI is equal to GDP (which at market prices represents the final result of the production activity of resident producer units) less taxes (less subsidies) on production and imports, compensation of employees and property income payable to the rest of the world plus the corresponding items receivable from the rest of the world.

The land-locked developing countries are, by region: Africa: Botswana, Burkina Faso, Burundi, the Central African Republic, Chad, Ethiopia, Lesotho, Malawi, Mali, Niger, Rwanda, Swaziland, Uganda, Zambia and Zimbabwe; Asia and the Pacific: Afghanistan, Azerbaijan, Bhutan, Kazakhstan, Kyrgyzstan, the Lao People's Democratic Republic, Mongolia, Nepal, Tajikistan, Turkmenistan and Uzbekistan; Europe: The former Yugoslav Republic of Macedonia and the Republic of Moldova (expected from 2003); Latin America and the Caribbean: Bolivia and Paraguay.

### **Method of computation**

- a) Net ODA received by each landlocked country (US\$ million)
  - b) Net ODA received by each landlocked country / GNI of each landlocked country (%)
- Components of ODA, GNI and the list of landlocked countries are described in the "Definition" section, above.

### **Sources of discrepancies between global and national figures**

The estimates used in the global-MDG database are national figures, reported according to internationally agreed guidelines, and are not modified.

### **Process of obtaining data**

All data on ODA are collected by the OECD/DAC Secretariat from its 23 members, then checked and aggregated by the OECD/DAC Secretariat. The DAC Secretariat collects two sets of data:

1. **DAC Questionnaire.** A set of eight statistical tables completed annually in the Fall by DAC members, who report the amount and destination of their official and private flows made in the previous year. Detailed information is collected regarding the destination, form, terms, sector and tying status of official flows. A simplified form of the

questionnaire is completed by multilateral agencies. Non-DAC donors also report on a voluntary basis on an abridged questionnaire. There is also a one-page "Advance Questionnaire on Main DAC Aggregates" completed by DAC members each April to give preliminary data on their ODA flows made in the previous year. See [www.oecd.org/dac/stats/dac/guide](http://www.oecd.org/dac/stats/dac/guide) for details.

2. ***Creditor Reporting System (CRS)***. A system for reporting individual official transactions (both ODA and other official flows) relevant to development. Reports are received directly from participating official agencies, including bilateral and multilateral aid agencies, development lending institutions, and export credit agencies. Follow up reports on the disbursement and repayment status of loans allow the Secretariat to calculate the debt burden of developing countries. See [www.oecd.org/dac/stats/dac/guide](http://www.oecd.org/dac/stats/dac/guide) for details.

The DAC Working Party on Statistics reviews the operation of the data collection system in annual formal meetings, and in informal meetings. The OECD/DAC Secretariat checks the data and their compliance with the methodology. Bilateral work with reporters is undertaken as necessary in order to resolve reporting issues.

### **Treatment of missing values**

There is not adjustment for missing data, as the indicator is calculated only in years and countries for which suitable data are available.

### **Data availability**

Data are available for approximately 31 countries. GNI data are only available for Afghanistan as from 2001 and Mongolia as from 1996.

Data are collected in year Y for year Y-e. Complete data are available towards the end of year Y.

Data are produced annually.

### **Regional and Global estimates**

Regional and global aggregates are made by straight addition and do not involve any estimation for missing values.

### **Expected time of release**

Estimates are published annually at the end of the calendar year in International Development Statistics (IDS) database at the following address: <http://www.oecd.org/dac/stats/idsonline>

## **Indicator 8.5 ODA received in small island developing States as a proportion of their gross national incomes**

### **Contact point in international agency**

E-mail: [DAC.contact@oecd.org](mailto:DAC.contact@oecd.org)

### **Definition**

Official development assistance comprises grants or loans to developing countries and territories on the OECD Development Assistance Committee (DAC) list of aid recipients that are undertaken by the official sector with promotion of economic development and welfare as the main objective and at concessional financial terms. Technical cooperation is included. Grants, loans and credits for military purposes are excluded. Also excluded are aid to more advanced developing and transition countries as determined by the DAC.

Recipient countries' gross national income at market prices is the sum of gross primary incomes receivable by resident institutional units and sectors. GNI at market prices was called gross national product in the 1953 System of National Accounts. In contrast to gross domestic product, GNI is a concept of income (primary income) rather than value added. GNI is equal to GDP (which at market prices represents the final result of the production activity of resident producer units) less taxes (less subsidies) on production and imports, compensation of employees and property income payable to the rest of the world plus the corresponding items receivable from the rest of the world.

The small island developing States (SIDS) are by region: Africa: Cape Verde, Comoros, Guinea- Bissau, Mauritius, Saõ Tomé and Príncipe, and Seychelles; Asia and the Pacific: Bahrain, Cook Islands, Fiji, Kiribati, Maldives, Marshall Islands, Micronesia (Federated States of), Nauru, Niue, Palau, Papua New Guinea, Samoa, Singapore, Solomon Islands, Timor Leste, Tonga, Tuvalu and Vanuatu; Europe: Cyprus and Malta; Latin America and the Caribbean: Antigua and Barbuda, Aruba, the Bahamas, Barbados, Belize, Cuba, Dominica, the Dominican Republic, Grenada, Guyana, Haiti, Jamaica, Netherlands Antilles, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago, and the U.S. Virgin Islands.

### **Method of computation**

- a) Net ODA received by each SIDS (US\$ million)
- b) Net ODA received by each SIDS / GNI of each SIDS (%)

Components of ODA, GNI and the list of SIDS are described in the "Definition" section, above.

## Sources of discrepancies between global and national figures

The estimates used in the global-MDG database are national figures, reported accordingly to international agreed guidelines, and are not modified.

## Process of obtaining data

All data on ODA are collected by the OECD/DAC Secretariat from its 23 members, then checked and aggregated by the OECD/DAC Secretariat. The DAC Secretariat collects two sets of data:

1. **DAC Questionnaire.** A set of eight statistical tables completed annually in the Fall by DAC members, who report the amount and destination of their official and private flows made in the previous year. Detailed information is collected regarding the destination, form, terms, sector and tying status of official flows. A simplified form of the questionnaire is completed by multilateral agencies. Non-DAC donors also report on a voluntary basis on an abridged questionnaire. There is also a one-page "Advance Questionnaire on Main DAC Aggregates" completed by DAC members each April to give preliminary data on their ODA flows made in the previous year. See [www.oecd.org/dac/stats/dac/guide](http://www.oecd.org/dac/stats/dac/guide) for details.

2. **Creditor Reporting System (CRS).** A system for reporting individual official transactions (both ODA and other official flows) relevant to development. Reports are received directly from participating official agencies, including bilateral and multilateral aid agencies, development lending institutions, and export credit agencies. Follow up reports on the disbursement and repayment status of loans allow the Secretariat to calculate the debt burden of developing countries. See [www.oecd.org/dac/stats/dac/guide](http://www.oecd.org/dac/stats/dac/guide) for details.

The DAC Working Party on Statistics reviews the operation of the data collection system in annual formal meetings, and in informal meetings. The OECD/DAC Secretariat checks the data and their compliance with the methodology. Bilateral work with reporters is undertaken as necessary in order to resolve reporting issues.

## Treatment of missing values

There is not adjustment for missing data, as the indicator is calculated only in years and countries for which suitable data are available.

## Data availability

Data are available for the 22 DAC countries.

Data are collected in year Y for year Y-1. Complete data are available towards the end of the year Y. Data are produced annually.

### **Regional and Global estimates**

Regional and global aggregates are made by straight addition and do not involve any estimation for missing values.

### **Expected time of release**

Estimates are published annually at the end of the calendar year in International Development Statistics (IDS) database at the following address:  
[www.oecd.org/dac/stats/idsonline](http://www.oecd.org/dac/stats/idsonline)

## **Indicator 8.6 Proportion of total developed country imports (by value and excluding arms) from developing countries and from the least developed countries, admitted free of duty**

### **Contact point in international agency**

Hubert Escaith

Chief Statistician

World Trade Organization

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### **Definition**

This indicator is one of two trade/market access indicators (8.6 and 8.7) that have been defined to reflect targets 8.A (Develop further an open, rule-based, predictable, non-discriminatory trading and financial system) and 8.B (Address the special needs of Least Developed Countries) of Goal 8 – (develop a global partnership for development). More specifically, indicator 8.6 is the proportion of duty free imports (excluding arms) into developed countries from developing and least developed countries.

For the purpose of calculating Indicator 8.6, Japan in Asia, Canada and the United States in North America, Australia and New Zealand in Oceania and Iceland, Norway, Switzerland and the EU(25 countries included since 2004) in Europe are considered

“developed” regions or areas, following the common accepted practice used for MDG indicators. Developing countries are those not listed as developed or transition countries.

The list of least developed countries (LDCs) has been agreed by the General Assembly, on the recommendation of the Committee for Development Policy, Economic and Social Council. It includes the following 50 countries, classified by region: Africa: Angola, Benin, Burkina Faso, Burundi, Cape Verde, the Central African Republic, Chad, Comoros, the Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, the Gambia, Guinea, Guinea-Bissau, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Saõ Tomé and Príncipe, Senegal, Sierra Leone, Somalia, the Sudan, Togo, Uganda, the United Republic of Tanzania and Zambia; Asia and the Pacific: Afghanistan, Bangladesh, Bhutan, Cambodia, Kiribati, the Lao People's Democratic Republic, Maldives, Myanmar, Nepal, Samoa, Solomon Islands, Timor Leste, Tuvalu, Vanuatu and Yemen; Latin America and the Caribbean: Haiti.

Agricultural, clothing and textile groups follow the definition in WTO agreements based on the Harmonized System 1992, transposed to current versions by WTO Secretariat. Agricultural products correspond to Harmonized System 1992, chapters 01 to 24 less fish and fish products (chap. 03).

Imports and imported value of goods (merchandise) are goods that add to the stock of material resources of a country by entering its economic territory. Goods simply being transported through a country (goods in transit) or temporarily admitted (except for goods for inward processing) are not included. In many cases, a country's economic territory largely coincides with its customs territory, which is the territory in which the customs laws of a country apply in full.

### **Method of computation**

The sample does not cover all developed countries, because of availability of comprehensive detailed data on imports. Trade and tariff information at the national tariff line level covers Australia, Canada, the European Union (EU), Japan, Norway, Switzerland, and the USA.

The calculation of indicator 8.6 is a straightforward ratio of the value (current US dollar) of those developed countries duty free imports from least developed and developing countries, compared with the total value of imports from these respective country groups.

## **Comments and limitations**

There are a number of limitations in the ability of indicators 8.6 to fully reflect the level of openness of the trading system:

Accurate estimates on non-tariff measures do not exist, thus the calculations on market access are limited to tariffs only. These are only part of the trade limitation factors, especially when looking at exports of developing or least developed countries under non-reciprocal preferential treatment, that set criteria for eligibility.

A full coverage of preferential schemes of developed countries has been used for the computation, but preferential treatment may not be fully used by developing countries' exporters for different reasons such as the inability of certain exporters to meet eligibility criteria (i.e., complying with rules of origin). As there is no accurate statistical information on the extent of the actual utilisation of each of these preferences, it is assumed that they are fully utilised.

Duty free treatment is an indicator of market access, but is not always synonym with preferential treatment for beneficiary countries, because a number of MFN tariffs are already at, or close to, zero, especially for fuels and minerals. International agreements on IT products offer also duty-free treatment for components and equipments used for production purpose.

Coverage of tariffs is limited to developed markets, disregarding the potential benefit of trade between developing countries, a growing share of world trade. Further, only the tariff situation facing developing countries' exports is addressed, and not their own tariff profiles, despite the fact that trade openness, by itself, is conducive to export promotion.

## **Sources of discrepancies between global and national figures**

The estimates used in the global- MDG database are based on national figures, reported accordingly to international agreed guidelines and are not modified.

## **Process of obtaining data**

Tariff and import data are based on the International Trade Center (ITC), United Nations Conference on Trade and Development (UNCTAD) and WTO common database. WTO data are received directly from WTO Members, are processed and verified by the WTO, and validated jointly with the WTO Members. Data from ITC and UNCTAD are also taken from official sources and are subject to substantial verification procedures. All national data sets are reported according to the international agreed Harmonized System classification.

### **Treatment of missing values**

All calculations for the sample of developed importing countries are based on official data. There are very few occurrences of missing values; when a specific tariff line is missing, the previous year value is used.

### **Data availability**

Import and tariff data used are for the EU, USA, Japan, Canada, Switzerland, Norway, and Australia. These markets cover more than 97% of developed countries' imports from developing or least developed countries. These data include exports from all their developing and least developed trading countries partners.

The indicator is available starting 1996. The reference is the calendar year January to December. Calculations could not be done for years 1990 to 1995, because consistent tariff data were not available.

The lag between the reference year and actual production of data series is one year, for publication at the beginning of the second year. Data are produced annually. The processing of national data referring to year T initiates in the last quarter of the year T+1; resulting indicators are disseminated at the end of the first quarter of year T+2.

### **Regional and Global estimates**

The website <http://www.mdg-trade.org> provides data at national level, as well as average for several regional groupings. Regional estimates are based on existing national data and actual trade flows.

### **Expected time of release**

Market access indicators are generally released in March each year. At that time (say year y), the indicator is compiled for (y-2), corresponding to the availability of detailed bi-lateral trade flows and applied tariffs.

## **Indicator 8.7 Average tariffs imposed by developed countries on agricultural products and textiles and clothing from developing countries**

### **Contact point in international agency**

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Websites: <http://www.mdg-trade.org/Metadata.aspx>

## Definition

This indicator is one of two trade/market access indicators (8.6 and 8.7) that have been defined to reflect targets 8.A (Develop further an open, rule-based, predictable, non-discriminatory trading and financial system) and 8.B (Address the special needs of Least Developed Countries) of Goal 8 – (develop a global partnership for development). More specifically, indicator 8.7 is the average tariffs imposed by developed countries on subsets of selected items (agricultural products, textile and clothing exports) that are deemed to be of interest to developing countries.

Japan in Asia, Canada and the United States in North America, Australia and New Zealand in Oceania and EU are considered “developed” regions or areas. Developing countries are those not listed as developed or transition countries.

The list of least developed countries (LDCs) has been agreed by the General Assembly, on the recommendation of the Committee for Development Policy, Economic and Social Council. It includes the following 50 countries, classified by region: Africa: Angola, Benin, Burkina Faso, Burundi, Cape Verde, the Central African Republic, Chad, Comoros, the Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, the Gambia, Guinea, Guinea-Bissau, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Saõ Tomé and Príncipe, Senegal, Sierra Leone, Somalia, the Sudan, Togo, Uganda, the United Republic of Tanzania and Zambia; Asia and the Pacific: Afghanistan, Bangladesh, Bhutan, Cambodia, Kiribati, the Lao People’s Democratic Republic, Maldives, Myanmar, Nepal, Samoa, Solomon Islands, Timor Leste, Tuvalu, Vanuatu and Yemen; Latin America and the Caribbean: Haiti.

Agricultural, clothing and textile groups follow the definition in WTO agreements based on the Harmonized System 1992, transposed to current versions by WTO Secretariat. Agricultural products correspond to Harmonized System 1992, chapters 01 to 24 less fish and fish products (chap. 03); in addition to parts of chapters 29, 33, 35, 38, 41, 43, 50 to 53. Textile is mainly covered in chapters 50 to 60. The bulk of clothing products are found in chapters 61-63.

Average tariffs are the simple average of all applied ad valorem tariffs (tariffs based on the value of the import) applicable to the bilateral imports of developed countries. Agricultural products comprise plant and animal products, including tree crops but

excluding timber and fish products. Clothing and textiles include natural and synthetic fibers and fabrics and articles of clothing made from them.

