Issues in Measuring the Millennium Development Goals Indicators[1]

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I. INTRODUCTION

This paper aims to discuss some issues about the measurement of Millennium Development Goals (MDGs) indicators. The MDGs summarize the development goals agreed on at international conferences and world summits during the 1990s. At the end of the decade, world leaders distilled the key goals and targets in the Millennium Declaration (September 2000). Based on the declaration, the United Nations Development Programme (UNDP) has worked with other United Nations departments, funds and programmes, the World Bank, the International Monetary Fund (IMF) and the Organisation for Economic Co-operation and Development (OECD) on a concise set of goals, numerical targets, quantifiable indicators to assess progress. The new set is known as the MDGs, which includes 8 goals, 18 targets and 48 indicators. The UN General Assembly has approved these as part of the Secretary-General's Millennium Roadmap.

With 1990 as baseline, by 2015, the MDGs are as follows: (i) extreme poverty and hunger will be halved; (ii) universal primary education will be achieved; (iii) gender equality will be promoted; (iv) under-five mortality will be reduced by two-thirds; (v) maternal mortality will be reduced by two-thirds; (vi) the spread of HIV/AIDS, malaria and tuberculosis will be reversed; (vii) environmental sustainability will be ensured; and (viii) global partnership for development with targets for aid, trade and debt relief will be established. The complete list of goals, targets and indicators is in Appendix 1. The definition, dimension captured, official international data source and issues regarding some indicators are also summarized in Appendix 1.

While there were very minimal consultations with national statistical systems (NSSs) during the formulation of MDGs, NSSs will have a prominent role in the monitoring of the MDGs because they are the ultimate source of these indicators. At the global level, the UN Secretary General is to report annually to the General Assembly on the progress towards a subset of the MDGs and to report more comprehensively every five years. For this purpose, a UN agency has been designated as official data source for each indicator. These UN agencies are expected to assemble baseline and current MDG statistics from country sources. At the country level, a UN Country Team composed of representatives from these agencies and counterparts from government will be responsible for monitoring progress and for preparing national MDG Report. This report is expected to be prepared at least once every two to three years. The periodicity of the national MDG Report depends on the government and the dissemination of other related national public reports.

The UN agenda has put considerable effort behind the MDGs, which, if realized will significantly reduce the poverty gap. Since the Asian Development Bank (ADB) shares this paramount goal, it has also adopted these MDGs in April 2002 and is now reorienting its

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processes to be able to design and implement projects that will help countries in achieving their targets. ADB serves developing Asia and Pacific, the largest developing region in the world in terms of landmass, population and aggregate income. This region is home to 3.3 billion people or over 70% of the developing world's population. Since about two thirds of the world's poor live in our region, ADB has adopted poverty reduction as its number one priority.

When ADB adopted the MDGs, the process of compiling the indicators was examined. We requested designated representatives of national statistical systems in two poorest sub-regions of Asia – South Asia and Mekong[3] -- for information regarding national official data sources, data compilation methodology and general views regarding the MDGs[4]. Similarly, we examined ADB's data requirements to support its operational activities. Goal 8, to develop a global partnership for development, however, was excluded in the inquiry because most of the indicators for this goal are compiled only by international organizations, such as the OECD, IMF and the World Trade Organization without any direct inputs from national counterparts. The following paragraphs summarize the result of these inquiries.

2. GENERAL ISSUES

At present, there are major differences in the statistics that are being compiled by the designated international official data sources and the NSSs. One example of these differences can be gleaned from Table 1 where poverty incidences (headcount ratios) of some countries computed on the basis of national poverty lines differ significantly from those derived by World Bank using $1-day criteria. Since countries prefer to use their own official poverty incidences in formulating their government programs, these differences could cause inconsistencies in the development of strategies and programs to achieve the MDGs at the national and international levels.

The following data compilation issues were also raised by the representatives of NSSs: (i) baseline statistics (1990) are not available; (ii) the indicators are not being compiled by any government agency within the national statistical system; (iii) some indicators are not meaningful because of the peculiarity of the government's infrastructure; (iv) indicators may not be comparable across countries because of differences in compilation methodologies and/or definitions; (v) some indicators may not be consistent across years because of differences in data sources; and (vi) most of the indicators are not compiled at sub-national level.

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[3] South Asia – Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka; Mekong -- Cambodia, Lao PDR, Myanmar, Thailand and Viet Nam.

[4] Under ADB Regional Technical Assistance 6007: Enhancing Social and Gender Statistics.

Table 1. Poverty Incidence in Selected Countries (%)				
	1990[a]		Latest Year	
DMC	Based on Country Poverty Line	Based on $1 a Day	Based on Country Poverty Line	Based on $1 a Day
China, People's Rep. of	8.6	29.4	4.6	18.8
India	36.0	52.5	26.1	44.2
Indonesia	15.1	14.5	23.4 [c]	7.7
Kazakhstan	34.6	2.0	31.8	1.5
Korea, Rep. of	4.5	2.0	7.4	<2.0
Kyrgyz Republic	43.5	18.9	52.0	18.9
Lao PDR	46.1	...	38.6	26.3
Malaysia	17.1	5.6	8.1 [b]	4.3
Nepal	42.6	...	42.0	37.7
Pakistan	26.6	11.6	32.2	31.0
Philippines	45.3	28.6	39.4	26.9
Sri Lanka	30.4	4.0	26.7 [b]	6.6
Thailand	27.2	2.0	12.9	<2.0
Turkmenistan	...	20.9	48.0	12.1
Uzbekistan	...	3.3	22.0	3.3

[a] Refers to available data nearest the year indicated in the column heading.
[b] Refers to percentage of poor households.
[c] Excludes East Timor.

