Monitoring the millennium development goals

Current weaknesses and possible improvements

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Preface/Acknowledgements

Table of contents

List of Tables

List of Figures

Executive Summary

This short study was commissioned against a background of attempts by the Millennium Development Goals (MDG) Task Force, and others, that are aimed at improving the quality of MDG indicators.

The particular aim of the study is to provide a better understanding of the monitoring process and its standards, and to highlight areas for possible improvement. This report summarises the results of the international component of the study.

The report begins by addressing current weaknesses of MDG data in two separate sub-sections:

1. data availability, and

2. comparability issues.

The report concludes by identifying and discussing five activities that could have a large impact on the MDG indicators for a low cost.

Current Weaknesses of the MDG Indicators

The current weaknesses of the MDG indicators can be organised around two key questions:

1. what is the level of data available ?, and

2. can a judgement be made about the quality of that indicator i.e. is the data comparable over time and between places ?.

What has been the level of data availability? During the 1990s the availability of data for the 48 MDG indicators saw improvement in almost all cases. However, there are very significant differences in availability between geographic areas and over time. These differences in availability and coverage are best explained by the "age" of the indicator, with indicators that have been widely used for many years having considerably better coverage and availability than "newer" indicators.

The report presents a brief statistical analysis of the coverage of the 48 indicators and this analysis shows that:

- data availability has been improving - for more than 80% of the indicators data coverage improved;

- however, the availability of data still needs considerable improvement - at the end of the 1990s for about one fourth of the indicators the population covered for LDCs and SSA is less than fifty percent;

- finally, "availability" might be exaggerated because for 8 MDG indicators[1] predictive models, based on earlier data rather than current data, are used to generate estimates.

Comparability – data increasingly available but analytically useful? When data is available is it of high enough quality to be analytically useful? Clearly, differences in definitions and methods of calculation of an indicator can mean reduced opportunities for performance comparisons between regions and for comparisons over time.

Overall 18 of the 48 indicators are affected by comparability issues, and in particular Goals 1,2,3 and 5 (poverty and hunger, primary education, gender equality, maternal health) are especially seriously affected.

Definitional Issues: There are three main definitional problems:

1. Lack of clarity in the definition provided by the international agencies. Newer indicators tend to be subject to more debate and revision than the old and established indicators. Frequent revisions results in poor comparability. Examples include "HIV prevalence among 15-24 year old pregnant women"; the "condom use rate of the contraceptive prevalence rate", and more generally, indicators that measure the spread of HIV/AIDS,

2. Clear international definition, but some countries and some agencies still use alternative definitions to measure the same indicators. For example, in the case of "literacy", UNESCO provides a very clear definition that is not adhered to in many censuses and indeed in widely used Demographic and Health Surveys (DHS).

3. Clear definitions but difficulties in operationalising them in some country-specific contexts. This problem applies particularly to five indicators[2] where precise international classification and differences in the strictness of interpretation promote comparability problems. For example, in the case of "the proportion of births attended by skilled health personnel" although international definitions clearly define skilled health attendants as doctors, midwives and nurses, professional categories do not always fall into this precise international categorization.

Methodological Differences: For a number of indicators different calculation methods are used to derive estimates. These different methodologies can sometimes introduce biases that severely restrict cross country or time series comparisons. That said when the methodology is used consistently comparisons can become possible.

Some examples are presented below:

- For the indicator "share of women in wage employment in the non-agricultural sector", available estimates make use of two main sources of information: labour force surveys and establishment surveys (other sources are administrative and official statistics or insurance records). However, the coverage of these surveys makes international comparison difficult. For example, in Algeria the establishment survey covers only the public sector, whilst in other cases establishment surveys can exclude the informal sector or small enterprises,

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[1] Literacy; infant, child and maternal mortality; measles immunisation; improved water and sanitation; and malaria prevalence.

[2] "Attended Births", "Improved Water", "Improved Sanitation", "women in wage employment" and "unemployment amongst 15-24 year olds".

- For the indicator "share of poorest quintile in national consumption", about 40% of reported values are income shares instead of consumption shares. This generally tends to produce values that are lower than those calculated with consumption. A similar problem applies to the poverty indicators,

- In the case of measles immunization, when available, household survey data are often used to recalibrate officially reported estimates, but if household survey estimates do not exist, only official data are taken into consideration. For instance in Tunisia, official reported coverage since 1997 was above 90%, but a recent household survey estimated a coverage in 1999 of just above 70%,

- In indicators of access to water and sanitation improved systems, administrative data report a provider perspective while household surveys are closer to the user perspective. Although much of the provider data has been replaced with data from household surveys (whenever possible), there are still cases in which administrative data are the only available source[3].

Priority Activities

Unfortunately, many of the problems outlined in the previous section can only be addressed as more data become available. However, there are areas that are within the control of international agencies that if properly addressed could lead to substantial improvements in international data even in a relatively short time period. These areas are not based on the collection of more data, but on better management and use of the present resources. The key areas include:

- appropriate and additional use of available data from household surveys with an investigation of the potential benefits of an international household survey database;

- changes in the use by international organisations of data reporting questionnaires sent out to national governments;

- changes in the use of international population data in the calculation of some indicators;

- changes in the management of common methodologies and definitions; and

- changes in data management practices.

Appropriate and Additional Use of Household Surveys and the Creation of an International Surveys Database The use of data from household surveys could dramatically improve both the quality and coverage of certain indicators that do not currently make full use of household survey data. This would potentially apply to four indicators in education and literacy: the net enrolment ratio (NER), the survival ratio, literacy rate of 15-24 year-olds, the ratio of girls to boys in primary, secondary and tertiary education, and the ratio of literate females to males of 15-24 year-olds.

The inclusion of data from existing household surveys could make significant differences to the estimates for these four indicators. For the NER we could have information on an extra 10% of countries; for the survival rate to grade 5, this percentage increases to about 40%, and in the case

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[3] If administrative data are the only available source of data there is certainly a benefit in using them, but when different sources of data are used they should be properly distinguished.

of literacy indicators estimates could be based on information that on average is more recent by eight years.

In addition to these indicators household survey data could also potentially be used for 'the proportion of population below minimum level of dietary energy consumption'. For this indicator, household survey data could complement the information currently available and challenge some of the present results with benefits for the quality of the data.

An international surveys database would go some way to provide a sustainable solution to problems of availability, comparability and timeliness. Some of the MDG agencies have put in place sophisticated networks in order to identify and select household surveys for use in generating MDG indicators. Examples include WHO's Global Database on Child Growth and Malnutrition; UNICEF's CRING database that includes data on Infant and Under-5 Mortality Rates. All agencies maintain some type of formal or informal network for that aim to capturing new available sources of data, including household survey data.

However, these networks can and do miss important data gathering opportunities (e.g. malnutrition data in Malawi; mortality and immunisation data in Pakistan) from multi-topic household surveys that collect a range of MDG data. Such multi-topic household surveys are becoming increasingly available for example the MICS, the DHS, and the LSMS.

An international household survey database could potentially document and archive the surveys and collect and eventually provide support documents (questionnaires, manuals of interviewers, sampling information, etc.).

The benefits of such a database would be of three kinds:

1) An improvement in data availability and timeliness. Given that almost half of the MDG indicators use or may potentially make good use of household surveys, creating a system that systematically gathers all household surveys with relatively easy access to data and information could reduce substantially the chances of failing to include available estimates.

    In the case of Pakistan, and inclusion of the Pakistan Integrated Household Survey in such as database would have changed infant mortality rate estimates from 84 to 77 for 2001 and from 96 to 108 for 1990.

2) To enable the improvement of comparability across countries. Gathering different questionnaires in one database could help highlight definitional differences and the importance of country specific methodologies. A single database would improve the chances for a harmonization of some definitions.

    For example, because of substantial differences in definition, some surveys cannot currently be used. This is the case for categories of water sources and sanitation, and for skilled birth attendants, among others.

3) Reduction in the costs both of reporting MDG performance and of using data for analysis. National statistical agencies currently have to report to several different data agencies. A single international database would require only a single report.

    Similarly, distribution and analysis of data from a single source would reduce supplier and user costs.

Changes in the use by international organisations of data reporting questionnaires sent out to national governments. For 12 indicators, international agencies use questionnaires that are sent out to national governments, to gather information from reporting countries. These indicators include amongst other education, immunisation and improved water and sanitation.

Although questionnaires represent a convenient way to gather information, this approach does not always provide the best means of acquiring high quality data, especially when the questionnaire is long and complicated. Indeed, the authors' own experience and observations are that these questionnaires do not receive the attention that they deserve. Reporting governments do not necessarily prioritise and assure quality control in their completion of the questionnaires.

Alternative ways that could be explored to avoid such problems are a direct contact with the authorities that fill the questionnaires and the independent gathering of similar information using other sources.

Changes in the use of international population data in the calculation of some indicators. International population data are used in two quite different ways in the calculation of MDG indicators:

1) They are combined with national data to produce country indicators;

2) They are used as weights to generate regional or global estimates.

It is when international population data are directly used to produce country estimates that agencies could be more cautious vis a vis possible unwanted effects on some MDG indicators.

In fact, population data for many countries are just estimates and consequently these estimates are surrounded by some uncertainty. There are three main international sources of population data: the United Nations Population Division, the World Bank and the U.S. Census Bureau. Furthermore, most national governments make population estimates and projections for their own countries. These various population estimates present differences that cannot be ignored - especially for developing countries.

Comparing population estimates of the UN Population Division, the World Bank, and the US Census Bureau we found that for the year 2000, total population estimates presented differences greater than 10% (more or less than 10%) for more than 1 country in every 6, and this percentage increased to almost 1 in every 3 when taking into consideration estimates of population aged between 0 and 14.