### **Method of computation**

Trade and tariff data at the national tariff line level are used for the EU, USA, Japan, Canada, Switzerland, and Australia. All relevant trade agreements and preferential schemes are used. This means that the applied rate at the tariff line level for an exporter is the most favourable tariff rate that any exporter from an eligible developing country deserves under the different Agreements.

In order to isolate the tariff policy component from other trends in international trade and reduce the endogeneity bias, a fixed trade structure has been used to compute the weighted average of tariffs for each of the two groups of exporting countries (all developing, LDCs).

This fixed weighting scheme, referred to as " Standard Import Structure" is the same for all developed markets imports originating from developing countries and least developed countries. This structure was calculated at the HS6-digit level by averaging total imports of OECD from Developing countries and least developed countries in the period 1999-2001.

All calculations are based on official data. However, in order to include all tariffs into the calculation, some rates that are not expressed in ad valorem form (e.g., specific duties) are converted in ad valorem equivalents (i.e. in per cent of the import value). The conversion is made at tariff line level for each importer and under each Agreement by using the unit value method. Import unit values are calculated from import values and quantities for each corresponding Agreement.

The applied tariff rates are first averaged at the HS6-digit level where the classification is common for all importers. Then the tariffs are aggregated by product groups for all importers and for developing and least developed countries, using the Standard Import Structure as weights.

### **Comments and limitations**

There are a number of limitations in the ability of indicators 8.7 to fully reflect the level of openness of the trading system:

Tariffs are only part of the trade limitation factors, especially when looking at exports of developing or least developed countries under non-reciprocal preferential treatment, that set criteria for eligibility. Accurate estimates on non-tariff measures do not exist, thus the

calculations on market access are limited to tariffs only (i.e., excluding non tariff barriers).

A full coverage of preferential schemes of developed countries has been used for the computation, but preferential treatment may not be fully used by developing countries' exporters for different reasons such as the inability of certain exporters to meet eligibility criteria (i.e., complying with rules of origin). As there is no accurate statistical information on the extent of the actual utilisation of each of these preferences, it is assumed that they are fully utilised.

Coverage of tariffs is limited to developed markets, disregarding the potential benefit of trade between developing countries –a growing share of world trade. Further, only the tariff situation facing developing countries' exports is addressed, and not their own tariff profiles, despite the fact that trade openness, by itself, is conducive to export promotion.

Additionally, the indicator focuses on “traditional” products of interest to developing and least developed countries, defined as agricultural products, textile and clothing. But developing countries also export other processed products. Thus, the indicator does not assess the potential benefits of trade diversification.

### **Sources of discrepancies between global and national figures**

See *Treatment of missing values* section on the calculation of equivalent ad valorem for non ad valorem tariffs.

### **Process of obtaining data**

The main source of data is the WTO Integrated Data Base (IDB), complemented by information from the International Trade Center (ITC) and United Nations Conference on Trade and Development (UNCTAD). Tariff Schedules and corresponding imports at the tariff line level in the IDB are received directly from WTO Members (Governments). They are processed in a common database format by the WTO Secretariat and disseminated to the WTO Members concerned. If no objections are raised, they are also disseminated to all WTO Members and international organizations via a dedicated website. Data on tariffs, imports, and preferential schemes from ITC and UNCTAD are also taken from official sources and are subject to substantial verification procedures.

When national tariffs are based on specific rates that are not expressed in ad valorem form, they are converted in ad valorem equivalents to allow for international comparability (see previous section for more details).

## Treatment of missing values

All calculations are based on official data. There are very few occurrences of missing values. When a specific tariff line is missing, the previous year's value is used. Imports and tariff data are available from most developed markets (see data availability). These markets cover some 97% of developed countries' imports from developing or least developed countries. For the remaining 3%, the same import and tariff structure is assumed.

The calculation of tariff averages requires that all tariff rates are expressed in ad valorem terms, i.e. in per cent of the import value. When tariff rates, like specific duties, are not expressed in ad valorem form, they are estimated through a standard conversion into ad valorem equivalents (AVEs). The conversion is made at tariff line level using the unit value calculated from import values and quantities for each corresponding Agreement. If there is no import under a particular Agreement, imports from the world at that tariff line for the importer are used instead. If world imports at tariff line level are available, imports in HS 6-digit level from all OECD countries are used.

For some technical duties, AVEs are estimated by ignoring the part based on technical factors. A limited number of non-ad valorem tariff rates for which the AVEs cannot be calculated are excluded from the calculation.

## Data availability

The indicator is available starting 1996. The reference is the calendar year January to December. Calculations could not be done for years 1990 to 1995, because consistent tariff data were not available.

Import and tariff data used are for the EU, USA, Japan, Canada, Switzerland, Norway and Australia. The data include exports from all their developing and least developed trading countries partners. These markets cover at least 97% of developed countries' imports from developing or least developed countries.

The indicator is available starting 1996. The reference is the calendar year January to December. Calculations could not be done for years 1990 to 1995, because consistent tariff data were not available.

The lag between the reference year and actual production of data series: one year, for publication at the beginning of the second year.

Data are produced annually. The processing of national data referring to year T initiates in the last quarter of the year T+1; resulting indicators are disseminated at the end of the first quarter of year T+2.

### **Regional and Global estimates**

The website <http://www.mdg-trade.org> provides data at national exporter level, as well as several regional groupings. Following the standard procedure described above, the specific tariff structure –including preferential treatments– that a particular exporter would have to face on developed markets according to their tariff schedules is weighted by the "Standard Import Structure" typical of the relevant sub-group (developing or LDC). As a result, the national and regional data are trade policy indicators that reflect the degree of market access provided by the developed economies (within the range of what developing or least developed countries use to export) rather than the actual applied tariff based on bilateral export flows, that may be influenced by other considerations (such as the supply constraints proper to the exporter).

### **Expected time of release**

Market access indicators are generally released in March each year. At that time (say year y), the indicator is compiled for (y-2), corresponding to the availability of detailed bi-lateral trade flows and applied tariffs.

## **Indicator 8.8 Agricultural support estimate for OECD countries as a percentage of their gross domestic product**

### **Contact point in international agency**

E-mail: [DAC.contact@oecd.org](mailto:DAC.contact@oecd.org)

### **Definition**

**Agriculture support** is the annual monetary value of all gross transfers from taxpayers and consumers, both domestic and foreign (in the form of subsidies arising from policy measures that support agriculture), net of the associated budgetary receipts, regardless of their objectives and impacts on farm production and income, or consumption of farm products.

For agricultural products, the total support estimate (TSE) represents the overall taxpayer and consumer costs of agricultural policies. When expressed as a percentage of GDP, the total support estimate is an indicator of the cost to the economy as a whole.

Agricultural products comprise plant and animal products, including tree crops but excluding timber and fish products. Clothing and textiles include natural and synthetic fibers and fabrics and articles of clothing made from them.

Gross Domestic Product (GDP) is the sum of the gross value added by all resident producers in the economy plus any product taxes (less subsidies) not included in the valuation of output. Value added is the net output of an industry after adding up all outputs and subtracting intermediate inputs.

### Method of computation

a) Agricultural support estimate (US\$ million)

b) Agricultural support estimate / GDP (%)

Components of Agriculture support and GDP are described in the "Definition" section, above.

### Comments and limitations

Excludes general welfare payments to farmers and agricultors.

### Sources of discrepancies between global and national figures

National figures may refer to agriculture production subsidies.

### Process of obtaining data

All data on ODA are collected by the OECD/DAC Secretariat from its 23 members, then checked and aggregated by the OECD/DAC Secretariat. The DAC Secretariat collects two sets of data:

1. **DAC Questionnaire.** A set of eight statistical tables completed annually in the Fall by DAC members, who report the amount and destination of their official and private flows made in the previous year. Detailed information is collected regarding the destination, form, terms, sector and tying status of official flows. A simplified form of the questionnaire is completed by multilateral agencies. Non-DAC donors also report on a voluntary basis on an abridged questionnaire. There is also a one-page "Advance Questionnaire on Main DAC Aggregates" completed by DAC members each April to give preliminary data on their ODA flows made in the previous year. See [www.oecd.org/dac/stats/dac/guide](http://www.oecd.org/dac/stats/dac/guide) for details.

2. **Creditor Reporting System (CRS).** A system for reporting individual official transactions (both ODA and other official flows) relevant to development. Reports are received directly from participating official agencies, including bilateral and multilateral aid agencies, development lending institutions, and export credit agencies. Follow up

reports on the disbursement and repayment status of loans allow the Secretariat to calculate the debt burden of developing countries. See [www.oecd.org/dac/stats/dac/guide](http://www.oecd.org/dac/stats/dac/guide) for details.

The DAC Working Party on Statistics reviews the operation of the data collection system in annual formal meetings, and in informal meetings. The OECD/DAC Secretariat checks the data and their compliance with the methodology. Bilateral work with reporters is undertaken as necessary in order to resolve reporting issues.

Data on agricultural support are produced by the OECD Directorate for Food, Agriculture and Fisheries - the process is analogous (source data are directly provided by the 30 OECD members, the OECD Secretariat is responsible for producing the indicator).

### **Treatment of missing values**

There is not adjustment for missing data, as the indicator is calculated only in years and countries for which suitable data are available.

### **Data availability**

Data are available for approximately 11 countries. Data are compiled annually, generally around March. At that time (say year y), tariff data are available for the preceding year (y-1), and trade data for y-2. The indicators are thus compiled for year y-2.

### **Regional and Global estimates**

Regional and global aggregates are made by straight addition and do not involve any estimation for missing values.

Imports and tariff data are available from most developed markets (see data availability). These markets cover some 97% of developed countries' imports from developing or least developed countries. For the remaining 3%, the same import and tariff structure is assumed. These data include exports from all their developing and least developed trading countries partners. For a particular group of exporters, the situation is the following: tariffs are weighted according to the standard import structure.

### **Expected time of release**

Estimates are published annually, at the end of the calendar year in the OECD, Producer and Consumer Support Estimates database.

## Indicator 8.9 Proportion of ODA provided to help build trade capacity

### Contact point in international agency

E-mail: [DAC.contact@oecd.org](mailto:DAC.contact@oecd.org)

### Definition

Official Development Assistance (ODA) comprises grants or loans to developing countries and territories on the OECD Development Assistance Committee list of aid recipients that are undertaken by the official sector with promotion of economic development and welfare as the main objective and at concessional financial terms (if a loan, having a grant element of at least 25 per cent). Technical cooperation is included. Grants, loans and credits for military purposes are excluded. Also excluded is aid to more advanced developing and transition countries as determined by DAC.

Activities to help build trade capacity enhance the ability of the recipient country:

- To formulate and implement a trade development strategy and create an enabling environment for increasing the volume and value-added of exports, diversifying export products and markets and increasing foreign investment to generate jobs and trade;
- To stimulate trade by domestic firms and encourage investment in trade-oriented industries; and
- To participate in the benefit from the institutions, negotiations and processes that shape national trade policy and the rules and practices of international commerce. Those activities are further classified by the First Joint WTO/OECD Report on Trade-Related Technical Assistance and Capacity-Building (2002) under two main categories: trade policy and regulations (divided into nineteen subcategories) and trade development (divided into six subcategories).
- Donors differ in defining what constitutes a single "activity". Some donors split individual activities into components in order to obtain detailed data on aid allocated to each subcategory. Others classify the whole activity under the most relevant subcategory. For some donors, the number of records in the database is larger than the actual number of activities.
- In the Joint Report by the World Trade Organization and the Organisation for Economic Co-operation and Development, the data are based on the actual number of activities.

### Method of computation

ODA to help build trade capacity / total sector allocable ODA (%)

Components of ODA and activities to help build trade capacity are described in the "Definition" section, above.

## Comments and limitations

The series "Multilateral agencies", which includes data from 18 multilateral organizations, has been added as most of aid to build trade capacity is channeled through the multilateral channel; data for the multilateral organizations include both activities funded through their regular budgets and those implemented by them using trust funds financing.

There are differences in the methodology used for reporting trade development activities among donors who replied to the requests for information. A number of donors isolated the trade components of each activity, whereas others reported the whole activity as trade related. The total amounts of trade-related technical assistance and capacity building per donor in this category should therefore be interpreted with caution.

There is a need to refine the activity categories to better identify general trade development activities, such as trade fairs, trade information, publications or general export training. At present, most of these activities appear under "business support services and institutions".

## Sources of discrepancies between global and national figures

The estimates used in the global-MDG database are national figures, reported accordingly to international agreed guidelines, and are not modified.

## Process of obtaining data

All data on ODA are collected by the OECD/DAC Secretariat from its 23 members, then checked and aggregated by the OECD/DAC Secretariat. The DAC Secretariat collects two sets of data:

1. ***DAC Questionnaire***. A set of eight statistical tables completed annually in the Fall by DAC members, who report the amount and destination of their official and private flows made in the previous year. Detailed information is collected regarding the destination, form, terms, sector and tying status of official flows. A simplified form of the questionnaire is completed by multilateral agencies. Non-DAC donors also report on a voluntary basis on an abridged questionnaire. There is also a one-page "Advance Questionnaire on Main DAC Aggregates" completed by DAC members each April to give preliminary data on their ODA flows made in the previous year. See [www.oecd.org/dac/stats/dac/guide](http://www.oecd.org/dac/stats/dac/guide) for details.

2. ***Creditor Reporting System (CRS)***. A system for reporting individual official transactions (both ODA and other official flows) relevant to development. Reports are received directly from participating official agencies, including bilateral and multilateral

aid agencies, development lending institutions, and export credit agencies. Follow up reports on the disbursement and repayment status of loans allow the Secretariat to calculate the debt burden of developing countries. See [www.oecd.org/dac/stats/dac/guide](http://www.oecd.org/dac/stats/dac/guide) for details.

The DAC Working Party on Statistics reviews the operation of the data collection system in annual formal meetings, and in informal meetings. The OECD/DAC Secretariat checks the data and their compliance with the methodology. Bilateral work with reporters is undertaken as necessary in order to resolve reporting issues.

The data on ODA to build trade capacity are collected through the joint WTO/OECD Trade Capacity Building Database (TCBDB) (<http://tcbdb.wto.org>). 26 bilateral donors and 19 multilateral agencies reported to the TCBDB since its creation in 2001. Data are collected and then checked and aggregated by the OECD/DAC and WTO Secretariats. Bilateral work with reporters is undertaken as necessary in order to resolve reporting issues.

### **Treatment of missing values**

There is no adjustment for missing data, as the indicator is calculated only for years and countries for which suitable data are available.

### **Data availability**

The series begin in 2001. The data reflect trade-related aid activities of 22 of the 23 OECD Members (only Luxembourg does not report). Data are not available for Greece in 2001 and 2002, for Norway in 2002 and for Finland in 2004. Data are compiled annually, generally around March. At that time (say year  $y$ ), tariff data are available for the preceding year ( $y-1$ ), and trade data for  $y-2$ . The indicators are thus compiled for year  $y-2$ .

### **Regional and Global estimates**

Regional and global aggregates are made by straight addition and do not involve any estimation for missing values.

### **Expected time of release**

Estimates are published annually, at the end of the calendar year in the Trade Capacity Building Database at the following address: <http://tcbdb.wto.org>

## **Indicator 8.10 Total number of countries that have reached their HIPC decision points and number that have reached their HIPC completion points (cumulative)**

### **Contact point in international agency**

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### **Definition**

Heavily indebted poor countries reach HIPC decision point if they have a track record of macroeconomic stability, have prepared an Interim Poverty Reduction Strategy through a participatory process, and have cleared or reached an agreement on a process to clear the outstanding arrears to multilateral creditors. The amount of debt relief necessary to bring countries' debt indicators to HIPC thresholds is calculated, and countries begin receiving debt relief.