Sources: ADB Key Indicators 2002 and past issues
            WB World Development Indicators 2002 and past issues

Net enrolment ratio (6) is rarely compiled while gross enrolment ratio is readily available. This is probably because the latter is generated easily from administrative records while the former has to be derived from several sources or from surveys that are very infrequent and highly specialized. On the other hand, proportion of pupils who reach grade 5, which is intended to capture the second of three components of universal primary education – completion of a basic education, may not be meaningful for countries that have different educational structure.

HIV prevalence among 15-24 year old pregnant women (18) is difficult to compile because there is no administrative reporting system on all pregnant women, by age group. The number of children orphaned by HIV/AIDS (20) is not easily compiled because there is no survey or administrative reporting in place for such purposes. Indicators on malaria (21-22) and tuberculosis (23-24), on the other hand, are not very relevant since these diseases have already been contained in Asia and the Pacific. Compilation of GDP per unit of energy use (27) seems difficult because of varying units of measures of different sources of energy and also because of the limitations of the type of energy. Carbon dioxide emission (28) is location specific and therefore, country averages may not be as meaningful. Other indicators that need further scrutiny regarding definitions and compilation methodology are the proportion of people with access to secure tenure (32) and proportion of population with access to affordable essential drugs on a sustainable basis (46).

In tracking the progress of countries, MDG indicators are also aggregated at sub-regional levels on the assumption that indicators are comparable across countries. Comparison of indicators across countries is also done to rationalize resource allocation. A study (Go 2001)

of several social indicators, however, concluded that oftentimes this assumption does not hold. South Asian and Mekong countries, for example, use different concepts of contraceptive prevalence rate, safe water and adult literacy rate.

Incomparability of statistics across time could also occur because differences in estimation methodology and changes in data collection strategy. Table 2 is an example of this occurrence. The infant mortality rates of Bangladesh vary across different types of data collection strategies – census, sample vital registration system and survey. Indirect estimates from the census yielded relatively lower estimates than the direct estimates from the sample vital registration system during the same period. It seems that age reporting errors and omission or under-reporting of the children who have died due to memory recall problems account for the low census estimates (Go 2001). Similarly, the infant mortality rate from the 1998 census of Cambodia resulted in a lower estimate (89 births per thousand live births) than that of the demographic survey of almost the same reference period (95 births per thousand live births).

Table 2. Infant Mortality in Bangladesh: Comparison of Data Sources (per 1,000 live births)						
Year	World Bank	UNICEF	SVRS	ESCAP	DHS	Census
1988			110.0			64.0
1989			98.0			
1990	90.6	96.0	94.0	114.0		69.0
1991			92.0	111.0	87.4	87.0
1992			88.0	109.0		
1993			84.0			
1994			77.0		82.2	
1995	74.1	75.0	71.0			
1996			67.0			
1997			60.0			
1998			57.0			
1999	...	58.0				
2000	60.0	54.0	50.0*			

* provisional estimate

Abbreviations: UNICEF - United Nations Children's Fund
                SVRS - Sample Vital Registration System
                ESCAP - Economic and Social Commission for Asia and the Pacific
                DHS - Demographic and Health Survey

Sources: Go, 2001; United Nations Website; World Bank Website.

Since the MDG targets are now being incorporated in the business process that identifies viable and relevant projects that could be supported by ADB, indicators at the sub-national level are required. The design and monitoring of these projects would also require statistics at a finer level of disaggregation. However, except for some that were compiled using administrative reports and those that were computed from recent censuses, MDG indicators at the sub-national level are very rare.

3. ANALYSIS

Issues regarding the differences of international and national statistics could be resolved by the active participation and coordination of the UN Country Teams that could serve as the link between the national statistical system and the MDG indicators international data sources. The bigger problems, however, are the unavailability of some indicators, incomparability of estimates across time and data sources and the lack of sub-national level data. These problems have to be discussed and resolved by the NSSs to be able to achieve a sound data support system for monitoring the MDGs.

Unavailability of some indicators

Some indicators are not available because the data collection strategy for them have not been developed and implemented. NSSs do not consider these indicators as vital because there is low demand for them. Because of very limited public funds allocated for statistics, these low priority indicators are not compiled regularly. And therefore, these indicators could only be compiled when there is external funding. When this happens, however, the methodology and scope for data collection are greatly influenced by the donor.

Special surveys such as nutrition and health surveys usually require highly specialized skills in the development of the survey instruments as well as in survey operations. To minimize non-sampling errors, face-to-face interviews are supplemented by other data collection methods such as laboratory tests, examination of health records, diary method, food weighing, etc. These techniques are sometimes neglected when donors rely solely on national statistics offices to conduct these special surveys.