In order to mitigate the potential unwanted impacts, where faced with discrepancies international agencies could consider several hypotheses, and investigate the reasons behind the discrepancies. International agencies could also be encouraged to make public several alternative figures at each end of the potential scale of difference, making their sources clear. Additionally, other sources of information such as household survey data could be used to cross-check data where anomalies occur.

Changes in the management of common methodologies and definitions. Indicator definitions are not always accepted or as widely known and understood as might be desirable. This is particularly problematic when there is a lack of data: when data does become available, definitions may have become distorted to such an extent that an accurate trend analysis is impossible.

For example, in the case of "The proportion of births attended by skilled health personnel", skilled health attendants are defined as doctors, midwives and nurses. However, in some countries there

are professional categories that do not always fall into this precise international categorization. This creates uncertainty concerning the way in which data is treated. Indeed, this is the main reason for some of the differences between WHO and UNICEF data, especially in Latin American countries. For instance, both WHO and UNICEF rely on the 1998 ENSMI survey for the estimate of births attended by skilled health personnel in Paraguay. While WHO reports a proportion of 58.1, UNICEF's estimate is 70.9. This apparently is due to the exclusion of 'partera' from the WHO estimate.

Possible responses are: a) to further promote standard definitions and guidelines (this applies to situations where there are distortions in definitions, or a need for guidance in using the definitions, for example in education and HIV indicators); b) to provide tools with which to successfully measure trends in particular countries where context-specific issues arise.

Changes in data management practices. When data is posted on international agencies' websites, original notes and sources can become lost. This means that to the observer, information looks as if it is directly comparable, while in fact it may not be. The use of different methodologies does not undermine the analysis of data trends for countries that systematically use the same source. However, it does raise problems for comparability with other countries that may use different sources.

It is therefore important to ensure that metadata is always published with a link to its source. Certain exceptional data should also be properly documented. For example, in the indicator for 'the share of women in wage employment in the non-agricultural sector', some of the estimates refer only to urban areas of the country. Transparency also dictates that where figures are derived from models, the source and year on which the model was based, should also be clearly presented.

Further Issues

Finally, this study identified a number of areas in which the international effort could focus to improve the quality of data. In particular, the issues that might be addressed in further dialogue with the agencies are:

a. The level of accountability that the various lead international agencies have in the reporting process, as well as a review of the rules and systems that define the responsibilities of countries versus international agencies;

b. A further investigation into possible improvements in the quality of data currently collected from agency questionnaires;

c. Further exploration of the feasibility, costs and benefits of implementing an official international household survey database;

d. Explore the advantages of a direct re-analysis of raw survey data.

Abbreviations

CFCs	Chloro-Fluoro-Carbon
CPR	Contraceptive Prevalence Rate
CWIQ	Core Welfare Indicator Questionnaire
DAC	Development Assistance Committee
DHO	District Health Office
DHS	Demographic and Heath Survey
EMIS	Education Management Information System
ENSMI	Encuesta Nacional de Salud Materno Infantil
EPI	Expanded Programme on Immunization
FLCF	First Level Care Facility
GDP	Gross Domestic Product
GER	Gross Enrolment Ratio
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome
HMIS	Health Management Information System
IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
I-PRSP	Interim Poverty and Reduction Strategy Paper
ISCED	International Standard Classification of Education
LAMP	Literacy Assessment and Monitoring Program
LDC	Less Developed Country
LHW	Lady Health Worker
LSMS	Living Standard Measurement Survey
MDG	Millennium Development Goals
MICS	Multiple Indicators Cluster Survey
NEMIS	National Education Management Information System
NER	Net Enrolment Ratio

NGO	Non-Governmental Organization
NSO	National Statistical Office
ODA	Official Development Assistance
OECD	Organization for Economic Cooperation and Development
OREALC	Oficina Regional de Educación para América Latina y el Caribe
PIHS	Pakistan Integrated Household Survey
PPP	Purchasing Power Parity
PRSP	Poverty Reduction Strategy Paper
RAMOS	Reproductive Age Mortality Study
UIS	UNESCO Institute of Statistics
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
UNSD	United Nations Statistics Division
WB	World Bank
WHO	World Health Organization
WHS	World Health Survey

1. Introduction

This report summarises the findings of the international component of an ongoing study to assess the status of the capacity to monitor the Millennium Development Goals (MDG). The study focused on assessing the methods used by international lead agencies in their monitoring of the MDG. Its aim was to gain a better understanding of the monitoring process and to highlight areas for possible improvement. A second and separate study, examines six country-specific experiences in MDG reporting process. This second study assesses the ability and commitment of these six countries to monitor the MDG indicators and other national development goals.

Other reports have already recognised "serious and far-reaching problems in almost all of the millennium development goals indicators in terms of data availability, accuracy, coverage in order to produce global and regional estimates, and consistency over time" (sic) (Inter-agency Expert Group on MDG Indicators, 2002). However, two main areas seem to remain inadequately addressed: first, the problems which are identified are not comprehensively documented. Second, there is no systematic account of the methodologies used by the various agencies in compiling the data.

It is in these two main areas that this study wants to make a first contribution. This paper therefore focuses on these specific objectives: it does not comment on the international community's progress towards reaching the goals, nor is it an attempt to discuss which indicators are better in monitoring the goals, or what the indicators aim to capture. Instead, it focuses merely on understanding processes of data reporting and compilation, and the methodologies behind them.

The paper is divided into two parts. The first looks at current weaknesses of the MDG indicators (Appendix A reports the full list of goals, targets and indicators[4], and Appendix E provides a summary of each indicators key characteristics), by focusing on data availability and comparability issues. It quantifies data availability to provide an indication of the magnitude of the "availability" problem and discusses key methodological issues, giving examples to demonstrate ways in which they may potentially affect data quality.

The second part of the report identifies five key areas that could be addressed to improve some of the problems described in the first part. The key areas which have been highlighted do not involve collection of new data, but could, in a short time period, improve data availability. Therefore, the focus of recommendations made is not on actions to be taken at the national level, but on possibilities of better management of the current resources and more coordination among the various international agencies.

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[4] These indicators were agreed in September 2001 by the United Nations Secretariat, the specialised agencies of the United Nations, as well as the World Bank (WB), the International Monetary Fund (IMF) and the Organization for Economic Cooperation and Development (OECD) ("Road Map Towards The Implementation Of The United Nations Millennium Declaration – 2001").

2. Current weaknesses of MDG data

MDG monitoring and its coordination by the United Nations Statistics Division (UNSD) began in 2001. Both monitoring activities and their coordination is still evolving within the existing framework of responsibilities, providing the platform for the further development of responsibilities and systems. Indeed, since this study began (March 2003), a number of changes in systems and methodologies have already taken place, and it is recognised that there might be further changes underway of which the present analysis is unaware. Nonetheless, this summary highlights some general points that may provide a platform of support to further innovations and improvements.

We have divided this section into two parts. Firstly we provide an account of data availability, and secondly we investigate in some detail the comparability of MDG data both across countries and over time.

2.1. Data availability

The 48 MDG indicators combine those that have been widely used and for which data reporting systems are well established with those that are relatively new or indeed completely new to a broad international user group. As a result, the pattern of data coverage and data quality is very variable across the range of indicators. In this section we discuss how we assessed data availability and comment on what we found.

In order to assess data availability, for each indicator we looked at the number of countries that have data in at least one year in two different periods: around 1990 (1989-1992) and ten years later (1998-2002). Besides the number of countries, we also calculated the percentage of world population represented by them, and also the proportion of population of two relevant groups of nations: the Least Developed Countries[5] (LDC) and Sub-Saharan Africa (SSA). Finally, for each indicator we also computed the average year across countries of the most recent estimate. Although this approach might appear crude and in some instances might over or understate data availability, it is simply used to make some general assessment of overall data availability.

The comparison between availability in 1990 and 2000 intends to capture any eventual improvement in coverage, which is further assessed by looking at how many countries have data around both 1990 and 2000. In fact, this last piece of information aims at understanding the possibility of analysing trends over the last decade.

For a number of key indicators based on country reported data or household surveys, data availability is relatively poor. This raises serious doubts vis-à-vis the credibility of regional and global estimates, and it is particularly true for indicators monitoring goal 1 (poverty), 2 (education), 3 (gender equality), 5 (maternal health) and 6 (combating HIV/AIDS, malaria and other diseases).

Figures 1, 2 and 3 report the coverage, expressed as population proportions, for eight selected indicators, respectively for the World, SSA and LDC. These figures are produced as example of the analysis conducted, but in appendix B these data are presented for all the indicators.[6]

The analysis shows that for almost all indicators, availability of data over the decade improved. However, for many indicators (about one fourth of them) population covered is still below 50%, this

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[5] We used the United Nations definition of this grouping.

[6] Interested readers might want to check this with the disaggregated tables in Appendix B.

being the case not only for the world population, but also for Sub-Saharan Africa and Least Developed Country categories.