Heavily indebted poor countries reach HIPC completion point if they maintain macroeconomic stability under a Poverty Reduction and Growth Facility (PRGF) supported program, carry out key structural and social reforms agreed on at the decision point, and satisfactorily implement a Poverty Reduction Strategy for one year. The country then receives the bulk of debt relief under the HIPC Initiative without any further policy conditions.

### **Method of computation**

Staff of International Development Agency (IDA) and the International Monetary Fund (IMF) makes an assessment of each country's eligibility for assistance under the Enhanced HIPC Initiative and submits a document for the approval of the Executive Boards of the IMF and IDA. When the Board approves the assessment document, the country is deemed to have reached decision point.

Staff of IDA and the IMF assesses country's performance and progress in meeting the requirements for reaching the completion points under the Enhanced HIPC initiative, as

set out in the decision point document, and submits an assessment report to the Executive Board of the IDA and IMF. Once the Board approves the completion point document, the country is deemed to have reached completion point<sup>1</sup>.

1 All documents related to countries' decision and completion points can be accessed at: <http://go.worldbank.org/9W8I0X55A0> and <http://go.worldbank.org/T0OFS29N10>

### **Comments and limitations**

This indicator is applicable to only to HIPC countries.

### **Sources of discrepancies between global and national figures**

National estimates are not available for this indicator, so there are no discrepancies between global and national figures.

### **Process of obtaining data**

Please refer to the "Method of Computation" section above for a description of the process of obtaining data.

### **Treatment of missing values**

In principle, there is no adjustment for missing data, as the indicator is applicable only to HIPC countries.

### **Data availability**

Data are available for approximately 41 countries.

Data are applicable only to HIPC countries.

The lag between the reference year and actual production of data series is around one year. Country level data for this indicator are published in the HIPC Initiative and the Multilateral Debt Relief Initiative (MDRI) - Status of Implementation reports. The information is updated annually by IMF and the World Bank t and is accessible on the external website of the HIPC Initiative.<sup>2</sup>

1 The HIPC Initiative and the MDRI - Status of Implementation reports can be downloaded at: <http://go.worldbank.org/LG6DPCAI60>. The address for the HIPC Initiative website is: <http://www.worldbank.org/hipc>

### **Regional and Global estimates**

Regional and global estimates are produced by aggregating the number of countries reaching decision and completion points.

### **Expected time of release**

Updated information on number of countries at decision point or completion point is reported in the HIPC Initiative and the MDRI - Status of Implementation reports annually (around September) released by the IMF and the World Bank staff. The external website is updated when there is significant additional information available, such as a country reaching their completion or decision point.

## **Indicator 8.11 Debt relief committed under HIPC and MDRI Initiatives**

### **Contact point in international agency**

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### **Definition**

Debt relief is committed under the Heavily Indebted Poor Countries (HIPC) Initiative when a country reaches its decision point. It is calculated as the amount needed to bring the net present value (NPV) of the country's debt level to the thresholds established by the HIPC Initiative (150 percent of exports or in certain cases 250 percent of fiscal revenues).

Heavily indebted poor countries reach decision point if they have a track record of macroeconomic stability, have prepared an Interim Poverty Reduction Strategy through a participatory process, and have cleared or reached an agreement on a process to clear the outstanding arrears to multilateral creditors. The amount of debt relief necessary to bring countries' debt indicators to HIPC thresholds is calculated, and countries begin receiving debt relief.

### **Method of computation**

Under the HIPC Initiative, the amount of relief is calculated at decision point using the actual data on debt, fiscal revenue, exports and the discount rates and exchange rates as at the last (fiscal) year prior to the decision point (base year).

The first step of the Debt Sustainability Analysis (DSA) is the calculation of the net present value (NPV) of debt, which is the discounted value of all future debt service payments on disbursed and outstanding debt as at the reference year. Interest and amortization on future disbursements are not added into the calculation. The discount rates used are the currency-specific average CIRRs (Commercial Interest Reference Rates provided by OECD) for the last six months of the reference year and the exchange rate is the fiscal year end exchange rate. For those currencies for which no CIRR rates are available, but which are pegged to other currency, the CIRR for the peg should be used. For currency baskets, the weighted average for the currencies in the basket is to be used. For all other currencies the SDR CIRR is to be used.

Once the NPV of debt has been determined the NPV amount of total HIPC assistance is calculated as the amount of debt reduction needed to bring the NPV of debt-to-exports (or the NPV of debt-to-revenue) ratio to the HIPC threshold. The threshold is 150 percent for the NPV of debt-to-exports of goods and services and 250 percent for the ratio of NPV to fiscal revenue. To qualify under the second criterion, a country must have ratios of exports of goods and services to GDP and fiscal revenue to GDP above 30 percent and 15 percent, respectively. If a country qualifies under both criteria, the one that provides the more debt relief is retained.

The debt relief commitment may be revised at completion point, if new information is provided by creditors that affects the decision point debt stock figure, or a country receives topping-up. The HIPC Initiative framework allows for additional debt relief at completion point - topping-up, if a HIPC has experienced a significant deterioration in its debt burden indicators that was unanticipated at the decision point. For topping-up assistance to be granted, the deterioration must be primarily attributable to exogenous factors. Topping-up assistance may be provided proportionately by all creditors to bring the NPV of debt to the HIPC Initiative threshold at completion point. In most cases, the primary factors that explain the need to provide topping-up are unanticipated changes in the exchange and discount rates, or exports.

### **Comments and limitations**

The indicator shows net present value (NPV) of committed debt relief under the assumption that all creditors will participate. Thus, the values do not indicate the actual delivery of debt relief received by HIPC countries. The HIPC Initiative seeks a comprehensive approach among all creditors to debt reduction. The World Bank, International Monetary Fund (IMF), and Paris Club creditors have committed most of their shares of debt relief. But the initiative's structure as a voluntary agreement has hindered efforts to achieve the full participation of all creditors. Some commercial

creditors and those not in the Paris Club did not participate which has generated a shortfall in HIPC assistance.

The HIPC DSA makes assumptions about future growth rates of exports and GDP projections. These assumptions have profound implications for assessing the likely outcomes and overall success of the initiative. For instance, the higher the assumed export growth rate, the more likely it is that a country's projected debt-to-export ratio will reach a level defined as sustainable. An accurate projection is thus essential to projecting future sustainability. The domestic debt is excluded from the HIPC DSA. The HIPC DSAs use currency-specific short-term interest rates when discounting debt which is known to cause volatility in NPV calculations.

The enhanced HIPC Initiative aims to provide HIPC countries with a base from which to achieve debt sustainability and exit the rescheduling cycle. However, debt reduction alone is not a sufficient instrument to affect the multiple drivers of debt sustainability. Sustained improvements in export diversification, fiscal management, the terms of new financing, and public debt management are also needed, measures that fall outside the ambit of the HIPC Initiative.

### **Sources of discrepancies between global and national figures**

National estimates are not available for this indicator, so there are no discrepancies between global and national figures.

### **Process of obtaining data**

For each "pre-decision-point" country, World Bank and IMF staffs conduct a mission to undertake a DSA before HIPC debt relief is provided. A key part of the mission is loan-by-loan debt data reconciliation between creditor and debtor loan statements. Once the loan-by-loan debt database has been reconciled they proceed with the calculation of HIPC debt relief and subsequent DSA.

### **Treatment of missing values**

In principle, there is no adjustment for missing data, as the indicator is applicable only to HIPC countries.

### **Data availability**

Data are available for approximately 32 countries that have reached HIPC decision points.

Data are applicable only to HIPC countries. The lag between the reference year and actual production of data series is around one year.

Under the Enhanced HIPC Initiative, the amount of debt relief that a country is eligible to receive under Enhanced HIPC is determined once a country has reached decision point. When a country reaches completion point, The IMF and World Bank verify the decision point data again and the NPV of debt relief may be revised if, for example, new information is received from creditors. Moreover, if a country receives topping up at the completion point, the NPV of debt relief would be adjusted accordingly.

### **Regional and Global estimates**

Regional and global estimates are produced by simply aggregating debt relief committed under the HIPC Initiative.

### **Expected time of release**

The amount of total debt relief commitment under HIPC initiative changes as countries reach the decision point if revisions are made to debt stock figures or a country receives topping-up at the completion point. Revised data is reflected in the annual HIPC Initiative and the MDRI - Status of Implementation report, and other information made available on the external website of the HIPC Initiative<sup>1</sup>.

1 The HIPC Initiative and the MDRI - Status of Implementation can be downloaded at: <http://go.worldbank.org/LG6DPCA160>. HIPC Initiative website is: <http://go.worldbank.org/85B908KVE0>.

## **Indicator 8.12 Debt service as a percentage of exports of goods and services**

### **Contact point in international agency**

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### **Definition**

Debt service is the sum of principle repayments and interest payments made to non-residents in foreign currency, goods, or services. This series differs from the standard

debt to exports ratios. It covers only long-term public and publicly guaranteed debt and repayments (repurchases and charges) to the International Monetary Fund (IMF).

Long-term refers to debt that has an original or extended maturity of more than one year. IMF repurchases are total repayments of outstanding drawings from the general resources account during the year specified, excluding repayments due in the reserve tranche. Exports of goods, services and income are the sum of goods (merchandise) exports, exports of (nonfactor) services and income (factor) receipts and do not include workers' remittances.

### **Method of computation**

Debt service is calculated by the World Bank based on the loan-by-loan information reported by the countries to the World Bank's Debt Reporting System (DRS). Some adjustments are made to debt service based on known HIPC debt relief commitments and other information obtained by World Bank and IMF staff. Exports of goods, services, and income come from the IMF's Balance of Payments (BOP) database. In some cases the IMF adjusts BOP data reported by countries.

### **Comments and limitations**

Data received by the World Bank from its members and major multilateral agencies are expressed in the currencies in which the debts are repayable or in which the transactions took place. For aggregation, the Bank converts these amounts to U.S. dollars using the IMF par values or central rates, or the current market rates where appropriate. Service payments, commitments, and disbursements (flows) are converted to U.S. dollars at the average rate for the year.

Where formal registration of foreign borrowing is not mandatory, compilers must rely on balance of payments data and financial surveys. A majority of the countries are fully current in their reporting under the DRS and the reported data give an adequate and fair representation of the countries' total public debt. In some cases, when debtor reports are not available or incomplete, World Bank staff make estimates based on previously reported data, creditor reports, and other sources. Every effort has been made to ensure the accuracy and completeness of the debt statistics. Nevertheless, quality and coverage vary among debtors and may also vary for the same debtor from year to year.

### **Sources of discrepancies between global and national figures**

National figures on external debt might be different from the global figures published in World Bank's *Global Development Finance* due to discrepancies in reported currency and exchange rates used to convert the data to US dollar. Data on long-term debt reported

by member countries are checked against, and supplemented by data from several other sources including statements and reports of regional development banks, government lending agencies, and official government websites. In some case adjustments are made to the incomplete reports using secondary sources of information, and the final figures may differ from what the country publishes.

### **Process of obtaining data**

Loan-by-loan information on external debt is reported to the World Bank's Debt Reporting System by the country authorities (ministry of finance or central bank). All data related to public and publicly guaranteed debt are provided on a loan-by-loan basis by debtors except for lending by some multilateral agencies, in which case data are taken from the creditors' records. These creditors include the African Development Bank, the Asian Development Bank, the Inter- American Development Bank, and the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA). Reports contain annual stocks and flows information as well as terms and conditions of individual loans contracted.

Based on this information, country-level debt service data are estimated by the World Bank staff. These initial estimates are subject to internal review, which consists of asking the Bank country offices for verification and cross-checking with other sources including statements and reports of several regional development banks, government lending agencies, and official government websites. Country offices use various sources for the verification including contacting the central banks. Exports of goods, services, and income come from the IMF's Balance of Payments (BOP) database. BOP data reported by countries are, in some cases, adjusted by the IMF. No comparison has been made between the IMF BOP files and country published data.

As mentioned above, data are converted to U.S. dollars, using the IMF par values or central rates, or the current market rates where appropriate, to enable international comparability. Data are also verified against other sources, and are adjusted, as described above, as needed to ensure completeness and accuracy.

### **Treatment of missing values**

Where information from debtors is not available, data from creditors and data reported by the debtors for prior years are used to estimate external debt statistics. The principal creditor sources are the semiannual series of commercial banks' claims on developing countries, published by the Bank for International Settlements (BIS). For some countries, estimates were prepared by pooling creditor and debtor information.

## Data availability

Data are available for approximately 128 countries. Coverage has been improved through the efforts of the reporting agencies and the work of World Bank missions, which visit member countries to gather data and to provide technical assistance on debt issues.

Estimates of external debt are based on loans reported by countries through the World Bank's DRS and only available for developing countries that report to the DRS. Coverage has been improved through the efforts of the reporting agencies and the work of World Bank missions, which visit member countries to gather data and to provide technical assistance on debt issues. In this case, the data for the graduated country is removed from the new editions of the GDF and World Development Indicators (WDI) publications and databases. Historical data remains available in previously published editions. The lag between the reference year and the actual year or production is one to one and a half years. This indicator is computed and published annually.

## Regional and Global estimates

Aggregation is done using the denominator (exports of goods, services and income) as the weight.

## Expected time of release

The World Bank publishes data on indicators of debt annually, usually in June, in the GDF publication, CD-ROM, and database.. The GDF Online database is released in April-May of each year, and updated in November to include preliminary estimates of the latest year.

## Indicator [non-MDG] Unemployment rate of young people aged 15-24 years, each sex and total

Please refer to series metadata

## Indicator 8.14 Telephone lines per 100 population

### Contact point in international agency

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## **Definition**

A fixed telephone line connects the subscriber's terminal equipment to the public switched network and has a dedicated port in the telephone exchange equipment. This term is synonymous with the term main station or Direct Exchange Line (DEL) that is commonly used in telecommunication documents. It may not be the same as an access line or a subscriber. The number of ISDN channels should be included. Fixed wireless subscribers should also be included. If they are not included, this is specified in a note.

## **Method of computation**

The number of fixed telephone lines is divided by the country's population and multiplied by 100.

## **Comments and limitations**

Data on fixed telephone lines and mobile cellular subscribers are considered to be very reliable, timely, and complete. They are derived using administrative data that countries (usually the regulatory telecommunication authority or the Ministry in charge of telecommunications) regularly, and at least annually, collect from telecommunications operators. Data for this indicator are readily available for approximately 90 percent of countries, either through ITU's World Telecommunication Indicators questionnaires or from official information available on the Ministry or Regulator's website. For the rest, information can be aggregated through operators' data (mainly through annual reports) and complemented by market research reports.

## **Sources of discrepancies between global and national figures**

Discrepancies between global and national figures may arise when countries use a different definition than the one used by ITU. For example, some countries do not include the number of ISDN channels when calculating the number of fixed telephone lines.

Discrepancies may also arise in cases where the end of a fiscal year differs from that used by ITU, which is the end of December of every year. A number of countries have fiscal years that end in March or June of every year.

## **Process of obtaining data**

ITU collects its data through an annual questionnaire that is sent to the government agency in charge of telecommunications/ICT, usually the Ministry or the regulatory agency. In some cases (especially in countries where there is still only one operator), the questionnaire is sent to the incumbent operator. Data for this indicator are readily available for about 90 percent of countries, either through their replies to ITU

questionnaires or from information available on the Ministry/Regulator website. For another 10 percent of countries, the information can be aggregated through operators' data (mainly through annual reports) and complemented by market research reports.

The data, which are mainly based on administrative records, are verified to ensure consistency with data from previous years. When countries do not reply to the questionnaire, ITU carries out research and collects missing values from government web sites, as well as from Annual Reports by operators. Data are usually not adjusted but discrepancies in the definition, reference year or the break in comparability in between years are noted in a data note. For this reason, data are not always strictly comparable.

### **Treatment of missing values**

Missing values for the number of fixed telephone lines are estimated based on the Compound Annual Growth Rate of the last three years and adjusted for regional trends.