Proxy indicators derived from existing administrative records could also be used as alternative to the MDG indicators. However, this would require intensive coordination between statistics offices and other government agencies – ministries of health, education, environment, etc. International standards on concepts, definitions and estimation procedure must also be applied to data compilation from administrative records. Changes in the format of the records and data processing workflow may have to be implemented in this process.

Incomparability of estimates across time and data sources

Incomparability of estimates across time occurs because of changes in concepts, definitions, and estimation procedures. Differences in the coverage of surveys or in data collection instruments could also cause these inconsistencies. This situation should be considered when planning new data collection strategies. Methodological studies could be conducted to examine the consequences of changes in sampling design, coverage, data collection instruments and other relevant aspects of the data collection strategy before implementing these changes.

There are only very few developing countries in the region that have a system of household surveys that regularly collects social and economic statistics. Most countries conduct surveys intermittently or whenever external funding is available. Donors could impose changes in scope and methodology of surveys. To fulfill these requirements as well as maintain consistent data series across time, procedures could be developed and incorporated in the surveys. This approach, however, would also require careful planning and methodological research.

Research and careful planning are also needed for harmonizing various data collection instruments – surveys, censuses and administrative records/systems. Since surveys are very expensive to conduct, the use of existing administrative records/systems should be explored. In addition to regular household socio-economic survey, for example, Thailand collects grassroots level data covering 98 indicators on health, housing, education, living standards and income. These data are collected, stored, summarized and forwarded to the higher political hierarchy by the local government unit. Similar data collection methodology is also done in Laos, Vietnam, Mongolia and Indonesia. The data generated from these community-based monitoring systems (CBMSs) are used for targeting the poor and for planning purposes at the village/municipality level. CBMSs are generally cheaper than surveys because they employ whatever is the available political infrastructure as the data collection mechanism. They could also be conducted more frequently. However, because government officials are perceived to have vested interest to the data that they collect, the CBMSs' results are often subject to biases. Also, the application of standard concepts or definitions of the indicators that are being collected are often neglected. Moreover, the NSSs have to find ways of how to assimilate the data from these CBMSs and those from their regular household surveys.

Another example is the civil registration system (CRS) that exists in most South Asian countries and which could be a source for mortality and fertility rates. This alternative data source, however, remained unexplored in most countries because of under-reporting and in some cases, because of lack of data processing capabilities. To adjust for underreporting, India and Bangladesh have developed what is termed as the sample registration system that conducts continuous field investigation of the CRS in selected areas.[5] The statistics from this sample registration system are considered official by both countries.

Lack of sub-national level data

Countries agree that because the household surveys that they conduct are not designed to generate small area statistics, the resulting poverty and MDG-related statistics could only be used for policy making and monitoring purposes at the national level. After the 1997 Asian crisis, the demand for small area poverty and related statistics at a more frequent period increased because of the immediate need to reach out to those who were severely affected. Increasing the sample sizes of regular household surveys and conducting these surveys more frequently, however, are not possible in most countries because of the very limited resources that their governments allocate to statistics.

Alternative data sources such as the CRS and CBMS could be explored and improved to provide sub-national estimates. Also, small area estimation as well as data mining techniques could also be used in combining available data from different sources such as surveys, censuses and administrative records to generate these estimates. Successful implementation of these techniques that are commonly used by advanced countries requires analysis-ready electronic data files and personnel highly skilled in statistical programming and advanced statistical methods.

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[5] Sample Vital Registration System (SVR) in the case of Bangladesh

4. RECOMMENDATION

Considering the varying trends of MDG indicators across countries, the degree of relevance of different goals and corresponding targets would also differ across countries. For example, since the trends of indicators for goal 3 (promote gender equality and empower women) show that significant disparity among men and women still exist and those indicators for goal 4 (reduce child mortality) indicate that infant mortality rates have not declined as expected, South Asian countries may focus more in achieving gender equality and in controlling high infant mortality. On the other hand, Mekong countries could give priority to the control of HIV/AIDS because of alarming trends in the prevalence of this disease. Countries, therefore, should be able to define a subset of the MDGs that they would focus and could afford to effectively monitor.

Effective monitoring requires methodological research and careful planning and coordination among concerned government and international agencies. Given a specific subset of the MDGs, a coherent data compilation strategy should be developed and implemented. The strategy should identify the most efficient data collection instrument for each indicator. Also, data content, frequency, design and estimation of surveys and censuses should be examined to minimize inconsistent data series across time. The strategy should also consider that the value added by measuring these indicators every year may be insignificant since the yearly change in these indicators may not be detected or may not be statistically significant because such changes are usually small relative to sampling error (David 2000). An in-depth study is therefore needed to find ways of making surveys more efficient and cost effective. Moreover alternative viable data sources should also be explored and improved. Small area estimation, data mining and other advanced statistical techniques should be studied and applied to generate statistics from existing data sources instead of conducting new surveys.

The recommendations above entail a well-coordinated and strengthened national statistical system. To achieve this, the national statistical system needs support from the government and a donor community that understands and subscribes to the data compilation strategy of the country.