Figure 1:   Population with data in 8 MDG indicators (World percentages)
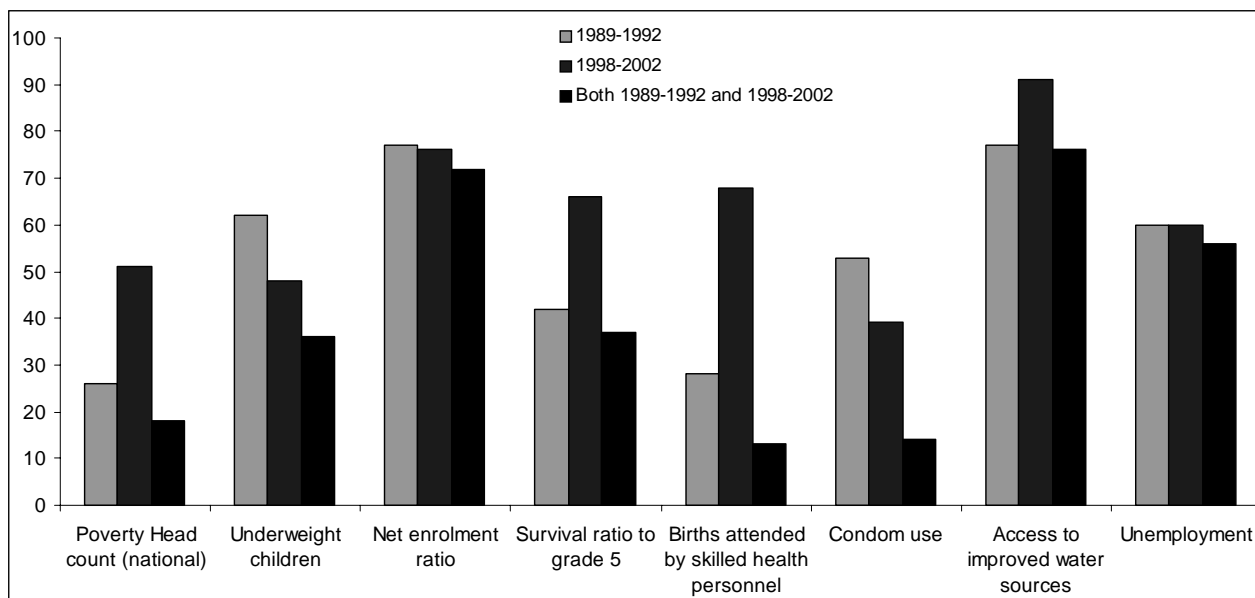
Figure 2:   Population with data in 8 MDG indicators (% in Sub-Saharan Africa)
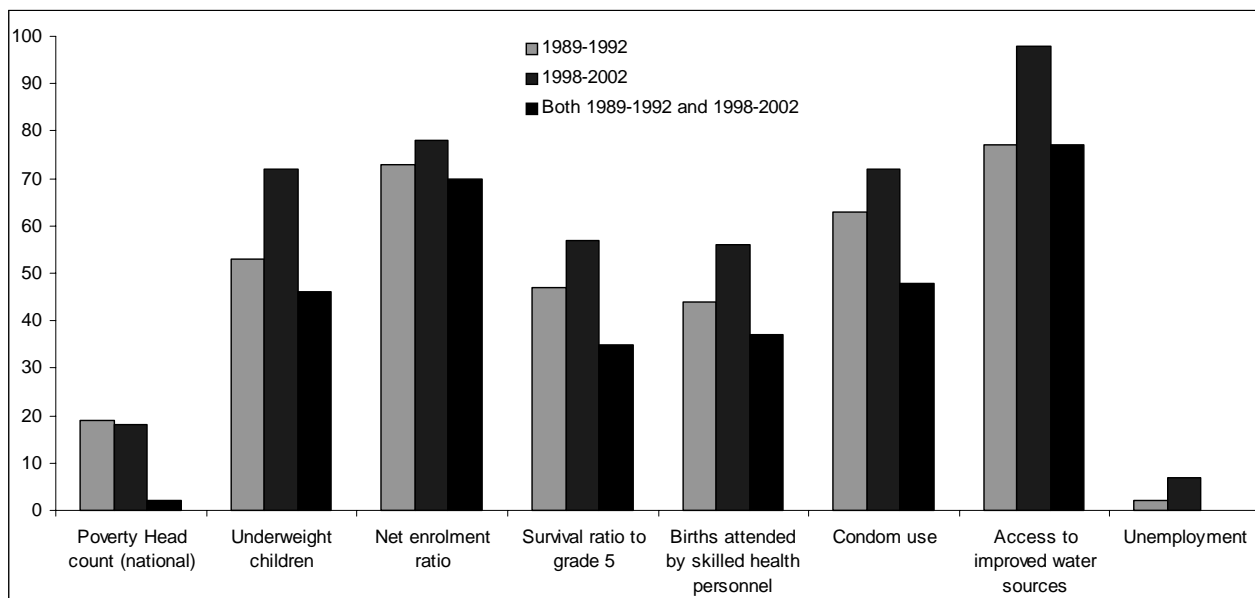
Figure 3:   Population with data in 8 MDG indicators (% in Least Developed Countries)
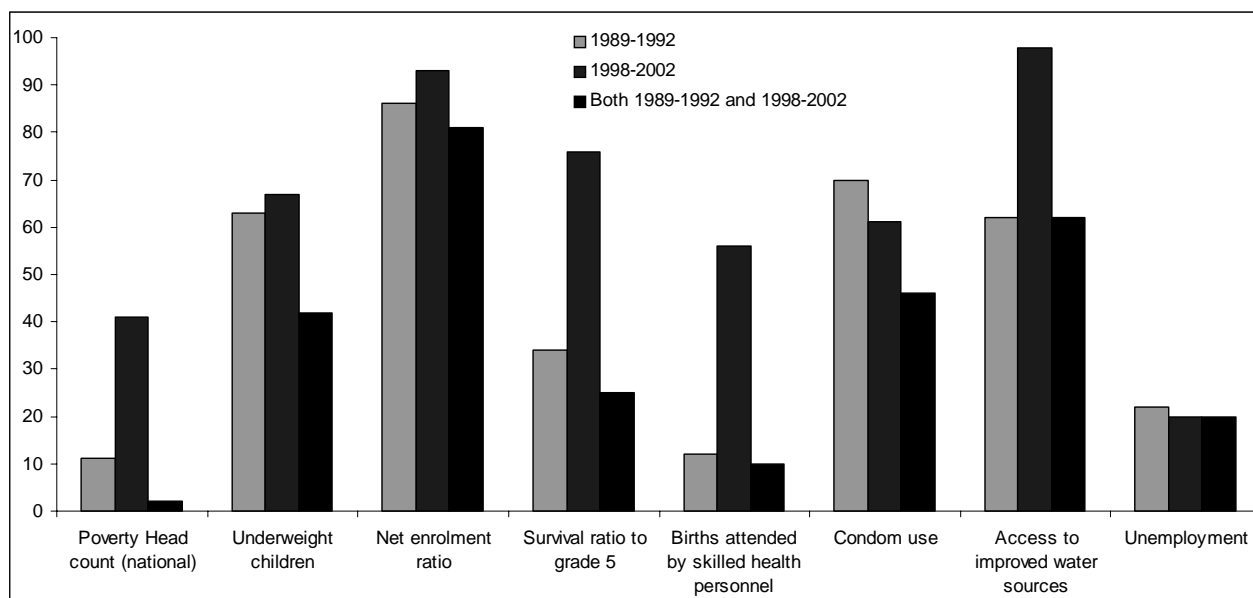
Furthermore, a number of indicators which appear to provide timely and very comprehensive coverage rely on theoretical models rather than on observed data i.e. literacy indicators, mortality rates (infant, child and maternal mortality), measles immunization, access to water and sanitation improved systems, and malaria prevalence. The accuracy of these predictions ultimately depends on the qualities of the model used and the timeliness of the data used in the models.

For example in the case of literacy estimates, it is relevant to know that the 2002 assessment used data that on average referred to 1987. Therefore, whilst some estimate is generated, it is legitimate to doubt its quality.

Similarly for infant and child (under-5) mortality rates, sources of information with which current estimates are calculated can be more or less recent and based on more or less numerous observations. This could potentially affect the reliability of some of the estimates. In the case of measles immunization, coverage is predicted based on reported official data and information from household surveys, but again their accuracy depends on the year in which observed data exist. Similar considerations apply for estimates of access to water and sanitation improved systems.[7]

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[7] A number of smaller points are also worth making:
- for some indicators the fact that the number of countries for which we have information in 2000 are different from those of 1990 also suggests that the improvement is not always consolidating national statistical capacity,
- Indicators that depend on household surveys produce data that are on average 3 to 5 years backdated. This occurs mainly because particular household surveys are conducted every 5 years, and particular rounds of surveys in various countries take place in different years.
- Furthermore, some of the indicators collected with household surveys in one year refer to the situation of previous years.
- Finally there is a lag involved between the time that data is processed and estimates are released.

2.2. Comparability issues

The ability to make appropriate comparisons is affected not only by the availability/absence of data but by the quality of data. In particular, two issues have the potential to undermine comparability in a number of indicators. The first is the problem of changing definitions. The second is the use of different methodologies which generates clear bias in the measurement of the indicators.

Overall 18 indicators are affected by some problem of comparability, and goals 1, 2, 3, and 5 are heavily influenced by such problems. The result is increased difficulty in making valid international comparisons. In some cases comparability issues also undermine estimates of trend.

It is important to note that the extent to which countries produce more or less available data, or data of better or worse quality, can depend on various factors. A country which provides poor quality data could do so for many reasons, for example due to a lack of resources in national statistical capacity.

Here we summarise and give examples of the main common problems regarding comparability, looking first at definitional issues and then at methodological differences.

2.2.1. Definitional issues

Three issues arise when looking at the consistency of an indicator's definition:

1. Lack of clarity in the definition from the international agencies that results in measuring different indicators;

2. Clear international definition, but countries and some agencies still use alternative definitions to measure the same indicators;

3. The clarity of one definition encounters difficulty when faced with the country-specific reality.

Firstly, for indicators that are relatively new to the debate there is sometimes a lack of consistency in the use of a common definition. Inevitably some of the indicators that intend to monitor new problems are subject to more debate and more revision compared to others for which indicators are better understood and widely used. As a result, for these indicators it is difficult to find a series of estimates that share common definitions.

This is the case for "HIV prevalence among 15-24 year old pregnant women", and "the condom use rate of the contraceptive prevalence rate"[8], where several indicators rather than a single indicator are being used in practice. Indicators that monitor the spread of HIV/AIDS that were

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In some cases household survey data analysis and its results can be very quick and are reported as soon as they appear in preliminary reports. However, the benefits of such practice are not always evident. Often preliminary results are revised substantially after a complete data cleaning or after the full dataset, rather than an early and partial dataset, is used for the analysis.