### **Data availability**

Country coverage is 100 percent. Depending on the country, there is usually a time lag of between 4-6 months, between the reference month (December of each year) and the production time. Data are produced annually.

### **Regional and Global estimates**

Regional and global totals are calculated as unweighted sums of the country values. Regional and global penetration rates (per 100 inhabitants) are weighted averages of the country values weighted by the population of the countries/regions.

### **Expected time of release**

Year-end estimates are usually released in June of the following year through the World Telecommunication/ICT Indicators Database. Data are also available at no cost through the ITU's ICT Eye, see: <http://www.itu.int/ITU-D/ict/>

## **Indicator 8.16 Internet users per 100 population**

### **Contact point in international agency**

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Website: <http://www.itu.int/ITU-D/ict/>

## **Definition**

The Internet is a linked global network of computers in which users at one computer, if they have permission, can get information from other computers in the network.

## **Method of computation**

The estimated number of Internet users is divided by the country's population and multiplied by 100. A growing number of countries are measuring the number of Internet users through regular surveys. Surveys usually indicate a percentage of the population for a certain age group (e.g., 15-74 years old). The number of Internet users in this age group should be supplied and not the percentage of Internet users in this age group multiplied by the entire population. In situations where surveys are not available, an estimate can be derived based on the number of subscribers. Countries are requested to provide the methodology used to estimate the number of Internet users, including reference to the frequency of Internet use (e.g., in the last month).

## **Comments and limitations**

While the data on the estimated number of Internet users is very reliable for those countries that have carried out official surveys, it is much less reliable in cases where the number of Internet users is based on the number of subscribers. ITU is currently, through the Partnership on Measuring ICT for Development, trying to get more countries to collect more, better, and harmonized ICT indicators through official ICT household surveys. The indicator Internet users per 100 population is part of the core list of ICT indicators, which has been adopted by this Partnership. It is expected that more countries will start to collect these data through official surveys (such as a stand-alone household ICT survey or as a modules to existing household surveys) and that the quality of data should improve over time.

## **Sources of discrepancies between global and national figures**

Discrepancies between global and national figures may arise when countries use a different definition than the one used by ITU.

Discrepancies may also arise in cases where the end of a fiscal year differs from that used by ITU, which is end of December of every year. A number of countries have fiscal years that end in March or June of every year.

## **Process of obtaining data**

ITU collects its data through an annual questionnaire that is sent to the government agency in charge of telecommunications/ICT, usually the Ministry or the regulatory

agency. In some cases (especially in countries where there is still only one operator), the questionnaire is sent to the incumbent operator.

The data are verified to ensure consistency with previous years' data. When countries do not reply to the questionnaire, ITU carries out research and collects missing values from government web sites, as well as from Annual Reports by operators. For most developed and some larger developing nations, Internet user data are based on methodologically sound user surveys conducted by national statistical agencies or industry associations. These data are either directly provided to the ITU by the country concerned or the ITU does the necessary research to obtain the data. For countries where Internet user surveys are not available, and where countries do not provide their own estimate, the ITU calculates estimates based on average multipliers for the number of Internet users per subscriber.

Data are usually not adjusted but discrepancies in the definition, reference year or the break in comparability in between years are noted in a data note. For this reason, data are not always strictly comparable.

### **Treatment of missing values**

Since there are major data gaps for this indicator at the country level, ITU estimates many of these data.

For countries where Internet user surveys are not available, the ITU calculates estimates based on average multipliers for the number of Internet users per subscriber.

### **Data availability**

Country coverage is approximately 60 percent.

Depending on the country, there is usually a time lag of between 4-6 months, between the reference month (December of each year) and the production time. Data are produced annually.

### **Regional and Global estimates**

Regional and global totals are calculated as unweighted sums of the country values. Regional and global penetration rates (per 100 inhabitants) are weighted averages of the country values weighted by the population of the countries/regions.

### **Expected time of release**

Year-end estimates are usually released in June of the following year through the World Telecommunication/ICT Indicators Database. Data are also available at no cost through the ITU's ICT Eye, see: <http://www.itu.int/ITU-D/ict/>

## **Indicator 6.2 Condom use at the last high-risk sex**

### **Contact point in international agency**

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### **Definition**

*Condom use at last high-risk sex* is the percentage of young men and women aged 15–24 reporting the use of a condom during sexual intercourse with a non-cohabiting, non-marital sexual partner in the last 12 months.

### **Method of computation**

The indicator is calculated by dividing the number of respondents ages 15–24 reporting using a condom during sexual intercourse with a non-marital and non-cohabiting sexual partner in the last 12 months, divided by the number of respondents ages 15–24 reporting having had sex with a non-cohabiting, non-marital sexual partner in the last 12 months.

The data from household surveys used to produce this indicator are weighted according to the survey design to create a nationally representative indicator. No additional alterations are made to the data.

### **Comments and limitations**

A rise in the indicator is a sign that condom promotion campaigns are having the desired effect among their main target market. However, condom promotion campaigns aim for consistent use of condoms with non-regular partners rather than simply occasional use. Some surveys have tried to ask directly about consistent use, but the question is subject

to recall bias and other biases. The current indicator is therefore considered adequate to address the target since it is assumed that if consistent use rises, use at last high-risk sex will also increase.

### **Sources of discrepancies between global and national figures**

In principle, there is no discrepancy between global and national figures, as national data are not modified.

### **Process of obtaining data**

These data are collected through household surveys, such as Multiple Indicator Cluster Surveys (MICS) and Demographic and Health Surveys (DHS), reproductive and health surveys and behavioural surveillance surveys. The results are reported regularly in the final reports of these surveys. In addition, most data are available at <http://www.measuredhs.com/hivdata>

Nationally representative population-based surveys, such as DHS and MICS, are conducted by national statistical offices or other relevant government offices under the supervision of government or international agencies.

As part of routine data quality control, survey results are checked for inconsistencies and to ensure that data are collected using a clearly defined population-based sampling frame, permitting inferences to be drawn for the entire population. UNICEF also conducts an annual exercise called the Country Reports on Indicators for the Goals (CRING), in which data maintained in the global databases at UNICEF for indicators regularly reported by UNICEF, are sent to countries for validation and updating. Updates from countries must be accompanied by original source documentation, e.g. survey reports.

No adjustments are made to the data compiled from DHS, MICS and other surveys that are statistically sound and nationally representative.

### **Treatment of missing values**

There is no treatment of missing values. When the information needed to calculate the indicator is not available, the indicator is not estimated.

### **Data availability**

Data are available from approximately 30 countries.

Data are available for the male and female population aged 15-24 years.

The lag between the reference year and actual production of data series depends on the availability and reliability of the survey for each country. Household surveys, such as Demographic and Health Surveys, reproductive and health surveys and Behavioural Surveillance Surveys, are generally conducted every three to five years.

Household surveys, such as DHS and MICS, are in general implemented every 3-5 years with results published within a year of field data collection. Data from national-level household surveys are compiled in the UNICEF global databases and are published annually by UNICEF in The State of the World's Children report, and are available at <http://www.childinfo.org>

### **Regional and Global estimates**

Regional and global estimates are based on population-weighted averages weighted by the total number of young women and men 15-24 years of age. These estimates are presented only if available data cover at least 50% of total men and women 15-24 years of age in the regional or global groupings.

### **Expected time of release**

Available data are published in annual reports, at the end of the calendar year, by UNICEF in The State of the World's Children, Children and AIDS Stock Taking Report and are available at <http://www.childinfo.org>.

## **Indicator 6.3 Proportion of population aged 15-24 years with comprehensive correct knowledge of HIV/AIDS**

### **Contact point in international agency**

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### **Definition**

*Percentage of population aged 15–24 years with comprehensive correct knowledge of HIV/AIDS* is the percentage of young persons aged 15–24 years who correctly identify

the two major ways of preventing the sexual transmission of HIV (using condoms and limiting sex to one faithful, uninfected partner), who reject the two most common local misconceptions about HIV transmission and who know that a healthy-looking person can transmit HIV. This indicator is usually presented for women and men separately.

### **Method of computation**

The data from household surveys used to produce the indicator are weighted according to the survey design to create a nationally representative indicator. No additional alterations are made to the data.

This indicator is constructed from responses to the following set of prompted questions:

1. Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?
2. Can a person reduce the risk of getting HIV by using a condom every time they have sex?
3. Can a healthy-looking person have HIV?
4. Can a person get HIV from mosquito bites?
5. Can a person get HIV by sharing food with someone who is infected?

Numerator: Number of respondents aged 15-24 years who gave the correct answer to all five questions

Denominator: Number of all respondents aged 15–24

The first three questions should not be altered. Questions 4 and 5 ask about local misconceptions and may be replaced by the most common misconceptions in your country. Examples include: "Can a person get HIV by hugging or shaking hands with a person who is infected?" and "Can a person get HIV through supernatural means?" Those who have never heard of HIV and AIDS should be excluded from the numerator but included in the denominator. An answer of "don't know" should be recorded as an incorrect answer.

The indicator should be presented as separate percentages for males and females and should be disaggregated by the age groups 15-19 and 20–24 years.

Scores for each of the individual questions (based on the same denominator) are required as well as the score for the composite indicator.

### **Comments and limitations**

The belief that a healthy-looking person cannot be infected with HIV is a common misconception that can result in unprotected sexual intercourse with infected partners.

Correct knowledge about false beliefs of possible modes of HIV transmission is as important as correct knowledge of true modes of transmission. For example, the belief that HIV is transmitted through mosquito bites can weaken motivation to adopt safer sexual behaviour, while the belief that HIV can be transmitted through sharing food reinforces the stigma faced by people living with AIDS.

This indicator is particularly useful in countries where knowledge about HIV and AIDS is poor because it allows for easy measurement of incremental improvements over time. However, it is also important in other countries because it can be used to ensure that pre-existing high levels of knowledge are maintained.

Surveying most-at-risk populations can be challenging. Consequently, data obtained may not be based on a representative sample of the national, most-at-risk population being surveyed. If there are concerns that the data are not based on a representative sample, these concerns should be reflected in the interpretation of the survey data. Where different sources of data exist, the best available estimate should be used. Information on the sample size, the quality and reliability of the data, and any related issues should be included in the report submitted with this indicator.

### **Sources of discrepancies between global and national figures**

In principle, there would normally be no discrepancy between global and national figures, because all nationally representative data on comprehensive HIV knowledge are collected only through large-scale household surveys, and these figures are not modified. However, there could be discrepancies if national figures are calculated based on only some components of the indicator or on surveys based on only some geographic areas.

### **Process of obtaining data**

These data are collected through household surveys, such as Multiple Indicator Cluster Surveys (MICS) and Demographic and Health Surveys (DHS), reproductive and health surveys, and behavioural surveillance surveys. The results are reported regularly in the final reports of these surveys. In addition most data are available at <http://www.measuredhs.com/hivdata>

Nationally representative population-based surveys, such as the DHS and MICS, are conducted by national statistical offices or other relevant government office under the supervision of the government or international agencies. As part of routine data quality control, survey results are checked for inconsistencies and to make sure that data are collected using a clearly defined population-based sampling frame, permitting inferences to be drawn about an entire population. UNICEF also conducts an annual exercise called the Country Reports on Indicators for the Goals (CRING), in which data maintained in the

global databases at UNICEF are sent to countries for validation and updates on recent information for all indicators regularly reported on by UNICEF. Updates from countries must be accompanied by original source documentation, e.g. survey reports.

No adjustments are made to the data compiled from DHS, MICS and other surveys that are statistically sound and nationally representative.

### **Treatment of missing values**

The data are not estimated if no values are available.

### **Data availability**

Data are available from approximately 80 countries (40 countries reporting male data and 80 countries reporting female data) with an additional 10-20 countries collecting the data for 2006 and 2007.

### **Regional and Global estimates**

Regional estimates are calculated if more than 50% of the 15-24 male or 15-24 female population is represented by the value.

### **Expected time of release**

Household surveys are released as they become available.

## **Indicator 5.3 Contraceptive prevalence rate**

### **Contact point in international agency**

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## Definition

Percentage currently using, or whose sexual partner is using, a method of contraception among women of reproductive age (usually aged 15-49) who are married or in union.

## Method of computation

Contraceptive prevalence is generally estimated from survey data as the proportion of married or in-union women of reproductive age (usually aged 15-49) who are currently using a method of contraception. It is expressed as a percentage.

Methods of contraception include modern methods and traditional methods. **Modern methods of contraception** include female and male sterilization, the pill, the intra-uterine device (IUD), the male condom, the injectable, the implant (including Norplant), vaginal barrier methods, the female condom and emergency contraception. **Traditional methods of contraception** include the rhythm (periodic abstinence), withdrawal, the lactational amenorrhea method (LAM) and folk methods.

For further reference see:

United Nations (2004). *Levels and Trends of Contraceptive Use as Assessed in 2002*, Sales No. E.04.XIII.9. New York: United Nations  
([http://www.un.org/esa/population/publications/wcu2002/WCU2002\\_Report.pdf](http://www.un.org/esa/population/publications/wcu2002/WCU2002_Report.pdf))

World Health Organization (2006). *Reproductive Health Indicators: Guidelines for their Generation, Interpretation and Analysis for Global Monitoring*. Geneva: World Health Organization ([http://www.who.int/reproductive-health/publications/rh\\_indicators/guidelines.pdf](http://www.who.int/reproductive-health/publications/rh_indicators/guidelines.pdf))

Demographic and Health Survey online guide under "Current Use of Contraceptive Methods" (<http://www.measuredhs.com/help/Datasets/index.htm>)

## Comments and limitations

There can be minor discrepancies in the lists of methods provided in different surveys. Contraceptive prevalence is generally disaggregated according to the use of modern versus traditional methods, and for specific methods. The indicator "unmet need for family planning" provides complementary information to contraceptive prevalence.

Contraceptive prevalence is often measured alternatively for all women of reproductive age, for sexually active women (irrespective of union status), or for women at risk of pregnancy defined as sexually active, not infecund, not pregnant and not amenorrhoeic.

In most surveys there is no definition of what is meant by “currently using” a method of contraception. Since the information is based on a survey it is affected by sampling variability. This is particularly an issue when contraceptive prevalence is measured for a specific subgroup (according to method, age-group, education, place of residence, etc) or when analyzing trends over time.

### **Sources of discrepancies between global and national figures**

The estimates are based on nationally owned data.

### **Process of obtaining data**

Nationally representative surveys including the Demographic and Health Surveys (DHS), the Fertility and Family Surveys (FFS), the CDC-assisted Reproductive Health Surveys (RHS), the Multiple Indicators Cluster Surveys (MICS) and national family planning or health or household or socio-economic surveys.

In general, all nationally representative surveys with comparable questions on current use of contraception are included in the database.

### **Treatment of missing values**

There is no attempt to provide estimates when country data are not available, except for the estimation of regional and global averages.

### **Data availability**

Data are available in 163 countries. There are 113 countries for which at least two data points are available.

Since the questions correspond to current use of contraceptives, contraceptive prevalence is measured at the time of interview. There is a lag between the date of interview and the diffusion of the survey report generally between one and four years. In case the interviews were held in two different years, the latest year is given as the reference year.

On average, the surveys are undertaken every three to five years.

## Regional and Global estimates

For reference years with missing data, linear interpolation between the closest data points on both sides of the reference year has been used. In other cases, the closest data point is used. Regional estimates are weighted averages of the country data, using the number of married or in-union women aged 15-49 for the reference year in each country as the weight. Global estimates are weighted averages of the regional estimates, using the number of married or in-union women aged 15-49 in each region as the weight. Regional averages are provided only if recent data are available for at least 50 per cent of the women of reproductive age who are married or in union in the region.

## Expected time of release

The dataset is revised annually.