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APPENDIX

Millennium Development Goals

Goal 1: Eradicate extreme poverty and hunger

Indicators (Data Source)	Dimensions Captured and Definition	Comment
Target 1. Halve, between 1990 and 2015, the proportion of people whose income/consumption is less than one dollar a day		
1. Proportion of population below $1 per day (WB)	**Dimension captured:** *incidence of poverty* The indicator measures the proportion of the population whose income/consumption levels fall below a prescribed poverty line. It reflects the purchasing power that households have over goods and services need to escape poverty (food, clothing, housing and other non-food essentials). **Definition** *Population below $1 per day* is the percentage of the population whose income/consumption falls below the *poverty line*. Individuals are considered as poor if the per capita real income/consumption of the household to which they belong is below the benchmark *poverty line*. The *poverty line* used here is one dollar per person per day, measured at 1985 purchasing power parity. The figure of $1 a day was chosen because it is typical of the poverty lines in low-income countries. By the same token, it is much lower than the poverty lines found in middle- or high-income countries. For these reasons data for the incidences of poverty using the national poverty line is also used.	**Indicator limitations:** • Design and definitions used in implementation of national household surveys can vary; • Varying methods for computing non-market consumption and intra-family shares of consumption; • Differing patterns of consumption by the poor in different countries; • Ratio is calculated on a household basis. It does not provide information: on income distribution within the household; on income distribution between genders; or on income disparity within the country/regions.
2. Poverty gap ratio (incidence x depth of poverty) (WB)	**Dimension captured:** *magnitude of poverty* This indicator measures magnitude of poverty, considering both the number of poor people, and how poor they are. **Definition** The *Poverty Gap Ratio* is the combined measurement of incidence of poverty and depth of poverty. Incidence of poverty, measured by the Poverty Headcount Ratio, is the proportion of people who live below the poverty line. Depth of poverty is the difference between the poverty line and the average income of the population living under the poverty line, expressed as a fraction of the poverty line. By multiplying the incidence of poverty by the depth of poverty we get a measure of the magnitude of poverty.	Strictly, this goal concerns the incidence of poverty. But it is interpreted here more generally to refer to other dimensions of poverty, covering the depth of poverty as well as its nutrition dimension. **Example:** In a given country, 30% of the population is below the poverty line ($1 a day per person at 1985 purchasing power parity). On average, the income of these poor people is 20% below the poverty line (i.e. it is 80 cents a day at 1985 PPP). The poverty gap ratio for this country is therefore 30% x 20%= 6% **Indicator limitations:** This indicator is generally from the same source as the Population below $1 a day. It therefore has similar strengths and weaknesses.
3. Share of poorest quintile in national income (WB)	**Dimension captured:** *inequality in consumption* The indicator measures the inequality in the distribution of income/expenditure as it affects the most vulnerable group in population, who generally live below or close to poverty threshold. While overall consumption growth in a country has a strong positive relationship with poverty reduction, inequality may increase or *decrease*. This indicator helps capture the extent to which changes in the poverty headcount affect the consumption level of poorest fifth of population. **Definition** Inequality is defined as the income/expenditure of the poorest	This indicator should be used in conjunction with the other poverty indicators, i.e. Incidence times Depth of Poverty and Incidence of Extreme Poverty. Its purpose is to highlight how changes in the share of national consumption can affect the overall levels of poverty and vice versa. **Indicator limitations:** The indicator limitations are the

Indicators (Data Source)	Dimensions Captured and Definition	Comment
	20% of the population divided by total income/expenditure of the whole population.	same as for the Poverty Headcount Ratio.
Target 2. Halve, between 1990 and 2015, the proportion of people who suffer from hunger		
4. Prevalence of underweight children (under five years of age) (UNICEF-WHO)	**Dimension captured:** *child malnutrition* An indication of poverty is the prevalence of malnourished children. Of course, reducing malnutrition is an end in itself. The use of the underweight prevalence serves two purposes: to cross-check the results of the money-metric approach (poverty ratios), and to indicate progress in improving child nutrition, especially among the poor. **Definition** *Prevalence of Underweight Children* measures the proportion of *underweight children* under-five as a percentage of child population under-five. A child is considered to be underweight if his or her weight-for-age ratio is more that two standard deviations below the median weight for the healthy reference population.	This indicator refers to the objective of reducing the proportion of people living in extreme poverty by at least one half by the year 2015. Strictly, this goal concerns the incidence of poverty. But it is interpreted here more generally to refer to other dimensions of poverty, covering the depth of poverty as well as its nutrition dimension. Underweight indicators combine wasting and stunting measures. It is useful as a single indicator, but it does not distinguish between current and past malnutrition. The WFS (Rome 1996) goal is expressed in terms of absolute numbers. Malnutrition in childhood has an effect for the rest of the child's life.
5. Proportion of population below minimum level of dietary energy consumption (FAO)		