[8] After the revisions of the HIV/AIDS indicators of August 2002 (see footnote below) the indicator 'condom use rate of the contraceptive prevalence rate' should be comprised of three indicators: a) condom use rate among women in union (15-49 year olds), b) condom use in high risk situations (15-24 year olds), and c) indicator of knowledge and misconceptions regarding HIV/AIDS by 15-24 year olds (5 questions).

identified in 2001 have subsequently been changed. Nevertheless some agencies still refer to the earlier indicators, or use slightly different definitions.[9]

A second potential area for methodological discrepancy is the use of alternative definitions even when a clearly defined international definition exists. In the case of literacy, the UNESCO definition is very clear and is both founded on specific principles and advocated by recommendations made for housing censuses by the UN statistics division. Despite this, censuses around the world phrase literacy questions in different ways, limit literacy only to certain languages or condition literacy to having attended formal education. Furthermore, internationally promoted household surveys such as the DHS do not necessarily follow the UNESCO definitions. In the case of the recent round of DHS, for example, literacy is defined only by a proven reading ability.

Finally, in other cases harmonisation involves a long-term commitment because differences arise not in the actual definitions, but in their interpretation due to the diverse reality of each country. For example, in the case of "the proportion of births attended by skilled health personnel" although international definitions clearly define skilled health attendants as doctors, midwives and nurses, professional categories in the various countries do not always fall into a precise international categorization. This creates uncertainty concerning the way in which data is treated. Additionally, in some countries interpretation is stricter than in others, which can also undermine comparability. Similar problems apply for the definition of "improved water source" and "improved sanitation", for "the share of women in wage employment in the non-agricultural sector", and for "the unemployment rate of 15 to 24-year-olds".

2.2.2. Methodological differences

For a number of indicators lack of data necessitates the use of various sources of information that use different calculation methodologies. Such different methodologies sometimes involve the introduction of biases that preclude the possibility of a full comparability. Nevertheless, these data allow comparability over time when the methodology is used consistently within the same countries. Some examples of different methodologies used are presented below.

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[9] In August 2002 the Joint United Nations Programme on HIV/AIDS published guidelines on the construction of core indicators that monitor the Declaration of Commitment on HIV/AIDS, and provide clear definitions on an advised set of MDG indicators. It might be argued that this is a relatively recent document and therefore other agencies should be allowed time to adapt to the changes that it advises. Nonetheless, web pages from some international agencies are failing to follow the advice of the August 2002 document and still refer to the old indicators, as well as to the new. In addition, the same agencies use of the revised indicators is sometimes different ways from the UNAIDS guidelines.

The WB web page (www.developmentgoals.org) that was edited before the changes on the HIV/AIDS indicators still refers to the general contraceptive prevalence rate (CPR) as an MDG indicator. The condom use in high-risk situations is reported by different agencies with a lot of variations from the advised definition regarding the group of reference of this indicator different age groups are used, and in some cases only people not married are taken into consideration. The UNSD web page about one third of the estimates reported does not correspond to the canonical definition.

The same applies to the indicator of "knowledge and misconceptions" vis HIV/AIDS. In some cases agencies report only one of the aspects of knowledge or one of the misconceptions and not the original composite indicator. This is true for the UNSD web site.

Moreover, considering the new indicator for "relative disadvantage in education attendance", there are some differences in the definition of orphans (whether they should be considered orphans only if they lost both parents or if they lost either parent and both). See HIV/AIDS Survey Indicator Database available at www.measuredhs.com and Guidelines on construction of core indicators, United Nations General Assembly Special Session on HIV/AIDS.

- In the indicator "share of women in wage employment in the non-agricultural sector", available estimates make use of two main sources of information: labour force surveys and establishment surveys (other sources are administrative and official statistics or insurance records). However, the coverage of these sources in many cases tends to be different and makes international comparison difficult. For example, in Algeria the establishment survey only covers the public sector and in many cases establishment surveys exclude the informal sector or small enterprises (it is common that only enterprises with a minimum of 5 or 10 employees are part of the survey).

- For the indicator "share of poorest quintile in national consumption", about 40% of reported values are income shares instead of consumption. This generally tends to produce values that are lower than those calculated with consumption (a similar problem applies to the poverty indicators) (see Box 1 for a discussion).

- The "proportion of 1 year-old children immunised against measles", the "proportion of population with access to an improved water source", and the "proportion of urban population with access to improved sanitation" combine administrative data with household survey information. However, often the two sources do not just represent different tools to measure the same thing, but contain a systematic bias in one or the other direction.

- In the case of measles immunization, when available, household survey data are often used to recalibrate officially reported estimates, but if household survey estimates do not exist, only official data are taken into consideration. For instance in Tunisia, official reported coverage since 1997 was above 90%, but a household survey estimated a coverage of just above 70% in 1999.

- In indicators of access to water and sanitation improved systems, administrative data report a provider perspective while household surveys are closer to the user perspective. Although much of the provider data has been replaced with data from household surveys (whenever possible), there are still cases in which administrative data are the only available source[10].

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[10] If administrative data are the only available source of data there is certainly a benefit in using them, but when different sources of data are used they should be properly distinguished.

Box 1: Comparability of Welfare Measurement Based on Income or Consumption

Figure A shows a cumulative distribution function for the same population using income and consumption expenditure. It is common to observe a higher variance for income, which translates into a distribution line that starts at lower values and finishes at higher ones when compared to consumption.

These common differences imply an income share of welfare for the poorest 20% that is systematically lower than the consumption share.

Similarly, if the poverty line (either the international or national one) is in the lower part of the distribution, again the use of income instead of consumption is likely to produce higher poverty estimates (both in the Head-Count and poverty gap).

On the other hand in those cases where the poverty line falls in the higher part of the distribution using income is likely to produce lower poverty rates than consumption.

Fig A. CDF of income and consumption

Calculations conducted with data from Pakistan found that the head-count with the international poverty line would be 20% instead of 13% if income had been used instead of consumption. And again, while the bottom 20% consumes 8.8% of the total consumption, it only enjoys 6.9% of the total income.
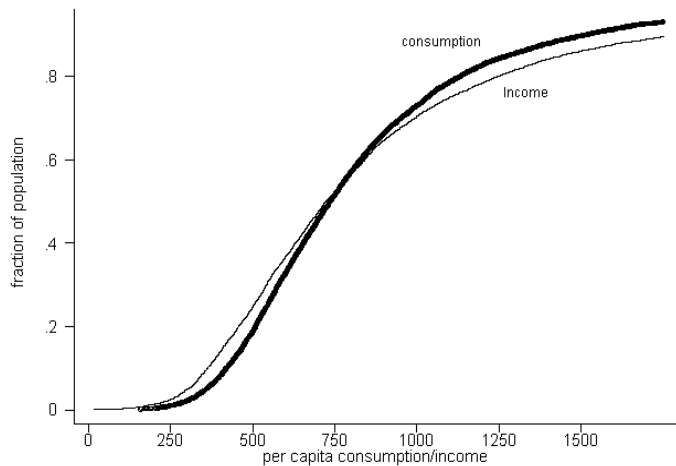
3. Key issues to address

Unfortunately, many of the problems outlined in the previous section can only be addressed as more data become available. However, there are certain aspects within the control of international agencies that if properly addressed could lead to substantial improvements in international data even in a relatively short time period. These areas are not based on the collection of more data, but on better management and use of the present resources. The key areas include:

- appropriate and additional use of available data from household surveys with an investigation of the potential benefits of an international household survey database;

- changes in the use by international organisations of data reporting questionnaires sent out to national governments;

- changes in the use of international population data in the calculation of some indicators;

- changes in the management of common methodologies and definitions; and

- changes in data management practices.

This section illustrates each of these key areas. We provide evidence on why there may be margins for improvement. We also make suggestions on how these issues could be addressed and what eventual benefits the suggested actions could bring.

3.1. Appropriate and additional use of available data from household surveys

Household survey data is already widely used in collating MDG indicators for a number of indicators. However, we suggest two ways in which the use of household survey data could be improved: firstly, by better consolidating existing networks of information on existing household surveys, for example by creating an international household survey database; secondly, by promoting the proactive use of existing available data from household surveys to contribute to certain indicators where they are currently not being used to their full potential.

Growth in the availability of well-conducted household surveys provides an increasing opportunity to improve the reliability, availability and timeliness of a number of MDG indicators. About one-third of indicators depend wholly or partly on household survey data.

Household surveys are the main source of information for many key indicators (for instance, the proportion of population below 1$ (PPP) per day, or national poverty lines, the prevalence of underweight children, the proportion of births attended by skilled health personnel, etc.).

In addition, indicators such as the proportion of the population with sustainable access to an improved water source, and improved sanitation, which previously relied exclusively on administrative data, have begun to make an extensive use of household surveys with clear benefits for the quality of data.

For some of the indicators, household surveys provide important reference data for model estimation (for instance, in absence of vital registration data, infant and child mortality rates).

However, there appear to be further opportunities to improve both the quality of existing estimates and the levels of coverage of existing estimates by consolidating existing networks of information on available household surveys, and also by using surveys data more proactively, especially when data is missing, old or of dubious and uncertain quality.

We address in two separate sub-sections the consolidation of existing networks and the additional possible use of household surveys.

3.1.1. Consolidating existing networks of information on available household surveys

Some agencies put in place sophisticated networks in order to identify and select household surveys. Others rely only on those surveys that are easily accessible or only on specialised single topic surveys. In all cases potentially useful household surveys can easily escape the screening processes.

Some examples of the current utilisation of household surveys, and examples of surveys that escape the screening process in each case, are presented below.