## Indicator 8.15 Cellular subscribers per 100 population

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### Definition

A mobile cellular telephone subscription refers to the subscription to a public mobile cellular telephone service which provides access to the Public Switched Telephone Network (PSTN) using cellular technology. It includes postpaid and prepaid subscriptions and includes analogue and digital cellular systems. This should also include subscriptions to IMT-2000 (Third Generation, 3G) networks.

### Method of computation

The number of mobile cellular subscriptions is divided by the country's population and multiplied by 100.

### Comments and limitations

Data on mobile cellular subscriptions are considered to be reliable, timely and complete data. They are derived from administrative data that countries (usually the regulatory

telecommunication authority or the Ministry in charge of telecommunication) regularly, and at least annually, collect from their telecommunications operators. Data for this indicator are readily available for about 90 percent of countries, either through replies sent to ITU's World Telecommunication/ICT Indicators questionnaires or from official information available on the Ministry or Regulator's website. For another 10 percent of countries, the information can be aggregated through operators' data (mainly through annual reports) and complemented by market research reports. However there are comparability issues for mobile cellular subscriptions owing to the prevalence of prepaid subscriptions. These issues arise from determining when a prepaid subscription is considered no longer active.

### **Sources of discrepancies between global and national figures**

Discrepancies between global and national figures may arise when countries use different definitions than the ones used by ITU and especially when countries' data for active and non-active subscriptions are not clearly distinguished. Discrepancies may also arise in cases where the end of a fiscal year differs from that used by ITU, which is the end of December of every year. A number of countries have fiscal years that end in March or June of every year.

### **Process of obtaining data**

ITU collects its data through an annual questionnaire that is sent to the government agency in charge of telecommunications/ICT, usually the Ministry or the regulatory agency. In some cases (especially in countries where there is still only one operator), the questionnaire is sent to the incumbent operator.

Data are available for about 90 percent of countries, either through their reply to ITU questionnaires or from information available on the Ministry/Regulator website. For another 10 percent of countries, the information can be aggregated through operators' data (mainly through annual reports) and complemented by market research reports.

The data, which are mainly based on administrative records, are verified to ensure consistency with data from previous years. When countries do not reply to the questionnaire, ITU carries out research and collects missing values from government web sites, as well as from Annual Reports by operators.

Data are usually not adjusted but discrepancies in the definition, reference year or the break in comparability in between years are noted in a data note. For this reason, data are not always strictly comparable.

### **Treatment of missing values**

Missing values are estimated by ITU.

### **Data availability**

Country coverage is 100 percent. Depending on the country, there is usually a time lag of between 4-6 months, between the reference month (December of each year) and the production time.

### **Regional and Global estimates**

Regional and global totals are calculated as unweighted sums of the country values. Regional and global penetration rates (per 100 inhabitants) are weighted averages of the country values weighted by the population of the countries/regions.

### **Expected time of release**

Year-end estimates are usually released in June of the following year through the World Telecommunication/ICT Indicators Database. Data are also available at no cost through the ITU's ICT Eye, see: <http://www.itu.int/ITU-D/ICTEYE/Indicators/Indicators.aspx>

## **Indicator 1.4 Growth rate of GDP per person employed**

Contact point in international agency

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## **Indicator 1.5 Employment-to-population ratio**

Contact point in international agency

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## **Indicator 1.6 Proportion of employed people living below \$1 (PPP) per day**

Contact point in international agency

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## **Indicator 1.7 Proportion of own-account and contributing family workers in total employment**

Contact point in international agency

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## **Indicator 5.4 Adolescent birth rate**

Contact point in international agency

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## Definition

The adolescent birth rate measures the annual number of births to women 15 to 19 years of age per 1,000 women in that age group. It represents the risk of childbearing among adolescent women 15 to 19 years of age. It is also referred to as the age-specific fertility rate for women aged 15-19.

## Method of computation

In all developed countries and in several developing countries, data on births by age of mother are obtained from civil registration systems covering 90 per cent or more of all live births, supplemented eventually by census or survey estimates for periods when registration data are not available. In developing countries lacking a civil registration system or where the coverage of that system is lower than 90 per cent of all live births, the adolescent birth rate is obtained from household survey data and census data. Registration data regarded as less than 90 per cent complete are exceptionally used for countries where the alternative sources present problems of compatibility and registration data can provide an assessment of trends. In countries with multiple survey programmes, large sample surveys conducted on an annual or biennial basis are given precedence when they exist.

The adolescent birth rate is generally computed as a ratio. The numerator is the number of live births to women 15 to 19 years of age, and the denominator an estimate of exposure to childbearing by women 15 to 19 years of age. The numerator and the denominator are calculated differently for civil registration, survey and census data.

(a) In the case of civil registration the numerator is the registered number of live-births born to women 15 to 19 years of age during a given year, and the denominator is the estimated or enumerated population of women aged 15 to 19. For the numerator, the

figures reported by National Statistical Offices to the United Nations Statistics Division have first priority. When they are not available or present problems, use is made of data from the regional statistical units or directly from National Statistical Offices. For the denominator, first priority is given to the latest revision of *World Population Prospects* produced by the United Nations Population Division in accordance with the recommendation of the 11th IAEG meeting on MDG indicators. In cases where the numerator does not cover the complete *de facto* population, an alternative appropriate population estimate is used if available. When either the numerator or denominator is missing, the direct estimate of the rate produced by the National Statistics Office is used. Information on sources is provided at the cell level. When the numerator and denominator come from two different sources, they are listed in that order.

(b) In the case of survey data, the adolescent birth rate is generally computed based on retrospective birth histories. The numerator refers to births to women that were 15 to 19 years of age at the time of the birth during a reference period before the interview, and the denominator to person-years lived between the ages of 15 and 19 by the interviewed women during the same reference period. Whenever possible, the reference period corresponds to the five years preceding the survey. The reported observation year corresponds to the middle of the reference period. For some surveys, no retrospective birth histories are available and the estimate is based on the date of last birth or the number of births in the 12 months preceding the survey. The information on sources at the cell level provides the name or acronym of the survey together with the beginning and end year of the reference period.

(c) In the case of census data, the adolescent birth rate is generally computed based on the date of last birth or the number of births in the 12 months preceding the enumeration. The census provides both the numerator and the denominator for the rates. In some cases, the rates based on censuses are adjusted for underregistration based on indirect methods of estimation. For some countries with no other reliable data, the own-children method of indirect estimation provides estimates of the adolescent birth rate for a number of years before the census.

For a thorough treatment of the different methods of computation see *Handbook on the Collection of Fertility and Mortality Data*, United Nations Publication, Sales No. E.03.XVII.11, ([http://unstats.un.org/unsd/publication/SeriesF/SeriesF\\_92E.pdf](http://unstats.un.org/unsd/publication/SeriesF/SeriesF_92E.pdf)) Indirect methods of estimation are analyzed in *Manual X: Indirect Techniques for Demographic Estimation*, United Nations Publication, Sales No. E.83.XIII.2. ([http://www.un.org/esa/population/publications/Manual\\_X/Manual\\_X.htm](http://www.un.org/esa/population/publications/Manual_X/Manual_X.htm)).

## Comments and limitations

There are a number of limitations in the estimates:

(a) For civil registration, rates are subject to limitations which depend on the completeness of birth registration, the treatment of infants born alive but dead before registration or within the first 24 hours of life, the quality of the reported information relating to age of the mother, and the inclusion of births from previous periods. The population estimates may suffer from limitations connected to age misreporting and coverage.

(b) For survey and census data, both the numerator and denominator come from the same population. The main limitations concern age misreporting, birth omissions, misreporting the date of birth of the child, and sampling variability in the case of surveys.

The adolescent birth rate is commonly reported as the age-specific fertility rate for ages 15 to 19 in the context of calculation of total fertility estimates. It has also been called adolescent fertility rate. A related measure is the proportion of adolescent fertility measured as the percentage of total fertility contributed by women aged 15-19.

## Sources of discrepancies between global and national figures

Estimates based on civil registration are only provided when the country reports at least 90 per cent coverage and when there is reasonable agreement between civil registration estimates and survey estimates. Small discrepancies might arise due to different denominators or the inclusion of births to women under 15 years of age. Survey estimates are only provided when there is no reliable civil registration. There might be discrepancies on the dating and the actual figure if a different reference period is being used. In particular, many surveys report rates both for a three-year and a five-year reference period. In such a case, the five-year reference period closest to the survey is used for global monitoring. For countries where data is scarce, reference periods located more than five years before the survey might be used. Note that, given the restrictions of the Millennium Development Goals database, only one source is provided by year and country. In such cases precedence is given to the survey programme conducted most frequently at the country level, other survey programmes using retrospective birth histories, census and other surveys in that order.

The adolescent birth rates reported for global MDG monitoring differ also from those calculated by the United Nations Population Division in the *World Population Prospects* publication. The latter are based on population reconstruction at the country level and provide a best estimate based on all the available demographic information. The

estimates for MDG global monitoring are direct estimates from country data on adolescent births.

### **Process of obtaining data**

(a) For civil registration data, data on births or the adolescent birth rate are obtained from country-reported data from the United Nations Statistics Division or regional Statistics Divisions or statistical units (ESCWA, ESCAP, CARICOM, SPC). The population figures are obtained from the last revision of the United Nations Population Division World Population Prospects and only exceptionally from other sources.

(b) For survey data, the data are obtained from surveys such as the Demographic and Health Surveys (DHS), the CDC-assisted Reproductive Health Surveys (RHS), MICS and other nationally sponsored surveys. Whenever the estimates are available in the survey report, they are directly taken from it. In other cases, if microdata are available, estimates are produced by the United Nations Population Division based on national data.

(c) For census data, the estimates are preferably directly obtained from census reports. In such cases, adjusted rates are only used when reported by the National Statistical Office. In other cases, the adolescent birth rate is computed from tables on births in the preceding 12 months by age of mother, and census population distribution by sex and age.

### **Treatment of missing values**

There is no attempt to provide estimates when country data are not available, except for the estimation of regional and global averages.

### **Data availability**

The current database contains estimates for almost every country or area of the world. In the vast majority of countries there are two or more data points available.

There is a significant time lag between the reference year and the actual production of the data series. In the case of civil registration, the data have to be distributed by the National Statistical Offices to the United Nations Statistics Division or regional offices. For survey data, the reference year generally corresponds to two and a half years before the survey. There is a delay between the date of interview and the release of the survey report of between one and three years.

Data based on civil registration are generally produced every year. Censuses are generally produced every ten years. Survey data depends on the existence of adequate

surveys. They are undertaken at different intervals in different countries. In developing countries they typically take place every three to five years.

### **Regional and Global estimates**

For reference years with missing data, linear interpolation between the closest data points on both sides of the reference year has been used. In other cases, the closest data point is used.

Averages are produced using the number of women 15-19 years of age in the reference year as the weight. The figures are taken from the latest revision of World Population Prospects.

Regional averages are provided only when more than 50 per cent of the women 15-19 in the region are covered. For most regions coverage exceeds 80 per cent.

### **Expected time of release**

Estimates are produced by the United Nations Population Division at the beginning of every year for the Millennium Development Goals database. They are largely based on the recurrent publications *World Fertility Patterns*, *World Fertility Report* and *World Fertility Data* that are produced biennially.

## **Indicator 5.5 Antenatal care coverage (at least one visit and at least four visits)**

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## Definition

Antenatal care coverage (at least one visit) is the percentage of women aged 15-49 with a live birth in a given time period that received antenatal care provided by skilled health personnel (doctors, nurses, or midwives) **at least once** during pregnancy, as a percentage of women age 15-49 years with a live birth in a given time period.

Antenatal care coverage (at least four visits) is the percentage of women aged 15-49 with a live birth in a given time period that received antenatal care **four or more times** with **ANY** provider (whether skilled or unskilled), as a percentage of women age 15-49 years with a live birth in a given time period.

A skilled health worker/attendant is an accredited health professional - such as a midwife, doctor or nurse - who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns. Both trained and untrained traditional birth attendants (TBA) are excluded.

The antenatal period presents opportunities for reaching pregnant women with interventions that may be vital to their health and wellbeing and that of their infants. WHO recommends a minimum of four antenatal visits based on a review of the effectiveness of different models of antenatal care. WHO guidelines are specific on the content of antenatal care visits, which should include:

- blood pressure measurement;
- urine testing for bacteriuria & proteinuria;
- blood testing to detect syphilis & severe anemia; and
- weight/height measurement (optional)

## Method of computation

The number of women aged 15-49 with a live birth in a given time period that received antenatal care provided by skilled health personnel (doctors, nurses or midwives) at least

once during pregnancy, is expressed as a percentage of women aged 15-49 with a live birth in the same period.

The number of women aged 15-49 with a live birth in a given time period that received antenatal care by ANY provider (whether skilled or unskilled) four or more times during pregnancy, is expressed as a percentage of women aged 15-49 with a live birth in the same period.

### **Comments and limitations**

Receiving antenatal care during pregnancy does not guarantee the receipt of interventions that are effective in improving maternal health. Receiving antenatal care at least four times, which is recommended by WHO, increases the likelihood of receiving effective maternal health interventions during antenatal visits. Importantly, although the indicator for “at least one visit” refers to visits with skilled health providers (doctor, nurse, midwife), “four or more visits” refers to visits with ANY provider because national-level household surveys do not collect provider data for each visit. In addition, standardization of the definition of *skilled* health personnel is sometimes difficult because of differences in training of health personnel in different countries.

### **Sources of discrepancies between global and national figures**

Discrepancies are possible if there are national figures compiled at the health facility level. These would differ from the global figures that are based on survey data collected at the household level.

In terms of survey data, some survey reports may present a total percentage of pregnant women with ANC from a skilled health professional that does not conform to the Millennium Development Goals (MDG) definition (for example, includes a provider that is not considered skilled such as a community health worker). In that case, the percentages with ANC from a doctor, a nurse or a midwife are totalled and entered into the global database as the MDG estimate.

### **Process of obtaining data**

UNICEF maintains antenatal care data (for at least one visit and four or more visits) and WHO (for at least four visits) and both collaborate to ensure the consistency of data sources. National-level household surveys are the main data sources used to collect data for the antenatal care indicators. These surveys include Demographic and Health Surveys (DHS), Multiple Indicator Cluster Surveys (MICS), Fertility and Family Surveys (FFS), Reproductive Health Surveys (RHS) and national surveys based on similar methodologies.

The surveys are undertaken every 3 to 5 years. For mainly industrialized countries (where the coverage is high), data sources include routine service statistics.

Before acceptance into the global databases, UNICEF and WHO undergo a verification process that includes correspondence with field offices to clarify any questions regarding estimates.

### **Treatment of missing values**

There is no treatment of missing values. When the information needed to calculate the indicator is not available, the indicator is not estimated.

### **Data availability**

Data for at least one visit are available for approximately 138 countries. Data for at least four visits are available for approximately 64 countries, and are only captured for developing countries. Work is in progress to increase the coverage of data for at least four visits, to include industrialized countries.

National household surveys such as DHS, MICS and RHS are generally conducted every three to five years. The data are generally published in *State of the World's Children* within one-two years of fieldwork.

### **Regional and Global estimates**

Regional and global estimates are based on population-weighted averages weighted by the total number of births. These estimates are presented only if available data cover at least 50% of total births in the regional or global groupings.

### **Expected time of release**

Estimates are published annually, in December, by UNICEF in *State of the World's Children*, and are available at <http://www.childinfo.org>.

## **Indicator 5.6 Unmet need for family planning**

### **Contact point in international agency**

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### **Treatment of missing values**

There is no attempt to provide estimates when country data are not available, except for the estimation of regional and global averages.