Millennium Development Goals

Goal 2: Achieve universal primary education

Indicators (Data Source)	Dimensions Captured and Definition	Comment
Target 3. Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling		
6. Net enrolment ratio in primary education (UNESCO)	**Dimension captured:** *participation in education* Enrolment in Primary Education measures one of the three dimensions of universal primary education: the extent of educational participation of the eligible primary school-aged children and youth. **Definition** *Net Enrolment in Primary Education* is defined as the percentage of children of primary school age who are enrolled in primary education.	**Indicator limitations:** • Reliability of national school censuses or Administrative Data Sources • Data gaps: national statistical capacity; • Over-reporting of enrolments; • Underreporting of school-age population. • Coverage and availability of population census data to compile denominator • Children repeating years may be mistakenly included in the net figures. • Reporting of children's ages is difficult without accurate birth records
7. Proportion of pupils who enroll in grade 5 (UNESCO)	**Dimension captured:** *education retention* Survival to 5th grade captures the second of three components of universal primary education: completion of a basic education. Children who complete grade 4 (and enroll in grade 5) of primary school are generally believed to have attained the objectives of primary education by having basic literacy and numeracy skills that would enable them to continue learning. **Definition** *Survival to 5th Grade of primary education* measures the proportion of school children enrolled in grade 1 of primary education who have enrolled in grade 5 and as a percentage of the initial number of school children in grade 1.	**Indicator limitations:** • Reliability of national school censuses and administrative data sources • National statistical capacity • Modeling and estimation: problems to take account of dropouts and repeaters
8. Adult literacy rate (Literacy rate of 15-24-year-olds) (UNESCO)	**Dimension captured:** *literacy (15-24 year-old)* Literacy in 15-24 year-olds captures the recent education outcomes of primary and secondary education. Given the age structure of the population and the cost of adult education, it would be more costly to redress the previous lack of education by targeting adult literacy more generally. Adult literacy figures for the whole population are, however, included under "General Indicators". **Definition** This indicator is simply the proportion of the population aged 15 to 24 who are literate. A person is said to be literate when he or she can both read and write with understanding a short and simple statement on his or her everyday life.	**Indicator limitations:** • Self completion questionnaires can yield biased results due to embarrassment of declaring oneself illiterate • Standards of literacy will vary – This indicator does not capture that variation.

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Goal 3: Promote gender equality and empower women

Indicators (Data Source)	Dimensions Captured and Definition	Comment
Target 4. Eliminate gender disparity in primary and secondary education, preferably by 2005, and to all levels of education no later than 2015		
9. Ratio of girls to boys in primary, secondary and tertiary education (UNESCO)	**Dimension captured:** *equality in education* This indicator seeks to measure equality in opportunity for boys and girls to participate in primary and secondary education. Investment in education for girls has been shown repeatedly to be one of the most important determinants of development, with positive implications for all other measures of progress. Achieving gender equality in education will be a measure of both fairness and efficiency. **Definition** *Ratio of Girls to Boys in Primary & Secondary Education* measures the difference in opportunity for boys and girls to participate in primary and secondary education. This indicator is defined as the combined primary and secondary gross enrolment ratio for girls as a percentage of the combined primary and secondary gross enrolment ratio for boys. A *Ratio of Girls to Boys in Primary & Secondary Education* rate equal to 100% signifies that girls and boys participate equally in primary and secondary education. A *Ratio of Girls to Boys in Primary & Secondary Education* rate significantly lower that 100% signifies that girls have less opportunities than boys to participate in primary and secondary education.	In order to improve coverage of this indicator, participation in education is based on gross enrolment ratios and not net enrolment ratios. This choice does not significantly bias indicator results.
10. Ratio of literate females to males of 15-to-24-year-olds (UNESCO)	**Dimension captured:** *equality in education* This indicator seeks to capture achievement of Ratio of Literate Females to Males aged 15 to 24. Gender disparity in adult literacy results from unequal opportunity of boys and girls to acquire basic literacy skills in primary and secondary education and the legacy of adults, particularly women, who received no education. **Definition** *Ratio of Literate Females to Males* measures the difference in ability of men and women aged 15 to 24 to read and write (see *Literacy rate of Adults aged 15 to 24*). This indicator is the female *Adult Literacy Rate* as a percentage of male *Adult Literacy Rate* in a given age group. A *Ratio of Literate Females to Males* rate equal to 100% signifies that the same proportion of women as of men are literate. A *Ratio of Literate Females to Males* rate significantly lower than 100% signifies that fewer women than men are literate.	See Literacy Rate of Adults aged 15 to 24 for limitations of this indicator
11. Share of women in wage employment in the non-agricultural sector (ILO)		
12. Proportion of seats held by women in national parliament (IPU)		

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Goal 4: Reduce child mortality