1) WHO started to compile data on " the prevalence of underweight children under five years of age" more than 15 years ago. In fact, the WHO Global Database on Child Growth and Malnutrition is of particularly high quality because estimates are not simply reported as they appear from available publications, but raw data are systematically re-analysed to guarantee the same standards and homogeneity of procedures. This produces comparable results.

   Data sources are identified through a weekly literature search and a wide network of national and international collaborators and principal investigators of nutritional surveys. Nonetheless, there are household surveys that escape even this detailed screening. One example is the Malawi Integrated Household Survey conducted in 1998, which failed to be captured in the WHO process.

2) Data on mortality rates (both infant and under-5 mortality rates) in most developing countries come from household survey data because vital registration procedures are not in place or they are not of the required quality. In order for estimates to be derived and indicators to be calculated, UNICEF brings together all available IMR and U5MR estimates and draws a line that best fits this available data.

   In this specific case the comprehensive selection of household surveys does not affect the coverage of data (in any case country data are estimated using the fitted line), but it compromise the quality of data. In particular, it is possible to imagine a situation in which the fitted line is based on relatively old data because the screening system neglects to include information from a relatively recent household survey.

   An example comes from Pakistan's 2000 mortality estimates (completed in 2002) which does not include the 1998-99 Pakistan Integrated Household Survey (PIHS) results. Since 1995-96 the PIHS has been the most important monitoring tool in Pakistan for understanding progress in health, education, family planning, water supply and sanitation. One of the key indicators derived from the PIHS is the infant mortality rate.

3) Household surveys are taken into consideration when WHO and UNICEF assess the proportion of 1 year old children immunized against measles, based on the available information that come from country reported data and surveys. Again, the WHO/UNICEF Review of National Immunization coverage conducted in 2002 fails to take into consideration the various PIHS surveys (1995-96, 1996-97, and 1998-99).

All these examples have something in common: firstly, that multi-purpose surveys are not easily picked up in the screening or reporting processes and secondly, surveys that do not have very direct and clear international sponsorship tend also to be missed.

Proposal: Creation of an international household survey database

Each single international agency currently maintains informal or semi-formal networks that aim at capturing new available sources of information and, in particular, household surveys with relevant information on various topics.

A good example of such a network is provided by UNICEF, which maintains a significant global database. Such a database is updated annually using the wide network of Field Offices. The headquarters use a form, called CRING, which is sent to all field offices (140) providing the latest available information on a range of different indicators and requesting the local office to verify whether there are new data available. If new data are available the field office is asked to provide the source of information and relevant supporting documentation. The World Bank operates a similar exercise through its country departments, and the case of the WHO Global database on malnutrition was presented above. (In Appendix C we report a brief summary of existing databases with information on household surveys).

However, aside from the existence of topic-specific household surveys, surveys increasingly tend to collect information on a range of issues that are of interest for more than one agency. Clearly, this is the case for multi-topic household surveys such as MICS, DHS and LSMS.

It seems that a joint effort of the various agencies and the creation of an international household survey database could be very beneficial and add extra valuable information for potential users.

The database could potentially document and archive the surveys and collect and eventually provide support documents (questionnaires, manuals of interviewers, sampling information, etc.). The database could allow the possibility to search surveys by topic, country and year with direct links to questionnaire pages.

By establishing 'the' international database, the reporting process for authorities involved in the collection of the survey in the first stage could be simplified. For example, a national statistical agency which compiles a multi-topic household survey currently has to report its existence to various databases. If a single international database existed, the national statistical agency could simply report once to the single, common resource. Each survey could receive some funding to make sure that its documentation is transmitted to the database and its results known to the international community.

The benefits of such a database would be of three kinds:

1) To improve data availability and timeliness

   Given that almost half of the MDG indicators use or may potentially make good use of household surveys, creating a system that systematically gathers all household surveys with relatively easy access to data and information could reduce substantially the chances of failing to include available estimates. Had an international database been in existence, the cases mentioned above, for instance, could have been picked up by the system because both the PIHS and HIS were known to the international community, despite not being used for some of the indicators. This type of omission could potentially be avoided if an international database were created, making information about the type of data collected in each survey readily available. Such omissions are not trivial. For instance, with the inclusion of PIHS mortality estimates, the infant mortality rate estimates change from 84 to 77 for 2001 and from 96 to 108 for 1990.

2) To spread information and knowledge more quickly.

An international household database would also make distribution of available statistical resources much easier, and it would facilitate the use of these data.

3) To enable the improvement of comparability across countries

Gathering different questionnaires in one database could help highlight definitional differences and the importance of country specific methodologies. Furthermore, it could lead to a harmonization of some definitions. For example, because of substantial differences in definition, some surveys cannot currently be used. This is the case for categories of water sources and sanitation, and for skilled birth attendants, among others.

3.1.2. Proactive use of surveys to overcome old or missing data

The use of data from household surveys could dramatically improve both the quality and coverage of certain indicators that do not currently make full use of household survey data. This would potentially apply to four indicators in education and literacy: the net enrolment ratio (NER), the survival ratio, literacy rate of 15-24 year-olds, the ratio of girls to boys in primary, secondary and tertiary education, and the ratio of literate females to males of 15-24 year-olds.

The inclusion of data from existing household surveys could make significant differences to the estimates for these four indicators. For the NER we could have information on an extra 10% of countries; for the survival rate to grade 5, this percentage increases to about 40%, and in the case of literacy indicators estimates could be based on information that on average is more recent by eight years.

In addition to these indicators household survey data could also potentially be used for 'the proportion of population below minimum level of dietary energy consumption'. For this indicator, household survey data could complement the information currently available and challenge some of the present results with benefits for the quality of the data.

Examples follow which demonstrate the potential improvements that could be made to these four indicators by better utilisation of data from existing household surveys.

Net enrolment ratio in primary education

While administrative data is currently used as the main source of NER estimates, household surveys could also potentially contribute to estimates. This could increase the total number of observations and could also facilitate more cross-checking of the data that exists from other sources, helping to improve the quality of data from both sources.

At present there are countries for which we do not have information on NER, but for which household surveys that provide information on attendance and enrolment do, in fact, exist. Increased use of household survey data in NER estimates could therefore improve both the quality and coverage of data for this indicator. Although administrative data (school statistics from the Ministry of Education) and household surveys do provide different enrolment indicators, their theoretical differences are not large. The problem lies mainly in the different methodology used to measure the net enrolment ratio. While other papers already argue that household survey information on education is often under-utilized and explain the potential use of household survey compared with data from the Ministry of Education (FASAF et al. 2002). In a footnote to this

paragraph we briefly compare the issues that arise from comparing enrolment rates from the two sources.[11]

Neither administrative data nor household surveys represent the perfect solution, but it is believed that a more systematic use of both sources could be beneficial to challenge each of the sources and thus encourage quality improvements.

In particular the benefits of starting to use household survey data more systematically for the UNESCO NER could be:

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[11] Firstly, there is a difference in the classification of what is actually being measured by the two sources. In the international literature, estimates provided by household surveys are often classified as net *attendance* rate and so distinguished by the net *enrolment* rate calculated with administrative data. However, it is not always clear whether this distinction occurs because of the different methodology used to measure the same indicator, or because administrative data in fact measures different variables from those measured by household surveys.

This is difficult to establish because the variables that are actually measured by household survey data depend crucially on the exact questions that are put forward in the questionnaires. The questionnaire could ask: whether the child was enrolled in school in the current/last academic year; whether the child attended school at any time during the current/last academic year; or whether the child attended school in a precise period of time before the interview (for instance the last two weeks).

In the first case, the difference between survey and administrative data is not a difference in what is measured, but simply a difference in the way the same indicator is measured. In the second case, there is the possibility that a child may be recorded as enrolled in school registers, but actually never attended school even for one day. In the third case, it is more likely that attendance will differ from enrolment: in particular differences occur when children drop out during the year and therefore even though they are enrolled, they are not attending school. Moreover, in this last case, if the household is interviewed during school holidays, the child may not be attending even though enrolled in school.

Secondly, concerning surveys (as opposed to administrative data), which are used for enrolment/attendance estimates, variations exist between the variables measured by particular major surveys, thus raising potential issues regarding comparability. The following examples demonstrate these variations:

- Multiple Indicator Cluster Surveys (MICS) provide information for measuring attendance based on whether the child attended school at any time during the current academic year, the class attended, and its age.
- In the Demographic and Health Surveys school attendance by age group is irrespective of class attended. However, the DHS does not always have a consistently defined questionnaire format, so there are often differences in the specific questions asked. In the case of the 1998 DHS survey in Burkina Faso attendance was measured asking whether the child was still in school, considering the age and sex of the child but irrespective of the class attended.
- Living Standard Measurement Surveys generally ask whether the child is enrolled in school, whether he/she ever attended school and, if so, in which class was enrolled, and whether he/she is currently attending.

However, while UNESCO's methodology recognises and adjusts differences in length and standards of primary education (depending on the country, the number of years considered part of primary school can vary from 4 to 8 years), data from household surveys should also be adjusted following the International Standard Classification of Education (ISCED) before calculating the net enrolment ratios or the net attendance rate. Currently, main reports from household surveys generally calculate net enrolment and net attendance rates according to the national official primary school age. This undermines the possibility of comparability between national statistics whose figures have been independently calculated from household surveys.

1) An increase in the total number of observations by 10% (15 countries);

2) Cross checking situations in which current data are dubious for various reasons (about half of the UIS estimates exist also from household survey data). Data could be dubious due to: lack of coherent population data; uncertainty about coverage of administrative data etc.

Proportion of pupils starting grade 1 who reach grade 5

As with the NER, although the methodology used by administrative and household survey data would be quite different, there could be sensible advantages in using both sources. Observations would increase by 40% (38 countries) and again the two sources could challenge each other promoting improvements in quality of both sources.

Literacy rates (indicators 8 and 10):

Literacy rate estimates are generated through a simulated model in which the parameters are calculated using available information. The July 2002 Literacy Assessment used, in most cases, census data to estimate its parameters.