### **Regional and Global estimates**

For reference years with missing data, linear interpolation between the closest data points on both sides of the reference year has been used. In other cases, the closest data point is used. Regional estimates are weighted averages of the country data, using

the number of married or in-union women aged 15-49 for the reference year in each country as the weight. Global estimates are weighted averages of the regional estimates, using the number of married or in-union women aged 15-49 in each region as the weight. Regional averages are provided only if recent data are available for at least 50 per cent of the women of reproductive age who are married or in union in the region.

## Indicator 7.5 Proportion of total water resources used

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### Definition

Proportion of total renewable water resources withdrawn is the total volume of groundwater and surface water withdrawn from their sources for human use (in the agricultural, domestic and industrial sectors), expressed as a percentage of the total volume of water available annually through the hydrological cycle (total actual renewable water resources). The terms *water resources* and *water withdrawal* are understood as *freshwater resources* and *freshwater withdrawal*.

### Method of computation

Water withdrawal is estimated for the three main sectors of consumption: agriculture, domestic (including urban water use) and industries, at country level and expressed in km<sup>3</sup>/year. The total actual renewable water resources for a country or region are defined as the sum of internal renewable water resources and incoming flow originating outside the country/region, also expressed in km<sup>3</sup>/year.

Internal renewable water resources are defined as the average annual flow of rivers and recharge of groundwater for a given country or region generated from endogenous precipitation.

Incoming flows include flows of water entering the country or region, taking into consideration the quantity of flows reserved to upstream and downstream countries through agreements or treaties and reduction of flow due to upstream withdrawal.

The indicator is computed by dividing total water withdrawal by total actual renewable water resources and expressed in percentage points.

### **Comments and limitations**

*Purpose and relevance:* The purpose of this indicator is to show the degree to which total renewable water resources are being exploited to meet the country's water demand. It is a measure of a country's pressure on its water resources and therefore on the sustainability of its water use.

The indicator can show to what extent water resources are already used, and the need for adjusted supply and demand management policy. It can also give an indication of increasing competition and conflict between different water uses and users in a situation of increasing water scarcity. Increased water scarcity, measured by an increase in the value of the indicator, has negative effects on the sustainability of the natural resources base and subsequent negative effects on economic development.

*Concept:* Water withdrawal as a percentage of water resources is a good indicator of the pressure on limited water resources, one of the most important natural resources. However, it only partially addresses the issues related to sustainable water management. Indicators that would capture the multiple dimensions of water management would combine data on water demand management, behavioral changes with regard to water use and the availability of appropriate infrastructure, and measure progresses in increasing the efficiency and sustainability of water use, in particular with regard to population and economic growth. They would also recognize the different climatic environments that affect water use in countries, in particular in agriculture, which is the main user of water. Sustainability assessment is also linked to the critical thresholds fixed for this indicator and there is no consensus on such threshold. UN-Water is currently working towards the development of a set of more satisfactory water-related indicators.

*Frequency and trends:* Trends in water withdrawal show relatively slow patterns of change, and it is unlikely that the indicator would show meaningful variations from one year to the other. Three years are a minimum frequency to be able to detect significant changes. Furthermore, estimation of water withdrawal by sector is the main limitation to the computation of the indicator. Although countries are encouraged, in particular through the Johannesburg Plan of Implementation (JPOI), to better monitor their water resources and uses, few countries actually publish water use data on a regular basis.

When available at country level, methods for computing water withdrawal vary from country to country. Water withdrawal is never measured directly but assessed through indirect methods.

*Definitions:* Renewable water resources include all surface water and groundwater resources that are renewed on a yearly basis without consideration of the capacity to harvest and use this resource. *Exploitable* water resources, which refer to the volume of surface water or groundwater that is available with an occurrence of 90% of the time, are considerably less than renewable water resources, but no universal method exists to assess such exploitable water resources.

### **Sources of discrepancies between global and national figures**

There is no satisfactory method to take into account return flow in the computation of water resources and use. In countries where return flow represents a substantial part of water withdrawal, the indicator will tend to overestimate total water use.

Additionally, there is no universally agreed method for the computation of incoming flows originating outside of countries.

### **Process of obtaining data**

FAO has been collecting and analyzing data on water resources and their use through its AQUASTAT country surveys since 1992. The periodicity of country surveys is about 10 years due to budgetary constraints, but it could be reduced to 3-5 years relatively easily.

Data on water resources, expressed in long-term averages of annual values, can be considered stable (they vary annually around a long term average which is constant, except on a long term basis where climate change can induce variations). They have been estimated by FAO on the basis of country information, complemented with available global datasets, and published in 2003 and are available for all countries at <ftp://ftp.fao.org/agl/aglw/docs/wr23e.pdf>. Updates are made when new information becomes available, and the latest country dataset is available online at [http://www.fao.org/nr/water/aquastat/water\\_res/index.stm](http://www.fao.org/nr/water/aquastat/water_res/index.stm).

Water use data have been collected from information available at country level for the period 1990-2000 through the AQUASTAT country surveys. Estimates of water use, based on a standardized methodology, have been made by FAO for most countries for the year 2000 and are available at <http://www.fao.org/nr/water/aquastat/dbases/index.stm>. They are based on country information, complemented, when needed, with expert estimates based on unit water use figures by sector.

AQUASTAT data on water resources and use are also published every 3 years through the UN World Water Development Report.

A comparative analysis of available country water resources data is carried out at regular intervals. On that basis, AQUASTAT compiles and updates its best estimates of the main elements of the water balance for each country.

AQUASTAT collects statistics on water resources and data on water resources obtained from national sources are systematically reviewed to ensure consistency in definitions and between countries located in the same river basin. A methodology has been developed and rules established to compute the different elements of national water balances.

In the case of conflicting sources of information, the difficulty lies in selecting the most reliable one. In some cases, water resources figures vary considerably from one source to another.

There may be various reasons for such differences:

- Differences in computation methods or definitions used in computing water resources.
- Differences in the reference period used to calculate the long-term average annual water resources.
- Overestimation of resources where there is double counting of surface water and groundwater.
- Transboundary rivers: Methods used by countries to compute transboundary rivers flows are not always transparent and countries sharing the same river, might each count the same water resources.
- Misuse of the concept of renewable water resources. Some sources may or may not include extraction of fossil water as part of water resources. Others include non-conventional sources of water such as desalinated water and wastewater, or return flows from agriculture.
- Reasons for changes in estimates on long-term average annual values can also be attributed to the availability of better data due to improvements in knowledge, methods or measurement networks.

It is hoped that through the comparative analysis of available country statistics on water resources the most reliable and complete dataset of water resources by countries is obtained and that the results can assist in harmonizing existing water resources databases.

### **Treatment of missing values**

Data on water use are obtained from AQUASTAT country surveys. When data are unavailable, methods to estimate water use by sector are applied, based on unit water

use figures available for each sector, and submitted to countries for endorsement. For agricultural water withdrawal, the method used for the calculation of the year 2000 values is described in detail at [http://www.fao.org/nr/water/aquastat/water\\_use/index.stm](http://www.fao.org/nr/water/aquastat/water_use/index.stm) . For the domestic and industrial water withdrawal the method used consists of scaling the country statistics available to the same year as the one for which the agricultural water withdrawal has been computed, in this case the year 2000, taking into consideration the gross domestic product (GDP) for the industrial water withdrawal, and the GDP and population data for the domestic water withdrawal.

### **Data availability**

Data are available for 172 countries, as well as by continent and for different regions. Data on water resources, and water use by sector and country, are available for all countries for the reference year 2000 and can be considered as baseline data. However, methods exist to provide estimates of water use by sector and by country since 1961.

Estimates are updated on a continuous basis, as new information becomes available.

### **Regional and Global estimates**

Regional and global level aggregations are done using simple summation. Total water use is divided by total renewable water resources for the region or globe.

### **Expected time of release**

Estimates are updated on a continuous basis, as new information becomes available. The most up to date country data are available online at <http://www.fao.org/nr/water/aquastat/dbase/index.stm>.

## **Indicator 7.7 Proportion of species threatened with extinction**

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## Definition

The indicator *Changes in the Status of Species* indicates the change in threat status of species in their natural habitat, based on population and range size and trends, as quantified by the categories of the IUCN Red List of Threatened Species™ (hereafter 'IUCN Red List'; <http://www.redlist.org>).

The world's species are impacted by a number of threatening processes, including habitat destruction and degradation, overexploitation, invasive alien species, human disturbance, pollution and climate change (Baillie *et al* 2004). This indicator measures overall changes in the extinction risk of sets of species as a result of these impacts and the extent to which they are being mitigated. The IUCN Red List Index (IUCN RLI) uses data from the IUCN Red List to show changes over time in the overall threat status (relative projected extinction risk) of representative sets of species.

The IUCN Red List is widely recognised as the most authoritative and objective method of classifying the status of species. It uses quantitative criteria based on population size, rate of decline, and area of distribution to assign species to the following categories of relative extinction risk: *Least Concern*, *Near Threatened*, *Vulnerable*, *Endangered*, *Critically Endangered*, *Extinct in the Wild*, *Extinct and Data Deficient* (IUCN 2001). It has been developed by the IUCN Species Survival Commission (IUCN SSC) and partners BirdLife International, the Zoological Society of London, Conservation International-Centre of Applied Biodiversity Science and NatureServe.

The IUCN RLI is an index of the proportion of species expected to remain living (i.e. not extinct) in the near future in the absence of any conservation action. The 'near future' cannot be quantified exactly, because it depends on the generation times of each of the species contributing to the index, but in most cases the period can be taken to be in the range of 10-50 years for species with short generation lengths and 10-100 years for species with long generation lengths. The IUCN RLI value can range from 1 (when all species are categorised as Least Concern) to 0 (when all species are categorised as Extinct). An intermediate value indicates how far the set of species has moved overall towards extinction. Thus, the IUCN RLI allows comparisons between sets of species in both their overall *level* of extinction risk (i.e. how threatened they are on average), and in the *rate* at which this changes over time. A downward trend in the IUCN RLI over time means that the expected rate of future species extinctions is worsening (i.e. the rate of biodiversity loss is increasing). An upward trend means that the expected rate of species extinctions is abating (i.e. the rate of biodiversity loss is decreasing), and a horizontal line

means that the expected rate of species extinctions is remaining the same, although in each of these cases it does not mean that biodiversity loss has stopped. Hence, to show that the target of significantly reducing the rate of biodiversity loss may have been met, an upward IUCN RLI trend is needed at the very least. An IUCN RLI value of 1.0 would show that biodiversity loss has been halted.

### Method of computation

The IUCN RLI is based on the proportion of species in each Red List Category, and changes in this proportion over time resulting from genuine improvement or deterioration in the status of individual species (i.e. category changes owing to revised taxonomy or improved knowledge are excluded). It can be calculated for any representative set of species that has been assessed for the IUCN Red List at least twice.

The formula for calculating earlier versions of the IUCN RLI (Butchart *et al.* 2004, 2005) has recently been improved and revised (Butchart *et al.* 2007), and this revision is summarised here.

At any particular point in time, the number of species in each Red List Category is multiplied by a weight (ranging from 1 for Near Threatened up to 5 for Extinct and Extinct in the Wild) and these products are then summed. The total is then divided by a 'maximum threat score' (the number of species multiplied by the weight assigned to the Extinct category). This final value is subtracted from 1 to give the IUCN RLI value, so that when all species are *Least Concern* the IUCN RLI is equal to 1, and when all species are *Extinct* the IUCN RLI is equal to 0.

Mathematically this can be expressed as:

Where  $W_{c(t,s)}$  is the weight for category  $c$  at time  $t$  for species  $s$  ( $W_{EX}$  is the weight assigned to *Extinct* species [5], with the weight for *Critically Endangered* = 4, *Endangered* = 3, *Vulnerable* = 2, *Near threatened* = 1 and *Least Concern* = 0), and  $N$  is the total number of assessed species, excluding those considered Data Deficient in the current time period, and those considered to be Extinct in the year the set of species was first assessed.

The formula requires that (a) exactly the same set of species is included in all time steps, and (b) the only category changes are those resulting from genuine improvement or deterioration in status (i.e. excluding changes resulting from improved knowledge or taxonomic revisions). In many cases, species lists will change slightly from one assessment to the next (e.g. owing to taxonomic revisions). The conditions can therefore be met by 'back-casting' (retrospectively correcting earlier Red List categorisations using

current information and taxonomy) through assuming that the current Red List Categories for the taxa have applied since the set of species was first assessed, unless there is information to the contrary that genuine status changes have occurred. Such information is often contextual, e.g. relating to the known history of habitat loss within the range of the species (see Butchart *et al.* 2007 for further details). If there is insufficient information available to back-cast categories of extinction risk for a newly added species, it is not incorporated into the IUCN RLI until it is assessed subsequently for a second time, at which point earlier assessments are back-cast by extrapolating recent trends in population, range, habitat and threats, supported by additional information.

The IUCN RLI can be calculated for any set of species for which Red List assessments have been completed for all the species in the set at a minimum of two points in time. RLIs can be produced at global, regional, and national scales. The global IUCN RLI was initially designed and tested using data on all bird species for 1988–2004 (Butchart *et al.* 2004), and has since been applied to amphibians (Butchart *et al.* 2005), with a global mammal IUCN RLI in preparation. By 2010, IUCN RLI trends will also be available for some plant groups (conifers and cycads), and for a more representative set of taxa based on a random sample of all vertebrates and selected plant groups. First data points for all reptiles and selected freshwater, marine and other plant groups will also be available by 2010 (Butchart *et al.* 2006), allowing calculation of trends thereafter.

In any particular group, trends can be shown for all species, or disaggregated by ecosystems, political areas, particular threatening processes, taxonomic subsets (e.g. families), or for suites of species relevant to particular international treaties or legislation.

## Comments and limitations

### Sources of uncertainty

There are four main sources of uncertainty associated with IUCN RLI values and trends. These derive from, and are being addressed in the following ways:

(a) Inadequate, incomplete or inaccurate knowledge of a species status; Minimised through the process of assessment whereby estimates of extinction risk are assigned to categories that are broad in magnitude and timing.

(b) Delays in knowledge about a species becoming available for assessment; Such delays apply to a small (and diminishing) proportion of status changes, and can be reflected in the IUCN RLI through back-casting.

(c) Inconsistency between species assessments; Minimised through the requirement to have supporting documentation detailing the best available data, with justifications, sources, and estimates of uncertainty and data quality, which are checked and standardised by IUCN through Red List Authorities, a Users' Working Group Unit and a Red List Standards and Petitions Working Group.

(d) Data Deficient species - species that are too poorly known for the Red List Criteria to be applied are assigned to the Data Deficient category, and excluded from the calculation of the IUCN RLI. For birds, only 0.8% of extant species are evaluated as Data Deficient, compared with 24% of amphibians. If Data Deficient species differ in the rate at which their extinction risk is changing, the IUCN RLI may give a biased picture of the changing extinction risk of the overall set of species. The degree of uncertainty this introduces can be quantified once a significant proportion of Data Deficient species have been re-assigned to other Red List Categories and then reassessed.

Inadequate knowledge is likely to be the most important source of uncertainty in most taxonomic groups. The magnitude of this uncertainty, and hence confidence limits, can be calculated for each IUCN RLI by using established techniques for incorporating uncertainty into Red List assessments. Sampling bias applies only to IUCN RLIs based on sampled sets of species, an approach that is still being developed to increase the taxonomic breadth of IUCN RLIs.

### **Limitations**

The main limitation of the IUCN RLI is that it shows relatively low temporal resolution (because the Red List Categories are relatively broad measures of status, and the IUCN RLI can practically be updated only every four years). The IUCN RLI captures trends in one particular aspect of biodiversity: the rate that species are moving towards extinction and becoming extinct. Biodiversity encompasses a much wider spectrum, from genes, through populations and species to ecosystems. Species, however, have a particular resonance with the public and decision makers, and losing species through extinction is a particularly tangible and readily understandable component of biodiversity loss, as well as having clear relevance to ecological processes and ecosystem function. The IUCN RLI does not capture particularly well the deteriorating status of common species that are declining slowly as a result of general environmental degradation.