Indicators (Data source)	Dimensions Captured and Definition	Comments
Target 5. Reduce by two thirds, between 1990 and 2015, the under-five mortality rate		
13. Under-five mortality rate (UNICEF-WHO)	**Dimension captured:** *child mortality* The child mortality and infant mortality rates measure the survival of children, but that survival is a reflection of the social, economic and environmental influences that impinge on children's lives. It is, therefore, not just a measure of health services (both preventive and curative), but more broadly of the milieu into which children are born. These mortality rates are, therefore, good overall indicators of development as it affects children. **Definition** The *Under-Five Mortality Rate* is the number of children who have died between birth and their fifth birthday expressed per thousand live births.	Child health is a commonly used, easily understandable, and universally supported goal of development. Improvements in child health have been set as goals of all the major conferences. As children are the future of every country, their situation is always of concern, whether it be the concern of leaders and policy makers, or of parents and the general public. In calculating the goal for 2015, countries are assumed to reduce their child mortality to the lower of two-thirds the 1990 level or the Cairo goal of no more than 45%.
14. Infant mortality rate (UNICEF-WHO)	**Dimension captured:** *infant mortality* The child mortality and infant mortality rates measure the survival of children, but that survival is a reflection of the social, economic and environmental influences that impinge on children's lives. It is, therefore, not just a measure of health services (both preventive and curative), but more broadly of the milieu into which children are born. These mortality rates are, therefore, good overall indicators of development as it affects children. **Definition** The *Infant Mortality Rate* is the number of children who have died between birth and their first birthday, expressed per thousand live births.	In calculating the goal for 2015, countries are assumed to reduce their infant mortality to the lower of two-thirds the 1990 level or the Cairo goal of no more than 35%.
15. Proportion of 1-year-old children immunized against measles (UNICEF-WHO)		

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Goal 5: Improve maternal health

Indicators (Data source)	Dimensions Captured and Definition	Comment
Target 6. Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio		
16. Maternal mortality ratio (UNICEF-WHO)	**Dimension captured:** *maternal mortality* Maternal mortality reflects not only women's access to and use of essential health care services during pregnancy and child birth, but also broader underlying socio-economic factors including women's general health and nutritional status, access to reproductive health care services including family planning, access to resources and educational, social and economic status. **Definition** The *Maternal Mortality Ratio* is the annual number of maternal deaths per 100,000 live births. A maternal death is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes (as cited in ICD 10).	The incorporation of maternal mortality reduction into the goals of the international community reflects its importance as a measure of human and social development. **Indicator limitations:** Most methodologies available for estimating maternal mortality have large margins of error (wide confidence internals). As a result, care needs to be taken in interpreting changes in the ratio over time. Because of large sample size requirements, survey methods are limited in their ability to detect statistically significant changes in maternal mortality over time. Proxy indicators for monitoring progress are proposed [UNICEF, WHO and UNFPA (1997) *Guidelines for monitoring the availability and use of obstetric services*].
17. Proportion of births attended by skilled health personnel (UNICEF-WHO)	**Dimension captured:** *maternal mortality* This indicator is a measure of the health system's potential to provide adequate coverage for deliveries and provides information on the actual use of skilled assistance during delivery. This indicator is an indirect measure of the health system's potential to provide adequate access to essential health care for pregnant women during childbirth coverage for deliveries and provides information on the actual use of skilled assistance during delivery. The skilled attendant should have the necessary back-up and supplies, drugs and equipment to provide life-saving care to women who develop pregnancy-related complications. This indicator also addresses the goal of providing access, through the primary heal-care system, to reproductive health services, including quality family planning services that are affordable, acceptable and accessible to all who need and want them. **Definition** This indicator is the number births attended by a skilled health worker over one year as a percentage of total number of births during the same period. This indicator also reflects access to reproductive health services although strictly speaking it is an indicator of utilization rather than access as such. Access is measured directly in many countries at present. Careful definition of the level of skills of the birth attendant is needed. In addition, the birth attendants need the necessary back-up, supplies and supervision as well as the possibility of referral to a higher level of care should complications arise which they are unable to manage.	**Skilled health personnel:** Doctors (specialist or non-specialist), and/or persons with midwifery skills who can manage normal deliveries, and diagnose, manage or refer obstetric complications. Skilled health personnel should *exclude* the following even if they have received training: ○ The trained traditional birth attendant (TBA), who initially acquired skills by delivering babies through apprenticeship to other TBAs but who has, in addition received a short course of training; ○ Any other attendant, including family members designated by an extended family to attend births in that family, and the traditional birth attendant who assists mothers during childbirth and initially acquired her skills by delivering babies herself or through apprenticeship to other TBAs.

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Goal 6: Combat HIV/AIDS, malaria, and other diseases