A comparison of the 2002 Assessment with the 1994 Assessment shows that there have been substantial improvements in data quality: firstly, because the number of countries for which estimates are based on only one observation decreased dramatically (about 40%); and secondly, because there are no longer cases in which estimates are not supported by at least one observation. Nevertheless, the data used for the 2002 assessment is still relatively old. This specific problem occurs largely because of the lengthy period over which national census data are processed (this is particularly the case for literacy data), and also because some recent censuses do not collect data on literacy.

The use of survey data might well help to overcome these problems. The UNESCO Institute of Statistics (UIS) in its new Assessment is intending to make use of surveys and will also include newly available census data. However, there may be further gains for indicator quality by even greater expansion of the role of household surveys.

In particular, the use of household survey literacy estimates could increase the timeliness of input data. In fact, whilst for the 2002 assessment the average of the latest available year for which estimates were used was 1987, making use of household survey estimates would take the average latest year to 1995[12]. On the other hand, the inclusion of estimates from household surveys would require special attention to the definition of literacy.

Ratio of girls to boys in primary, secondary and tertiary education

For this indicator new observations will be few (about 8% for the ratio in primary school), but again the advantages could be in cross-checking the quality of data.

Proportion of population below minimum level of dietary energy consumption

At present this indicator is based on a supply-oriented model that uses the food balance sheet. As FAO admits, there are several problems with the quality of such data, particularly in developing countries. Therefore, whenever household survey data are available, it could be advantageous to use this data separately to calculate the same indicator. The results of the two estimates from different sources could then be compared, and the quality of the estimates assessed and used to cross-check each other.

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[12] This is simply calculated updating the latest year of information used in the 2002 assessment with years in which MICS, DHS and LSMS surveys were conducted.

3.2. The use of international agency questionnaires for data reporting[13]

In order to ensure the reliability of data gathered using questionnaires, it is important to consider ways in which quality control in their completion can be assured. For example, such steps could include making direct contact with participating authorities to ensure that the questionnaire is given sufficient attention. Other methods of data collection could be developed which could be used independently alongside the questionnaire as a means of cross-checking the quality of the data gathered.

For 12 indicators, international agencies use questionnaires to gather information from reporting countries. Indeed, this tool is the main source of information for UNESCO statistics on education and, in the case of the MDG indicators, for three indicators "net enrolment rate in primary education", "the proportion of pupils starting grade 1 who reach grade 5", and "the ratio of girls to boys in primary, secondary and tertiary education".

UNICEF and WHO use questionnaires for the proportion of one-year-old children immunized against measles and the proportion of population with sustainable access to an improved water source and improved sanitation. However, in these cases questionnaires are not the only source of information, but are only one of a number of steps aimed at reviewing available information. In these cases, country reported data are generally checked and validated against other sources of information.

WHO uses questionnaires for statistics related to TB (indicators 23 and 24), and the ITU uses questionnaires to monitor developments in telecommunications. Questionnaires are also used for two indicators of sustainable development.

Questionnaires can be relatively straightforward. For instance, in the case of the ITU questionnaire for telephone lines, the respondent is simply asked the number of main telephone lines in operation and the total population. Questionnaires can also be quite complicated as in the case of education indicators in which the national education system needs to be adjusted to an international standard and a substantial amount of information needs to be elaborated in order to produce the final indicators.

Although questionnaires represent a convenient way to gather information, this approach does not always provide the best means of acquiring high quality data, especially when the questionnaire is long and complicated to fill in. Indeed, OPM's own experience and observations are that these questionnaires do not receive the attention that they deserve. Reporting governments do not necessarily prioritise and assure quality control in their completion of the questionnaires.[14] Alternative ways that could be explored to avoid such problems are a direct contact with the authorities that fill the questionnaires and the independent gathering of similar information using other sources.

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[13] Appendix F contains notes on the key questionnaires. Separate computer files that accompany this document contain the questionnaires themselves and the instructions and notes necessary for their completion.

[14] The separate six country study provide some clear examples as to why the quality of this data is often deemed unreliable.

We now briefly describe the use of questionnaires for the most important indicators, and the approaches used by the various agencies to guarantee the quality of data.

Measles immunization

Both WHO and UNICEF use a joint reporting form which is, however, sent through different channels (UNICEF's country offices and WHO regional offices). Local offices of WHO and UNICEF are encouraged to approach the relevant authorities together, but in practice this is not always the case. The questionnaire asks the relevant authorities to report all the available coverage estimates, both from administrative data and from surveys, also asking them to report factors that limit the accuracy of such estimates. This questionnaire also requires the country to provide an official estimate with explanatory comments. Given that sometimes the questionnaire reaches the concerned authorities at different times, new estimates might become available and UNICEF and WHO reported figures are sometimes different. However, official data are reviewed by a panel of experts who independently also take into consideration alternative sources of information (households surveys), and provide a joint estimate.

In this case the questionnaires are only one source of information, and the fact that alternative sources and expert opinions are considered guarantees a better quality of the final data. However, it is not clear, given that WHO and UNICEF agreed on a joint reporting form, why it is still necessary to send two questionnaires separately.

Water and sanitation

For indicators related to water and sanitation there is also full cooperation between WHO and UNICEF. In this case only one form reaches the concerned national authority. The questionnaire asks respondents to compile an inventory of existing population-based data on access to water supply, particularly national census reports, DHS, MICS, and LSMS. Official estimates of access must be based on these figures when available. Independent from the assessment questionnaires, household survey results are collected and reviewed. Questionnaires are used to monitor the existence of current sources of information, and official estimates are used whenever there are no other sources of information.

TB

Every year WHO requests data from TB control programs (or relevant public authorities) via a standard data collection form. This form is distributed and collected via local WHO offices. Data quality is guaranteed by the fact that information is directly reviewed and discussed with the respondents.

Education indicators

UIS sends questionnaires to the relevant national authorities via UNESCO National Commissions, but UNESCO does not provide *in loco* assistance in filling the questionnaire[15]. Instead, questionnaires are sent together with manuals that provide clear explanations on how to fill them. Moreover, every year regional workshops are organised in which issues and problems can be addressed. However, attendees at regional workshops are not always those who have responsibility for reporting or for the management of quality control. Whenever requested data are not available, UIS encourages national authorities to provide their estimates. These may be based on household survey results, but the questionnaire does not ask for any information about the

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[15] With the exception of OREALC (Oficina Regional de Educación para América Latina y el Caribe) in Chile, UNESCO regional offices do not play any role in assisting countries in the reporting task. This is by and large managed by the UNESCO Institute of Statistics in Canada. However, UIS is now appointing new employees in each of the four regional bureaux responsible for improved in reporting accuracy.

sources of country estimates. UNESCO does impose some quality controls on reported data, but these consist of consistency checks based mainly on previously reported data. Alternative sources of information are also considered, but such data are rarely used to challenge the reliability of country reported data. There seems to be a problem of resources that are not currently available at the UIS to carry out more in-depth analysis.

Indicators of sustainable development

In the case of indicators of sustainable development, countries that sign a specific convention agree to regularly report to the international body a number of indicators. Although the questionnaires are technical, they are quite straightforward to fill in provided the information is available.

Telecommunications indicators

ITU makes use of an annual questionnaire in which it enquires about telecom providers, telephone network and information technology. The questionnaire is relatively simple and asks for information that is easily available to the concerned authorities.

3.3. The use of international population data in MDG reporting

When indicators are calculated using national population estimates, questions arise about the quality of those indicators because there are often discrepancies between population estimates from different sources. To mitigate the negative impact of these discrepancies, international agencies could be encouraged to investigate the effects that different available population estimates might have on the particular indicator, and if appropriate, to produce a range of estimates at each extreme of the scale of variation, also stating the source of the various estimates. A second recommendation is that anomalies found when using population data to calculate specific indicators such as net enrolment ratio could be checked by utilising other sources of information such as household survey data as a comparison.

International population data are used in two quite different ways in the calculation of MDG indicators:

1) They are combined with national data to produce country indicators;

2) They are used as weights to generate regional or global estimates[16].

It is when international population data are directly used to produce country estimates that agencies could be more cautious on possible unwanted effects on the indicators.

In fact, population data for many countries are just estimates and consequently these estimates are surrounded by some uncertainty. There are three main international sources of population data: the United Nations Population Division, the World Bank and the U.S. Census Bureau[17]. Furthermore, most national governments make population estimates and projections for their own

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[16] On regional and global estimators see Holt (2003).

[17] The International Institute for Applied Systems Analysis also produces population estimates and projections, but it does not provide data for each single country, rather it produces world estimates disaggregated in 13 main regions

countries[18]. These various population estimates present differences that cannot be ignored - especially for developing countries. Comparing population estimates of the UN Population Division, the World Bank, and the US Census Bureau[19] we found that for the year 2000, total population estimates presented differences greater than 10% (more or less than 10%) for more than 1 country in every 6, and this percentage increased to almost 1 in every 3 when taking into consideration estimates of population aged between 0 and 14. Appendix D gives more detail on the size and characteristics of these differences.

To give a specific example of the effect that different population estimates can have on specific indicators, when infant mortality and under 5 mortality rates are reported as separate MDG indicators there seems to be an international agreement on their estimates (WB, WHO and UNICEF), but when we look at the rates used for population estimates, WB, UNSD and US Census Bureau estimates all differ from each other.

UN population data are used to produce country estimates for six MDG indicators: prevalence of under-nourishment, net enrolment rate, completion rate, literacy rate of 15-24 year-olds, ratio of literate females to males of 15-24 year-olds, and proportion of population with sustainable access to an improved water source. We briefly review for each indicator how they are used; whether this might generate some problems; and, eventually, how it might be possible to tackle the issue.