### **Sources of discrepancies between global and national figures**

The IUCN RLI can be applied at global, regional, and national scales. Global IUCN RLIs are based on repeated assessments of species' extinction risk at the global scale. While they can be disaggregated to show trends for species at smaller spatial scales, the

reverse is not true. National or regional IUCN RLIs cannot be aggregated to produce IUCN RLIs showing global trends. This is because a taxon's global extinction risk has to be evaluated at the global scale and cannot be directly determined from multiple national scale assessments across its range (although the *data* from such assessments can be aggregated for inclusion in the global assessment). The IUCN RLI can be applied at sub-global scales in two ways:

(a) *IUCN RLIs based on global extinction risk.* Global IUCN RLIs can be disaggregated to show trends at finer scales. An advantage of this approach is that such data are already available for some taxonomic groups, and so national or regional indices can therefore be calculated without further data gathering. This approach works well for large ecological or political units, and countries with relatively high levels of endemism (e.g. Madagascar). However, for smaller countries that share many species with their neighbours, it may be difficult to determine whether a species' global status changed because of factors operating within that particular nation, and also the IUCN RLI becomes less robust with fewer species driving the index trends. If a country has many endemic taxa (for which the global and national assessments of extinction risk will be identical), a national IUCN RLI can be calculated from the global Red List categories for the endemic species only. This will show national trends in extinction risk for the species in a country that are particularly significant at a global scale.

(b) *IUCN RLIs based on national or regional extinction risk.* Given the caveats outlined above, regional or national RLIs may be best developed from repeated Red List assessments of regional or national extinction risk. Guidelines are available on applying the IUCN Red List Categories and Criteria at regional or national scales (IUCN 2003). If all species within a particular region or country have been assessed at least twice using this approach, an IUCN RLI can be calculated using these data.

### **Process of obtaining data**

The Category and Criteria and associated documentation for each species on the IUCN Red List are provided principally by the Specialist Groups of the IUCN Species Survival Commission (comprising nearly 8,000 specialists with representatives in almost every country of the world), the BirdLife International partnership (composed of more than 100 autonomous national non-governmental organisations and their network of several thousand scientists and ornithologists), and the other IUCN Red List partner organisations (NatureServe, Zoological Society of London and the Center for Applied Biodiversity Science of Conservation International). The staffs of the IUCN Species Programme compile, validate, and curate these data and are responsible for publishing and communicating the results.

Red List assessments are made through an inclusive process, which is open to all interested parties and stakeholders, either through open workshops or open-access web-based discussion fora (e.g. <http://www.birdlifeforums.org>). Contributors include professional scientists, specialists and conservationists from a broad spectrum of institutions, including governments, museums, universities and local, national, regional and global non-governmental organisations. Assessments are given independent scientific review by the appropriate Red List Authority (an individual or organisation appointed by the IUCN SSC to review assessments for specific species or groups of species) to ensure standardisation and consistency in the interpretation of information and application of the criteria. A Biodiversity Assessments User's Working Group and the IUCN Red List Unit work to ensure consistent categorisation between species, groups and assessments. Finally, a Red List Standards and Petitions Working Group monitors the process and resolves challenges and disputes over Red List assessments.

All these data are stored and managed in the IUCN Red List database (IUCN's Species Information Service, SIS), and made freely available through the IUCN Red List website (<http://www.redlist.org>), which is updated annually.

## **Treatment of missing values**

### **Geographic gaps**

Global IUCN RLIs are based on assessments of species' extinction risk at a global level. The guidelines for applying the Red List Categories and Criteria (IUCN Red List Standards and Petitions Working Group 2007) provide guidance on how to deal with incomplete data (e.g. from particular countries within a species' range) through adopting a precautionary approach to drawing inferences from all available information (e.g. data from elsewhere in a species' range).

### **Taxonomic gaps**

The IUCN RLI can only be calculated when a set of species has been comprehensively reassessed (i.e. all species evaluated) at a second point in time. This is because if only a subset of species have been reassessed, these might represent a sample that is biased in some way (e.g. by geography, or degree of knowledge) and an IUCN RLI based on these partial data may not accurately reflect trends in the complete set of species.

### **Temporal gaps**

The data points for the IUCN RLI are based on the dates when the set of species was assessed. Once a time series of data are available, it is possible to interpolate values for

missing years through linear modelling or other approaches. The method for calculating the IUCN RLI allows retrospective correction (back-casting) of previous assessments using the best and most recent information, which permits missing values (categories) to be determined for species that have been assessed for the first time (e.g. owing to taxonomic revisions, or new information allowing a previously Data Deficient species to be evaluated).

## Data availability

### Global IUCN Red List

The 2006 release of the IUCN Red List (IUCN 2006) included assessments for 40,168 species, spanning every country of the world, of which 16,118 species are threatened with extinction. This includes species from a broad range of taxonomic groups spanning vertebrates, invertebrates, plants and fungi. However, only a subset of groups has been comprehensively assessed: birds (9,934 species, 12% threatened), mammals (5,416 species, 23% threatened), amphibians (5,918 species, 31% threatened) and gymnosperms (primarily conifers and cycads, 980 species, 34% threatened). A number of recent and ongoing initiatives are greatly improving the taxonomic coverage of the IUCN Red List. These include global assessments for amphibians (first comprehensive assessment completed in 2004), mammals (second comprehensive assessment due to be completed in 2008), reptiles, marine and freshwater species (several taxonomic groups), and plants (initially trees and legumes).

To calculate the IUCN RLI comprehensive assessments at two different time points are required. To date, only birds have been assessed more than once (four times, 1988–2004). Amphibians were comprehensively assessed for the first time in 2004 and their conservation status was also retrospectively assessed for 1980, allowing a preliminary IUCN RLI to be calculated for 1980-2004. Mammals and cycads will be reassessed by 2008, permitting IUCN RLIs to be calculated for these groups as well. Once groups have been completely assessed, they ideally (depending on available resources) will be reassessed at four-yearly intervals thereafter (e.g. the fifth assessment for birds is due in 2008).

In recognition that it will take time to carry out comprehensive assessments for some poorly known but species-rich groups, and that it will be difficult to repeat these regularly, IUCN has developed an IUCN RLI based on a randomised sample of at least 1,500 species starting with 15 major taxonomic groups representing vertebrates, invertebrates and plants. In the future this will be expanded to include fungi and algae. This IUCN RLI sampled approach (IUCN SRLI) will provide an indicator of trends in

global extinction risk for a broader spectrum of biodiversity. It will give the first estimate of the status of fish and reptiles (and therefore the first estimate of the status of all vertebrate classes) by 2007, with trends in extinction risk available by 2010, once the fish and reptile groups have been retrospectively assessed.

The lag between the reference year and actual production of data series is up to one year.

Data are produced every four years for birds. Assessments for other taxa are still under development.

### **Regional and Global estimates**

The IUCN RLI can be applied at global, regional, and national scales. Global IUCN RLIs are based on repeated assessments of species' extinction risk at the global scale. While they can be disaggregated to show trends for species at smaller spatial scales, the reverse is not true. National or regional IUCN RLIs cannot be aggregated to produce IUCN RLIs showing global trends. This is because a taxon's global extinction risk has to be evaluated at the global scale and cannot be directly determined from multiple national scale assessments across its range (although the data from such assessments can be aggregated for inclusion in the global assessment). The IUCN RLI can be applied at sub-global scales in two ways:

(a) IUCN RLIs based on global extinction risk. Global IUCN RLIs can be disaggregated to show trends at finer scales. An advantage of this approach is that such data are already available for some taxonomic groups, and so national or regional indices can therefore be calculated without further data gathering. This approach works well for large ecological or political units and countries with relatively high levels of endemism (e.g. Madagascar). However, for smaller countries that share many species with their neighbours, it may be difficult to determine whether a species' global status changed because of factors operating within that particular nation, and also the IUCN RLI becomes less robust with fewer species driving the index trends. If a country has many endemic taxa (for which the global and national assessments of extinction risk will be identical), a national IUCN RLI can be calculated from the global Red List categories for the endemic species only. This will show national trends in extinction risk for the species in a country that are particularly significant at a global scale.

(b) IUCN RLIs based on national or regional extinction risk. Given the caveats outlined above, regional or national RLIs may be best developed from repeated Red List assessments of regional or national extinction risk. Guidelines are available on applying the IUCN Red List Categories and Criteria at regional or national scales (IUCN 03). If all

species within a particular region or country have been assessed at least twice using this approach, an IUCN RLI can be calculated using these data.

### **Expected time of release**

The global IUCN Red List is updated annually in October. IUCN RLIs for any sets of species that have been comprehensively reassessed in that year are released alongside the update of the IUCN Red List. Data stored and managed in the IUCN Red List database (IUCN's Species Information Service, SIS) are made freely available through the IUCN Red List website : <http://www.redlist.org>

### **Please refer to series metadata**

## **Indicator 6.5 Proportion of population with advanced HIV infection with access to antiretroviral drugs**

### **Contact point in international agency**

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### **Definition**

The percentage of adults and children with advanced HIV infection currently receiving antiretroviral therapy according to nationally approved treatment protocols (or WHO/Joint UN Programme on HIV and AIDS standards) among the estimated number of people with advanced HIV infection.

The numerator (the number of people receiving antiretroviral therapy) is derived from national programme reporting systems, aggregated from health facilities or other service delivery sites. The denominator (the total number of people who need antiretroviral therapy) is generated using a standardized statistical modelling approach.

The human immunodeficiency virus (HIV) is a virus that weakens the immune system, ultimately leading to acquired immunodeficiency syndrome (AIDS).

The number of adults with advanced HIV infection who should start treatment is estimated based on the assumption that the average time from HIV seroconversion to eligibility for antiretroviral therapy is eight years and, without antiretroviral therapy, the average time from eligibility to death is about three years. These parameters were revised in 2007: the previous estimates were based on the assumption of seven years from seroconversion to eligibility and two years from eligibility to death in the absence of treatment.

## **Method of computation**

### **Antiretroviral therapy coverage (%)**

The estimates of antiretroviral therapy coverage presented were calculated by dividing the estimated number of people receiving antiretroviral therapy by the number of people estimated to need treatment (based on UNAIDS/WHO methods). Ranges around the levels of coverage are based on the uncertainty ranges around the estimates of need.<sup>1</sup> The ranges are presented in the annual progress report, *Towards universal access*<sup>2</sup>. For the purpose of the Millennium Development Goals indicator, only point estimates are provided. For countries where the number of people needing antiretroviral therapy is less than 500 people, no point estimate for coverage is calculated.

### **Estimated number of people receiving antiretroviral therapy**

The reported data are compiled from the most recent reports (see *Process of obtaining data*) received by WHO and/or UNAIDS from health ministries or from other reliable sources in the countries, such as bilateral partners, foundations and nongovernmental organizations that are major providers of treatment services. WHO and UNAIDS work with country governments to obtain as many facility-specific data as possible on the numbers of people receiving treatment.

### **Estimated number of people needing antiretroviral therapy**

Based on the recommendations of the UNAIDS Reference Group on Estimates, Modelling and Projections, UNAIDS and WHO have developed modelling methods and tools to generate country estimates of the magnitude of the epidemic and key impact indicators, including mortality<sup>3</sup>. Treatment needs are estimated using the Spectrum statistical software package. The tool takes into consideration epidemiological surveillance data and key assumptions (including adult HIV prevalence over time, average survival time of

people living with HIV with and without antiretroviral therapy and average time between seroconversion and eligibility for antiretroviral therapy) to generate estimates of treatment need. The estimation methods are regularly updated using new epidemiological and research data and improved methods.

To estimate the number of people who need antiretroviral therapy in a country, WHO and UNAIDS use statistical modelling methods that include all people who meet treatment initiation criteria, whether or not these people know their HIV status and their eligibility for antiretroviral therapy. A comprehensive estimate should include three categories of people:

1. people currently receiving antiretroviral therapy;
2. people who know they are HIV-positive and are eligible for antiretroviral therapy but do not have access to it;
3. people who do not know their HIV status but meet criteria for initiating treatment.

The number of **adults** with advanced HIV infection who should start treatment is estimated on the assumption that, without access to antiretroviral therapy, the time from eligibility to death is approximately three years. This parameter was revised upwards from two years in 2007. At present, it is assumed that approximately 85% of adults will survive their first year of treatment, depending on when treatment is initiated, adherence to treatment, drug resistance patterns, the quality of clinical management and other factors. In subsequent years, survival is estimated to be 95%.

It is estimated that more than 50% of **infants** with HIV infection will need antiretroviral therapy by their second year of life, based on data available from demographic studies. However, recent studies in resource-constrained settings show that (for infants acquiring HIV at or around delivery) disease progression or death occurs very rapidly in the first few months of life, with over 80% of infants meeting criteria to start antiretroviral therapy within the first six months of life.

WHO held a meeting in April 2008 to review new evidence and consider whether guidelines and existing recommendations should be revised. Experts recommended that revised criteria be developed for starting antiretroviral therapy in infants. WHO will now recommend that all infants with confirmed HIV infection within the first year of life should start antiretroviral therapy, irrespective of clinical or immunological stage. It is therefore likely that antiretroviral therapy need estimates for children will be adjusted in 2009.

- 1 *Morgan M et al. Improved plausibility bounds about the 2005 HIV and AIDS estimates. Sexually Transmitted Infections, 2006, 82(Suppl III):iii71–iii77.*
- 2 *WHO/UNAIDS/UNICEF. Towards universal access: scaling up priority HIV/AIDS interventions in the health sector, progress report 2008. Geneva, WHO, June 2008.*  
<http://www.who.int/hiv/mediacentre/2008progressreport/en/index.html>
- 3 *UNAIDS web site. Epidemiological software and tools (2007).*  
[http://www.unaids.org/en/KnowledgeCentre/HIVData/Epidemiology/epi\\_software2007.asp](http://www.unaids.org/en/KnowledgeCentre/HIVData/Epidemiology/epi_software2007.asp)

## Comments and limitations

To analyse and compare antiretroviral therapy coverage across countries, standardized estimates of treatment need derived using UNAIDS/WHO methods are utilized. Specialized software is used to generate uncertainty ranges around estimates for antiretroviral therapy need. Depending on the quality of surveillance data, the ranges for some countries can be large.

Uncertainty ranges have also been estimated around the number of people receiving antiretroviral therapy through the public sector, which can vary from 5–25% depending on the strength of the monitoring system and the comprehensiveness of the reported data. For data on the number of people receiving antiretroviral therapy through the private sector (which are reported separately for some countries), uncertainty ranges from 10–40% have been used. Private-sector data, when available, are included in the national level numbers and are footnoted.

The accuracy of the reported number of people on antiretroviral therapy is an issue as programme monitoring systems are still being developed and strengthened.

Although this indicator allows trends to be monitored over time, it does not attempt to distinguish between the different types of treatment regimens available nor does it measure the cost, quality or effectiveness of treatment.

Treatment data is available disaggregated by sex for most countries. However, the antiretroviral therapy coverage indicator includes both sexes.

Antiretroviral therapy for post-exposure prophylaxis is not included in this indicator.

## Comparability and availability of data

As for many other indicators, this indicator faces the problem of availability and comparability of country-level data. Estimating the number of people receiving antiretroviral therapy involves some uncertainty for countries that have not yet established regular reporting systems that can capture data on people who initiate

treatment for the first time, rates of adherence among people who receive treatment, people who discontinue treatment, people lost to follow-up and deaths.

A particular source of uncertainty is that some country-reported data do not distinguish between people who have ever started antiretroviral therapy and those who are still receiving it (continuing to pick up their medicine). The difference between the two numbers reflects discontinuation of treatment, losses to follow-up and mortality.