Indicators (Data source)	Dimensions Captured and Definition	Comment
Target 7. Have halted by 2015 and begun to reverse the spread of HIV/AIDS		
18. HIV prevalence among 15-to-24-year-old pregnant women (UNAIDS, WHO, UNICEF)	Figures shown are for all 15 to 49 yr-olds	
19. Contraceptive prevalence rate (UNAIDS, UN Pop. Division)	**Dimension captured:** *use of contraceptives* The ability to make free and informed decisions regarding the number and timing of children is a key goal of the Cairo Program of Action. Enabling women to take decisions about reproduction is closely related to decision-making in other aspects of their lives and provides them with the possibility of realistic alternatives to childbearing as a means of obtaining social status. There is general agreement that persistent widespread poverty as well as serious social and gender inequities have significant influences on, and are in turn influenced by, demographic parameters such as population growth, structure and distribution. **Definition:** The percentage currently using contraception, both traditional and modern methods, among currently married women of reproductive age, including where possible, those in consensual unions.	**Goal addressed:** *reproductive health* Addresses the goal of providing access, through the primary health-care system, to reproductive health services, including quality family planning services that are affordable, acceptable and accessible to all who need and want them. This will enable couples and individuals to decide freely and responsibly the number and spacing of their children and have the information and means to do so. Contraceptive method: Includes female and male sterilization, indictable and oral hormones, intrauterine devices, diaphragms, spermicides and condoms, natural family planning and lactational amenorrhea were cited as a method. **Numerator:** Number of women of reproductive age (15-49) who are currently using (or whose partner is using) a contraceptive method a given point in time. **Denominator:** Total women of reproductive age (15-49) at the same point in time (since precise data on the number of married women and those in consensual unions are not available).
20. Number of children orphaned by HIV/AIDS (UNICEF, UNAIDS, WHO)		
Target 8. Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases		
21. Prevalence and death rates associated with malaria (WHO)	Prevalence of malaria (per 100,000 people) 1997	
22. Proportion of population in malaria risk areas using effective malaria prevention and treatment measures		

Indicators (Data source)	Dimensions Captured and Definition	Comment
(UNICEF-WHO)		
23. Prevalence and death rates associated with tuberculosis (WHO)	Prevalence of tuberculosis (per 100,000 people) 1998	
24. Proportion of tuberculosis cases detected and cured under directly observed treatment short course (DOTS, WHO)		

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Goal 7: Ensure environmental sustainability

Indicators (Data source)	Dimensions Captured and Definition	Comment
Target 9. Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources		
25. Proportion of land area covered by forest (FAO)		
26. Land area protected to maintain biological diversity (UNEP-IUCN)	**Dimension captured:** *protected areas* Protected areas are an essential tool for an ecosystem conservation, with functions going well beyond the conservation of biological diversity. As such they are one of the building blocks of sustainable development. **Definition** This indicator represent the extent to which areas important for conserving biodiversity, cultural heritage, recreation, natural resource maintenance, and other values, are protected from incompatible uses. **Numerator:** Surface of totally protected or protected areas expressed in km^2. **Denominator:** Total surface of the country in km^2 *Totally protected areas* are areas maintained in a natural state and are closed to extractive uses. They comprise National Nature Reserves, National Parks, and National Monuments. *Partially protected areas* are managed for specific uses such as recreation, or to provide optimum conditions for certain species or ecological communities. They are also necessary to protect valued expressions of human relationships with nature in terms of landscape.	**Indicator limitations** The effectiveness of this indicator is limited by two problems. First, it represents *de jure* not *de facto* protection. It does not indicate quality of management or whether the areas are in fact protected from incompatible uses. Second, the indicator does not show how representative the protected areas are of the country's ecological diversity. This is a significant deficiency, since a large proportion of the same ecosystems may be protected to the neglect of others. Biodiversity is a global issue. It is intended to improve the indicator to underscore the importance of the areas protected and level of protection in force. An informal target of protection of 10% for each major *ecological region was* put forward in the 1991 *Caring for the Earth: A Strategy for Sustainable Living.* This target reflects recognition that representation of ecosystem diversity is more meaningful than a flat percentage of the country's area.
27. GDP per unit of energy use (as proxy for energy efficiency) (UNSD, IAEA, World Bank)	**Dimension captured:** *commercial energy use* Each stage in the production, transport, and use of energy has an impact on the environment. The quantity and mix of energy used in a country are an indicator both of potential environmental impact, and roughly of the country's stage of development. This indicator provides a measure of energy efficiency. Differences over time and across countries are influenced by structural changes in the economy, and in fuel mixes. The most important factor affecting energy efficiency is the rapid rise in energy use as countries approach middle-income status. **Definition** This indicator is a measure of energy efficiency. It is the US dollar estimate of real GDP (at 1987 prices) per kilogram of oil equivalent of commercial energy use. Commercial energy use is indigenous production plus imports and stock changes, minus exports and international marine bunkers.	This indicator excludes private energy use which will grow with rising prosperity.
28. Carbon dioxide emissions (metric tons per capita) (UNFCCC, UNSD)	**Dimension captured:** *CO2 emissions* While there are natural emissions of carbon dioxide, anthropogenic emissions have been identified as a source of climate change and are the subject of an international	Plus two figures of global atmospheric pollution: ozone depletion and the accumulation of global warming gases.