Prevalence of under-nourishment

In indicator 5, "the prevalence of under-nourishment", food quantities available for food consumption in the country are divided by its population to calculate the available calories per day per capita, also taking into consideration the composition of the population by age and sex. An overestimation or underestimation of the population by 10% can have quite a dramatic effect on such an indicator, and different age compositions can also affect the indicator significantly. In such cases it would be informative to investigate the effect of different available population estimates on the final indicator.

Net enrolment rate

For the calculation of net enrolment rate, the specific age group of school age children is taken as the denominator. The numerator and denominator come from two different sources (the Ministry of Education data on enrolment and UN population data for the required age group), and in some cases the significant difference between population estimates of the relevant age group creates a large degree of uncertainty.

This is also recognised by a special UNESCO study that focused on the differences in available estimates of school-age population. The study revealed that in the 1990s (1990-1998) for 122 countries out of 193 there were differences of at least one year between the national school-age population and the UN population. Moreover, in one country out of 6 there were substantial differences: higher than 10% in absolute value (more than 10% higher or 10% lower). In addition, it found that large countries were included among those with significant differences (India, Bangladesh and Nigeria) (UIS 2000).

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[18] In some developing countries national projections are the same of those of one of the international agency, which provided assistance to the national authority.

[19] UN estimates were taken from the "World Population Prospects: the 2002 Revision" – Medium variant population, WB estimates from the "World Development Indicators, 2003" and for the US Bureau from the online International Development Database as for September 2003 – Mid year population.

In these cases alternative sources of information could be used to test the results for some anomalies. Household surveys represent a potentially important alternative source of information that can shed some light on problems encountered when matching enrolment with population data[20]. Indeed, for each country in which we have the information needed in order to compare recent data on enrolment rates, Figure 4 reports net enrolment rates as provided by UNESCO and estimates for the same countries that come from household surveys[21].

Figure 4:   UNESCO and household surveys estimates of primary NER at the end of the 1990s. Named countries display sensible population uncertainty in primary school-age population.
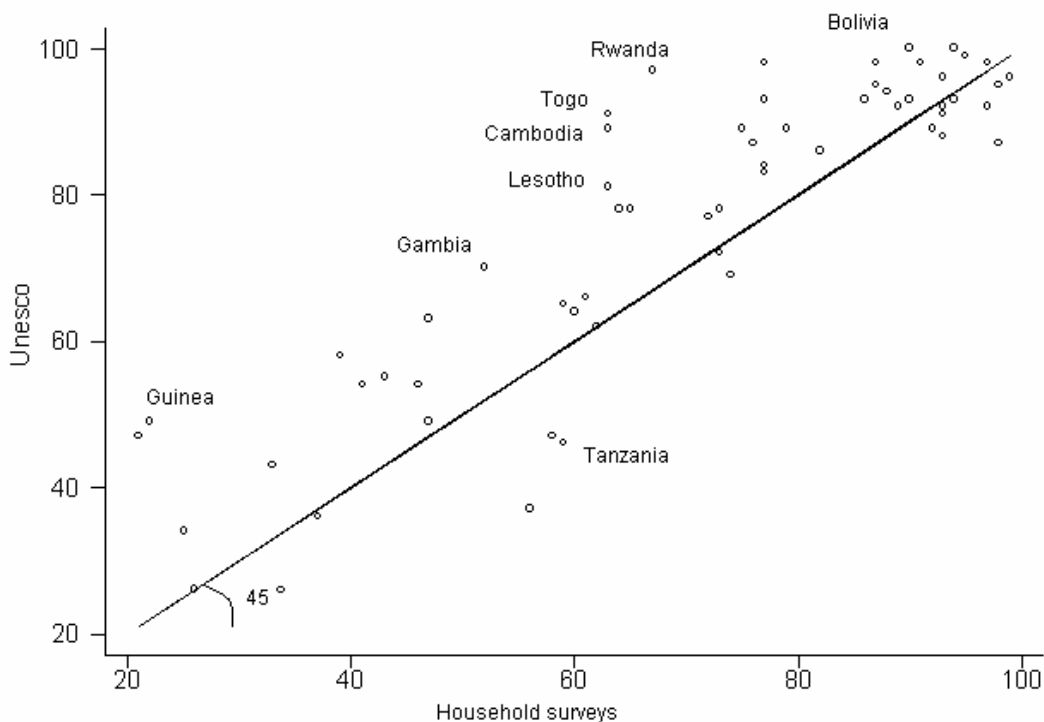
Although these data are not strictly comparable[22], it is significant to note that in countries where large differences exist between UN and national population estimates (as pointed out by UIS 2000), there are also significant differences between the data on NER provided by the two sources

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[20] Although survey estimates are also affected by uncertain population estimates, because the sampling frame does require accurate population information on the various areas of the country, the impact of partly different proportional regional weights is generally less problematic than the combination of two different sets of data.

[21] Only data of surveys conducted after 1995 are used in the analysis and match with UNESCO estimates for the same year. Households survey estimates of net enrolment rates come mainly from DHS and MICS and are taken from their final reports, without any adjustment of the national definition of primary school to the international standard classification.

[22] See previous discussion in section 3.1.2 and FASAF et al (2002) for more details.

(in the graph we reported the name of those countries). Where the UN population is more than 10% lower than national estimates, UNESCO's enrolment rates are also much higher than household survey estimates. Where in a significant case in which the UN population estimate is higher than the country estimate, UNESCO's NER is significantly lower than the household survey estimate (Tanzania). In these cases sources of discrepancies could be investigated, and the reasons for them interpreted. Moreover, users may be warned about the problem and awareness of these possible issues improved.

Completion rate

An even bigger difficulty occurs for completion rate. In this case, the denominator is a single year group, which is likely to show even more variable population estimates. Again, comparisons with estimates from household surveys could be made and some sensitivity analysis on variability of the indicator when using different population estimates could be undertaken[23].

Literacy rates

In the case of literacy rates (indicators 8 and 10) bias and uncertainty can come from the different proportion of sub-population groups used in the calculation of youth literacy rates (the proportion of people aged 15-19 compared to those 20-24 or the proportion in these two groups of male and female). For instance, in Malawi, according to the 1998 national census, the literacy rate of people aged 15 to 24 was 76.4 but was 69.6 according to international estimates. There are several reasons that could explain these differences, but one of them is the difference in the composition of two subgroups between the two data sources (15-19 male/female and 20-24 male/female). In fact, according to national statistics, the subgroup 15-19 consists of a much bigger proportion of the total age group (15-24), and it is the case that in the age group 15-19 the population has a higher literacy rate. For literacy rates, as with suggestions made for the previous indicators, a comparison with household survey results and some sensitivity analysis would be recommended.

Population with sustainable access to an improved water source

A different use of population estimates occurs with the calculation of the proportion of population with sustainable access to an improved water source. Estimates for this indicator are provided separately for urban areas, rural areas and the whole country. Estimates for rural areas are computed using household survey results, and the same for urban areas. However, overall country estimates are not taken from the survey, but extrapolated from urban and rural estimates using the respective population ratios as calculated by the UN Population Division. This procedure is inconsistent because it first accepts the household survey definition of urban and rural areas and then imposes ratios calculated with an external model, becoming subject to criticism on what the actual proportion of urban and rural population are. In this case it would be preferable to use the survey definitions alone.

The examples above demonstrate difficulties encountered when using national population estimates. When population data are used as weights to calculate regional and world figures, different population estimates tend to have a much lower impact. Differences in the world population estimates are minimal and they tend to be lower for very big countries. Moreover, in this case it is also justified to use a source of information that is consistent across countries and over time.

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[23] However, in the case of completion rate, the relative advantage of household survey data with respect to comparing numerator and denominator from the same source decreases and the single-age population denominator should be smoothed before being used to compute the completion rate.

Although there is no easy solution to the uncertainty surrounding some of the population estimates (uncertainty that is often signalled by the differences in estimates between the various sources), two steps could be taken to mitigate the potentially negative effects of this uncertainty. Firstly, agencies could assess the impact of different hypotheses on the final indicator. Secondly, international agencies that produce population estimates could better document the methods used to make population estimates and could be encouraged to try to reach an agreement on some of the problems (whenever estimates are particularly uncertain it could be useful to provide the range of likely figures in the two opposite extremes).

3.4. The importance of common definitions

As pointed out in section 2.2 on comparability issues, for a number of indicators international agencies still strive to achieve consensus on definitions and uniformity in their application.

Indicator definitions and guidelines do exist, but their acceptance and knowledge by statistics producers is not as complete as desired. This is a particularly serious problem in a scenario where there is lack of data: when for some countries new data become available after a substantial amount of time, it is disappointing to discover that methodologies and definitions have changed to the extent that any assessment of trends is seriously compromised.

Problems on definitional differences can be addressed in two different ways:

1) Further promotion of definitions and guidelines (this would address cases in which there are definitional distortions);

2) Adjust tools of analysis to capture the specific reality of the country and maintain definitional consistency.

The first approach would address cases in which there is a lack of clarity among the international agencies and cases in which agencies and countries are not aware of, or misinterpret, the international guidelines. This applies mainly to HIV and literacy indicators.

The second approach, instead, should tackle more complicated issues in which country specific realities require some adaptation of the canonical methodology to define and capture some indicators. This is the case for almost all indicators that rely on household surveys, and in particular for "the proportion of births attended by skilled health personnel", "improved water source", "improved sanitation", "the share of women in wage employment in the non-agricultural sector", and "the unemployment rate of 15 to 24-year-olds".

It is useful to provide two examples:

1) "The proportion of births attended by skilled health personnel": skilled health attendants are defined as doctors, midwives and nurses. However, in some countries there are professional categories that do not always fall into this precise international categorization. This creates uncertainty concerning the way in which data is treated. Indeed, this is the main reason for some of the differences between WHO and UNICEF data, especially in Latin American countries. For instance, both WHO and UNICEF rely on the 1998 ENSMI survey for the estimate of births attended by skilled health personnel in Paraguay. While WHO reports a proportion of 58.1, UNICEF's estimate is 70.9. This apparently is due to the exclusion of 'partera' from the WHO estimate.