Uncertainty may also arise due to the difficulty of measuring the extent of treatment provision in the private sector. Many people receive treatment through local pharmacies and private clinics that do not report through official channels. Private companies may have programmes to support the provision of treatment to workers with advanced HIV infection, but in some cases the data relating to these programmes are not reported to public health authorities.

#### **Availability of data over time**

WHO and UNAIDS have been collecting country specific data since 2003.

### **Sources of discrepancies between global and national figures**

#### **People receiving antiretroviral therapy**

##### ***Reporting period***

The estimated number of people receiving antiretroviral therapy at the end of the year is derived through projections to the end of the year for countries that did not report data for December of the year. End-of-year estimates are based on simple linear projections of reported numbers, using monthly increases to indicate growth. (In 2007, about two thirds of the 149 low- and middle-income countries were able to report data for the end of the preceding year).

##### ***Cumulative versus current data***

The data collection methods emphasize the need for information on only those people currently receiving treatment. However, through comparing numbers between United Nations agencies, it is apparent that some data are cumulative for all people ever having received antiretroviral therapy since the initiation of antiretroviral therapy programmes. The respective agencies follow up with the country governments to obtain correct data. In cases where data for current treatment is not available, adjustments of the order of 15–20% are made to cumulative data.

### ***People needing treatment***

Some countries have developed their own methods of estimating the number of people who need antiretroviral therapy, which may differ from UNAIDS/WHO methods. In some cases, these estimates are based only on registered HIV cases and therefore do not account for people with HIV who are unaware of their HIV status. Annex 3 of the annual report *Towards universal access* presents country-reported estimates of need <sup>1</sup>, but these are not aggregated and are not used for calculating or analysing regional and global coverage. In these cases, United Nations General Assembly Special Session on HIV/AIDS (UNGASS) reports to UNAIDS may include coverage percentages that differ from the reconciled data used for this MDG indicator <sup>2</sup>.

- 1 *WHO/UNAIDS/UNICEF. Towards universal access: scaling up priority HIV/AIDS interventions in the health sector, progress report 2008. Geneva, WHO, June 2008.*  
<http://www.who.int/hiv/mediacentre/2008progressreport/en/index.html>.
- 2 *UNGASS 2008 Country Progress Reporting.*  
<http://www.unaids.org/en/KnowledgeCentre/HIVData/CountryProgress>.

### **Process of obtaining data**

The data on people receiving antiretroviral therapy are collected through three international monitoring and reporting processes.

1. Health sector response to HIV/AIDS (WHO)

At the 59th World Health Assembly in 2006, countries mandated WHO to monitor and report annually on the global health sector response to HIV/AIDS in recognition of the fundamental importance of the health sector in achieving universal access to antiretroviral therapy. WHO sends an annual questionnaire to its regional and country offices in the fourth quarter of each year to collect data on key indicators related to the availability, coverage and impact of priority health sector interventions for HIV/AIDS <sup>1</sup>.

2. Prevention of mother to child transmission and paediatric HIV care and treatment (Interagency Task Team on Prevention of HIV Infection in Women, Mothers and their Children – IATT)

Since 2004, UNICEF and WHO, on behalf of the IATT, have been jointly tasked with collecting national data to track progress towards goals for the prevention of mother-to-child transmission and paediatric HIV care and treatment <sup>2</sup>. An annual reporting form is sent to UNICEF and WHO country offices to facilitate

data collection in collaboration with national governments and other in-country implementing partners.

### 3. UNGASS Declaration of Commitment on HIV/AIDS (UNAIDS)

With the adoption of the Declaration of Commitment on HIV/AIDS by the United Nations General Assembly Special Session on HIV/AIDS in 2001, countries committed to provide a progress report to the General Assembly every two years. The UNAIDS Secretariat facilitates this reporting and develops regular reports for submission to the Secretary-General of the United Nations. Country progress reports submitted to UNAIDS based on international guidelines for the construction of the core indicators are available online.<sup>3,4</sup>

All three processes are linked through common indicators and a harmonized timeline for reporting. In order to facilitate collaboration at country level, the country offices of WHO, UNICEF and the UNAIDS Secretariat, work jointly with national counterparts and partner agencies to collate and validate data in a single collaborative consultation process.

In addition, at least twice a year, international data reconciliation meetings are organized to review and validate data reported to WHO, UNICEF, the UNAIDS Secretariat, the Global Fund to Fight AIDS, Tuberculosis and Malaria; and the United States President's Emergency Plan for AIDS Relief. Where discrepancies are identified between data reported to the different organizations, follow-up letters are sent to UNAIDS, UNICEF and WHO country offices in order to liaise with national authorities to seek clarification and resolve discrepancies.

#### **Adjustments to data for international comparability**

Adjustments in reported data by countries are made in case they do not reflect end-of-year values. Furthermore, some countries only report data of the cumulative number of people receiving treatment, and adjustment are made to more accurately represent the value of people 'currently' on treatment at the end of the calendar year.

- 1 *WHO. Monitoring and reporting on the health sector's response towards universal access to HIV/AIDS prevention, treatment, care and support: WHO framework for global monitoring and reporting. Geneva, 2007.*  
[http://www.who.int/entity/hiv/universalaccess2010/UAframework\\_Final%202Nov.pdf](http://www.who.int/entity/hiv/universalaccess2010/UAframework_Final%202Nov.pdf)
- 2 *WHO, UNICEF with the Interagency Task Team (IATT) on Prevention of HIV Infection in Pregnant Women, Mothers and their Children. Guidance on the global scale-up of the prevention of mother-to-child transmission of HIV.*  
[http://www.who.int/hiv/pub/guidelines/pmtct\\_scaleup2007/en/](http://www.who.int/hiv/pub/guidelines/pmtct_scaleup2007/en/).

3UNGASS 2008 Country Progress Reporting.

<http://www.unaids.org/en/KnowledgeCentre/HIVData/CountryProgress>.

4UNAIDS. *Monitoring the Declaration of Commitment on HIV/AIDS: guidelines on construction of core indicators: 2008 reporting*. Geneva, 2007.

[http://data.unaids.org/pub/Manual/2007/20070411\\_ungass\\_core\\_indicators\\_manual\\_en.pdf](http://data.unaids.org/pub/Manual/2007/20070411_ungass_core_indicators_manual_en.pdf).

## Treatment of missing values

As described elsewhere, WHO strives to publish data representing the status as of December of each year. In case reported values are for an earlier month, projections to December are made based on calculations of growth per month (see also *Sources of discrepancies between global and national figures*). In the annual progress reports, countries for which projections were made are footnoted.

## Data availability

The WHO database on this indicator covers statistics for the 149 WHO Member States that are classified as low- or middle-income countries according to the World Bank country classification by income group. As of 2007, 97% of countries have reported at least once since 2005.

WHO/UNAIDS generate treatment need estimates for 112 of the 149 low- and middle income countries. Countries for which no need has been established are relatively small, have minor HIV epidemics and/or have poor surveillance data that do not enable the calculation of reliable need estimates.

Data on progress towards scaling-up access to antiretroviral therapy are published on an annual basis. The time lag between the reporting of values and the publication of data series is a minimum of six months.

## Regional and Global estimates

Regional and global estimates are calculated as weighted averages of the country level indicator where the weights correspond to each country's share of the total number of people needing antiretroviral therapy. Although WHO and UNAIDS collect data on the number of people receiving antiretroviral therapy in high-income countries, as of 2007 no need numbers have been established for these countries. Aggregated coverage percentages are based solely on low- and middle-income countries.

## Expected time of release

The data used to calculate the indicator are collected and disseminated annually, usually in the second quarter of each year. They are published in *Towards universal access*:

*scaling up priority HIV/AIDS interventions in the health sector: progress report* (WHO/UNAIDS/WHO) and disseminated on the WHO web site <http://www.who.int/hiv/en>

## **Indicator 6.8 Proportion of children under 5 with fever who are treated with appropriate anti-malarial drugs**

### **Contact point in international agency**

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### **Definition**

Percentage of children aged 0-59 months with fever in the two weeks prior to the survey who received any anti-malarial medicine within 24 hours of the onset of symptoms.

### **Method of computation**

The number of children aged 0-59 months with fever in the 2 weeks prior to the survey who received any anti-malarial medicine within 24 hours of onset of symptoms is expressed as a percentage of the total number of children aged 0-59 months reported to have fever in the two weeks prior to the survey.

### **Comments and limitations**

The indicator reports on receiving any anti-malarial medicine and includes anti-malarial medicines that may be less effective due to widespread resistance and treatment failures, such as chloroquine.

### **Sources of discrepancies between global and national figures**

Discrepanies are possible if there are national figures compiled at the health facility level. These would differ from the global figures which are based on survey data collected at the household level.

### **Process of obtaining data**

Data are collected through national-level household surveys, including MICS, DHS and Malaria Indicator Surveys (MIS). These surveys are generally conducted every 3-5 years.

### **Treatment of missing values**

No adjustments are made for missing values.

### **Data availability**

Data from national-level household surveys are compiled in the UNICEF global databases, in collaboration with Roll Back Malaria partners. Latest available estimates of these malaria prevention and treatment indicators are published annually by UNICEF in *The State of the World's Children* report, and are available on <http://www.childinfo.org>

### **Regional and Global estimates**

Regional and global estimates are based on population-weighted averages weighted by the total number of children under five years of age. These estimates are presented only if available data cover at least 50% of total children under five years of age in the regional or global groupings.

### **Expected time of release**

Published annually in State of the World's Children, which is typically launched in December.

## **Indicator 7.3 Consumption of ozone-depleting substances**

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### **Definition**

This indicator is used to monitor the reduction in the usage of Ozone Depleting Substances (ODSs) as a result of the Montreal Protocol. Therefore only ODSs controlled

under the Montreal Protocol are covered by the indicator. Reducing consumption ultimately leads to reductions in emissions since most uses of ODSs finally lead to the substances being emitted into the atmosphere. The Units of Measurement are metric tons of ODS weighted by their Ozone Depletion Potential (ODP), otherwise referred to as ODP tons.

This indicator signifies the progress made towards meeting the commitments to phase out the use of ODSs of the countries which have ratified the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer and its Amendments of London (1990), Copenhagen (1992), Montreal (1997) and Beijing (1999).

**Ozone depleting substance (ODS)** is any substance containing chlorine or bromine, which destroys the stratospheric ozone layer that absorbs most of the biologically damaging ultraviolet radiation. The phasing out of ozone depleting substances, and their substitution by less harmful substances or new processes, are aimed at the recovery of the ozone layer. Substances controlled by the Montreal Protocol are categorised into annexes, with different groups in each annex. These include chlorofluorocarbons (CFCs) (Annex A, group I), halons (Annex A, group I), methyl bromide (Annex E, group I) among others.

Controlled substance means a substance in Annex A, Annex B, Annex C or Annex E of the Montreal Protocol, whether existing alone or in a mixture. It includes the isomers of any such substance, except as specified in the relevant Annex, but excludes any controlled substance or mixture that is in a manufactured product other than a container used for the transportation or storage of that substance. Therefore trade in finished products would not fall under the control of the protocol.

**Ozone depleting potential (ODP)** refers to the amount of ozone depletion caused by a substance. It is the ratio of the impact on ozone of a chemical substance compared to the impact of a similar mass of CFC-11. The ODP of CFC-11 is defined to be 1. CFCs have ODPs that range from 0.6 to 1 while hydrochlorofluorocarbons (HCFCs) have ODPs that range from 0.001 to 0.52. The halons have ODPs of up to 10 while methyl bromide has an ODP of 0.6.

For a full list of the controlled substances as well as the control measures applicable to each group of substance, refer to the protocol text, which is available on the Ozone Secretariat's websites at:

- <http://ozone.unep.org/>
- <http://www.unep.ch/ozone>
- <http://www.unep.org/ozone>

## Method of computation

- Parties report in metric tonnes their Production, Imports, Exports and Destruction of individual substances controlled under the Montreal Protocol.
- For each substance, the metric tonnes are then multiplied by the ODP of the substance (resulting in ODP-weighted tonnes, or in short ODP-tonnes).
- **Consumption** is then calculated as production plus imports minus exports minus destroyed quantities minus feedstock uses of a controlled substance. Destruction and feedstock uses both take out ODS out of the system (opposite of production), hence the reason for subtracting them when calculating consumption. The protocol also specifies that consumption shall not include the amounts used for quarantine and pre-shipment applications of methyl bromide, and further specifies that exports to non-Parties will count as consumption in the exporting Party. The precise formula for calculating consumption is:

**consumption** = total production - destroyed - production for internal feedstock use - production for internal quarantine use (for methyl bromide only) + total new imports - import for feedstock - import for quarantine use – total new exports + export to non-parties

- Summation is then carried out across each annex group, since control measures are prescribed for annex groups.

## Comments and limitations

The main limitation of the data is probably its accuracy. Different countries will have different methods of collecting the data, with varying degrees of accuracy. The sources of inaccuracies could include errors of omission, under reporting, over-reporting, or mis-categorisation where one substance is incorrectly reported as a different substance. Since globally all exports should equal all imports, checking the global totals can give an idea of the error levels. A check of data reported over the last 9 years of 1997 to 2005 gives errors ranging up to 12%, and an average error level of 6% over those years.

## Sources of discrepancies between global and national figures

Not Applicable. National figures are used directly without adjustment (other than applying the standard computational formula).

## Process of obtaining data

- Countries that are Party to the Montreal protocol report data annually to the Secretariat using data reporting formats agreed by the Parties.
- Parties not reporting when required will usually get reminders from the Secretariat, and may also be subject to the non-compliance procedure of the Protocol once the deadline for reporting has passed.

- Data are usually reported by the Ministry of Environment or by designated authorities such as an Environment Protection Agency or an Environment Management Authorities or a National Ozone Unit.
- The countries themselves collect the data using a variety of methods. These include getting numbers from the known producers and consumers, use of estimates and surveys, collecting information through (or from) their customs among other methods.
- Currently, there is no validation by the Secretariat of the reported data. However, inconsistencies in the data are checked and rectified in consultation with the countries (e.g. reporting production for a specific use exceeding total production, or reporting abnormally high values compared to previous trends).
- Starting with data for 2005 reported exports by Parties are communicated in aggregated form at the end of the year to Importing Parties to allow some form of cross-checking and verification.
- Country data are not adjusted in any way and the formula is applied directly to the reported numbers.

### **Treatment of missing values**

The Secretariat does not try to fill in missing values for the country data, and these are simply left as non-reported.

For the European Community (EC) member states, their consumption is reported in aggregated form by EC, and individual EC member states do not report and are not required to report their consumption data.

### **Data availability**

There are 190 countries and 1 regional economic integration organization that are Parties to the Montreal Protocol: only 5 states, none of which are significant consumers, are not signatories of the protocol.

All countries that are Party to the Montreal protocol are obliged to report data not later than nine months after the end of the year to which the data related. 100% reporting for a given year is usually achieved by the end of next year. (The data are collected for all countries, and are available for 1986 and then annually from 1989 onwards.

Data are produced annually with a time-lag of approximately one year. Each country will report annually from the year for which the treaty enters into force for that country. Entry into force is usually 90 days after ratification of the protocol or an amendment.

### **Regional and Global estimates**

For regional and group estimates, simple straight summation is used to derive the estimates.

For years prior to the entry into force of the reporting requirement for a group of substances in an annex group, missing country consumption values have been estimated at the base year level. This country estimate is then used in the aggregation. This applies to substances in Annexes B, C and E, whose respective base years are 1989, 1989 and 1991 and whose years of entry into force are 1992, 1992 and 1994 respectively.

### **Expected time of release**

Data are released on the Secretariat's web site <http://ozone.unep.org/> continuously and incrementally as different countries report their data. However, the Millennium Development Goals (MDG) database is updated once annually, early in the calendar year.