Indicators (Data source)	Dimensions Captured and Definition	Comment
[Plus two figures of global atmospheric pollution: ozone depletion and the accumulation of global warming gases] (UNEP-Ozone Secretariat)	convention. Such emissions are largely influenced by a country's energy use and production systems, its industrial structure, its transport system, its agriculture and forestry systems, and the consumption patterns of the population. **Definition** This indicator measures emissions of carbon dioxide from industrial processes and land use change. Emissions of carbon dioxide are estimated based on activity data from fuel combustion, fugitive fuel emissions, industrial processes, solvent uses, agriculture, land use change, and forestry and waste. **Numerator:** Metric tons of carbon dioxide emissions from industrial processes and land from use change. This includes industrial contributions to the CO_2 flux from solid fuels, liquid fuels, gas fuels, gas flowing, cement manufacture, and deforestation. **Denominator:** Total population	**Indicator limitations:** When there is a large amount of non-commercial energy that does not go through normal market channels, the measures will tend to understate total generation of carbon dioxide and overestimate the efficiency of energy use. ○ IEA have comprehensive data on CO_2 emissions from energy use, but CDIAC data reported in the WDI have been used instead because they also include CO_2 emissions from other sources. CDIAC: Carbon Dioxide Information Analysis Center. CDIAC calculations of CO_2 emissions are based on data on the net apparent consumption of fossil fuels from the World Energy Data Set maintained by the UN Statistical Division.
29. Proportion of population using solid fuels (WHO)		
Target 10. Halve by 2015 the proportion of people without sustainable access to safe drinking water		
30. Proportion of population with sustainable access to an improved water source (WHO-UNICEF)	**Dimension captured:** *access to safe water* Access to safe water is of fundamental significance to lowering infant and child mortality. Its association with other socio-economic characteristics, including education and poverty, also makes it a good universal indicator of human development. **Definition** *Population with Access To Safe Water* is the share of the population with reasonable access to an adequate amount of safe water (including treated surface water and untreated but uncontaminated water such as from springs, sanitary wells, and protected boreholes). In urban areas the source may be a public fountain or standpost located no more than 200m away. In rural areas the definition implies that members of the household do not have to spend a disproportionate part of the day fetching water. An adequate amount of water is that needed to satisfy metabolic, hygienic and domestic requirements, usually about 20 liters of safe water a person per day. **Numerator:** number of people with access to safe water **Denominator:** total number of people considered.	**Indicator limitations** ○ The existence of a water outlet within reasonable distance is often used as a proxy for availability of safe water; ○ The definition of safe water has changed over time and there still are inter-country differences in standards, e.g. the distance for "reasonable access". ○ Households may be recorded as having access even though, for example, their handpump is broken or the individual is unable to physically reach the pump. ○ It is proposed to develop this measure to better reflect the sustainability of access to water.
Target 11. By 2020 to have achieved a significant improvement in the lives of at least 100 million slum dwellers		
31. Proportion of people with access to improved sanitation (WHO-UNICEF)		
32. Proportion of people with access to secure tenure (HABITAT)	*[Urban/rural disaggregation of several of the above indicators may be relevant for monitoring improvement in the lives of slum dwellers]*	

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Goal 8: Develop a global partnership for development

Targets		Indicators (Data Source)
Target 12.	Develop further an open, rule-based, predictable non-discriminatory trading and financial system Includes a commitment to good governance, development, and poverty reduction -both nationally and internationally	*Some of the indicators listed below are monitored separately for the least developed countries (LDCs), Africa, landlocked countries and small island developing States*
Target 13.	Address the special needs of the least developed countries Includes: tariff and quota free access for least developed countries' exports; enhanced programme of debt relief for HIPCs and cancellation of official bilateral debt; and more generous ODA for countries committed to poverty reduction	**Official development assistance** 33. Net ODA, total and to LDCs, as percentage of OECD/DAC donors' gross national income (OECD) 34. Proportion of total bilateral, sector-allocable ODA of OECD/DAC countries to basic social services (basic education, primary health care, nutrition, safe water and sanitation) (OECD) 35. Proportion of bilateral ODA of OECD/DAC donors that is untied (OECD)
Target 14.	Address the special needs of landlocked countries and small island developing States (through the Programme of Action for the Sustainable Development of Small Island Developing States and the outcome of the twenty-second special session of the General Assembly)	36. *ODA received in landlocked countries as proportion of their GNIs (OECD)* 37. *ODA received in small island developing States as proportion of their GNIs (OECD)*
Target 15.	Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term	**Market access** 38. Proportion of total developed country imports from developing countries (by value and excluding arms) and from LDCs, admitted free of duties (WTO, UNCTAD, World Bank, IMF) 39. Average tariffs imposed by developed countries on agricultural products and textiles and clothing from developing countries (WTO, UNCTAD, World Bank, IMF) 40. Agricultural support estimate for OECD countries as percentage of their GDP (OECD) 41. Proportion of ODA provided to help build trade capacity (WTO, OECD) **Debt Sustainability** 42. *Total number of countries that have reached their HIPC decision points and number that have reached their HIPC completion points (cumulative) (IMF)* 43. *Debt relief committed under HIPC initiative, US$ (IMF)* 44. Debt service as a percentage of exports of goods and services (World Bank)

Targets		Indicators (Data Source)
Target 16.	In cooperation with developing countries, develop and implement strategies for decent and productive work for youth	45. Unemployment rate of 15-to-24-year-olds, each sex and total (ILO)
Target 17.	In cooperation with pharmaceutical companies provide access to affordable essential drugs in developing countries	46. Proportion of population with access to affordable essential drugs on a sustainable basis (WHO)
Target 18.	In cooperation with the private sector, make available the benefits of new technologies, especially information and communications	47. Telephone lines and cellular subscribers per 100 48. Personal computers in use per 100 population (ITU) Internet users per 100 population (ITU)