In order to solve this dispute, a solution could be to encourage a revision of the types of profession accepted within the categorisation of skilled health personnel, taking into account the existing definition of skilled health attendants as "personnel trained to give the necessary supervision, care, and advice to women during pregnancy, labour, and the post-partum (after pregnancy) period, to conduct deliveries on their own, and to care for the new-borns". In order to carry out this revision thoroughly, the household survey could be supplemented by visits to local health clinics in order to investigate the ability and training received by the various health personnel.

2) "Measles immunization coverage": immunization from household surveys is generally measured in two ways: the mother is asked if she has an immunization card for the child and, if so, available data are directly taken from the card. If she does not have a card, the mother is asked to recall the type of immunization that the child had. However, in Vietnam, as in other countries, the immunization card is not kept by the mother but by the relevant health facility. This has the complication that no card can be seen by the interviewer at the household level. Again, such a problem could be solved only if the interviewer visits the health facility in that catchment area so that recall data can be integrated with recorded information. This could make estimates more acceptable.

As argued earlier, an easier access to a common household survey database could help resolve some of these problems by ensuring that new surveys make good use of past experiences.

3.5. Data management

An important point concerns the way in which international data is presented and posted on web sites by the various international agencies and indeed coordinated by the UNSD web page.

When data are taken from their original sources, a number of very important details are often lost. In addition, notes and footnotes that explain the difference behind any exceptional estimates vis-à-vis the way in which general estimates are made simply disappear so that, in the eyes of the user, all data appears to be the same – and therefore legitimate for direct comparison.

Improved transparency in the presentation of figures is crucial in order to raise awareness of potential differences between data from different sources, and thus potentially to increase the quality of data that can be gathered, and compared, from the international information sites.

Distinguishing between different data sources

In order to overcome problems of lack of data for some indicators, agencies do use different sources of information that often involve different methodologies to measure the same indicator. This is legitimate and still provides the possibility of measuring changes in trends within the country when the same, consistent source is used. However, it does sometimes pose problems of international comparability. It would be useful if, for all these indicators, metadata could indicate what sources have been used so that eventual users are aware of possible differences (see table 1).

Table 1: Indicators that make use of different sources of data

Indicator	Sources used
Women wage employment in non-agricultural sector	Labour force surveys, establishment surveys, administrative/ official statistics and insurance records. It should also be indicated whether the survey only covered urban areas or only certain regions of the country
One year old children immunised against measles	Administrative data and household surveys
Births attended by skilled health personnel	Survey data and administrative/official data
% of population with access to improved water sources	Survey data and administrative/official data
% of population with access to improved sanitation	Survey data and administrative/official data

Exceptional data

Various estimates are for some reason exceptional, because they are different from those of most other countries. All these cases should be properly noted. Such a problem occurs in two indicators: Firstly, in 'the share of women in wage employment in the non-agricultural sector', some of the estimates refer only to urban areas of the country. However, this is not noted by the UNSD database. Secondly, in 'the proportion of births assisted by skilled health personnel' some of the estimates only include births which occurred in hospitals.

Input data used to generate estimates

For some indicators in which models are used to generate estimates, a transparency requirement would suggest that year and sources of input data for such models should be available in the metadata. This is the case for the indicators reported in table 2.

Table 2: Indicators that make use of models and should provide information about input data

Indicator	Sources used
Youth literacy rate	Source and year of data used in the analysis
Ratio of youth literacy rate	Source and year of data used in the analysis
Under 5 mortality	Source and year of data used in the analysis
Infant mortality	Source and year of data used in the analysis

Finally, on a number of web pages, more clarity on data updates would be helpful. In various instances some agencies report data for a defined range of years (for instance 1996-2000), explaining that the estimate reported is the most recent available for that period of time. This is not an efficient way of reporting data because it may become contradictory, when comparing older datasets with newer ones. In fact, it is perfectly possible that the more recent dataset will provide new estimates that are still falling in the period mentioned above. To the data user this might appear as a difference between the estimates provided by different sources, whereas in fact the

original source of information is common and shared by the two agencies, the difference being explained by the fact that they represent estimates for two different periods of time.

For example, the WB in its web site (www.developmentgoals.org) reports data on prevalence of child malnutrition as the most recent estimate for the period 1993-2000. For Albania this is equal to 8.3. However, according to the UNICEF web page (www.childinfo.org) this is equal to 14.3 in the year 2000. The estimate of 8.3 actually comes from a 1998 survey, and when data were included in the WB web page the result of the 2000 survey was not yet available. Again, the solution should be to provide a direct link to the original sources.

4. Further Issues

Finally, and briefly, this study identified a number of areas in which the international effort could focus to improve the quality of data. In particular, the issues that might be addressed in further dialogue with the agencies are:

a. The level of accountability that the various lead international agencies have in the reporting process, as well as a review of the rules and systems that define the responsibilities of countries versus international agencies;

b. A further investigation into possible improvements in the quality of data currently collected from agency questionnaires;

c. Further exploration of the feasibility, costs and benefits of implementing an official international household survey database;

d. Explore the advantages of a direct re-analysis of raw data.[24]

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[24] At present original datasets are reanalysed by the responsible agencies for only three MDG indicators (poverty head-count, poverty gap, and prevalence of underweight children), but it is possible to think of such exercise for a number of other indicators where household surveys are or could be used (NER, completion rate, literacy rate, death rates, immunization, births attended by skilled health personnel, HIV/AIDS and malaria indicators, water and sanitation).

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Appendix A: The Millennium Development Goals

Goals and Targets (the Millennium Declaration)	Indicators for monitoring progress
Goal 1: Eradicate extreme poverty and hunger	
Target 1: Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day	1. Proportion of population below $1 (PPP) per day[a/] 2. Poverty gap ratio [incidence x depth of poverty] 3. Share of poorest quintile in national consumption
Target 2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger	4. Prevalence of underweight children under-five years of age 5. Proportion of population below minimum level of dietary energy consumption
Goal 2: Achieve universal primary education	
Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling	6. Net enrolment ratio in primary education 7. Proportion of pupils starting grade 1 who reach grade 5 8. Literacy rate of 15-24 year-olds
Goal 3: Promote gender equality and empower women	
Target 4: Eliminate gender disparity in primary and secondary education preferably by 2005 and to all levels of education no later than 2015	9. Ratios of girls to boys in primary, secondary and tertiary education 10. Ratio of literate females to males of 15-24 year-olds 11. Share of women in wage employment in the non-agricultural sector 12. Proportion of seats held by women in national parliament
Goal 4: Reduce child mortality	
Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate	13. Under-five mortality rate 14. Infant mortality rate 15. Proportion of 1 year-old children immunised against measles
Goal 5: Improve maternal health	
Target 6: Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio	16. Maternal mortality ratio 17. Proportion of births attended by skilled health personnel
Goal 6: Combat HIV/AIDS, malaria and other diseases	
Target 7: Have halted by 2015 and begun to reverse the spread of HIV/AIDS	18. HIV prevalence among 15-24 year old pregnant women 19. Condom use rate of the contraceptive prevalence rate[b/] 20. Number of children orphaned by HIV/AIDS[c/]
Target 8: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases	21. Prevalence and death rates associated with malaria 22. Proportion of population in malaria risk areas using effective malaria prevention and treatment measures[d/] 23. Prevalence and death rates associated with tuberculosis 24. Proportion of tuberculosis cases detected and cured under directly observed treatment short course (DOTS)

Goals and Targets (the Millennium Declaration)	Indicators for monitoring progress
Goal 7: Ensure environmental sustainability	
Target 9: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources	**25.** Proportion of land area covered by forest **26.** Ratio of area protected to maintain biological diversity to surface area **27.** Energy use (kg oil equivalent) per $1 GDP (PPP) **28.** Carbon dioxide emissions (per capita) and consumption of ozone-depleting CFCs (ODP tons) **29.** Proportion of population using solid fuels
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, urban and rural
Target 11 By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers	**31.** Proportion of urban population with access to improved sanitation **32.** Proportion of households with access to secure tenure (owned or rented)
Goal 8: Develop a global partnership for development	
Target 12: Develop further an open, rule-based, predictable, non-discriminatory trading and financial system *Includes a commitment to good governance, development, and poverty reduction – both nationally and internationally* **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 HIPC and cancellation of official bilateral debt; and more generous ODA for countries committed to poverty reduction* **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)* **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 **Target 16:** In co-operation with developing countries, develop and implement strategies for decent and productive work for youth **Target 17:** In co-operation with pharmaceutical companies, provide access to affordable, essential drugs in developing countries	Some of the indicators listed below are monitored separately for the least developed countries (LDCs), Africa, landlocked countries and small island developing States. *Official development assistance* **33.** Net ODA, total and to LDCs, as percentage of OECD/DAC donors' gross national income **34.** Proportion of total bilateral, sector-allocable ODA of OECD/DAC donors to basic social services (basic education, primary health care, nutrition, safe water and sanitation) **35.** Proportion of bilateral ODA of OECD/DAC donors that is untied **36.** ODA received in landlocked countries as proportion of their GNIs **37.** ODA received in small island developing States as proportion of their GNIs *Market access* **38.** Proportion of total developed country imports (by value and excluding arms) from developing countries and LDCs, admitted free of duties **39.** Average tariffs imposed by developed countries on agricultural products and textiles and clothing from developing countries **40.** Agricultural support estimate for OECD countries as percentage of their GDP **41.** Proportion of ODA provided to help build trade capacity[e] *Debt sustainability* **42.** Total number of countries that have reached their HIPC decision points and number that have reached their HIPC completion points (cumulative) **43.** Debt relief committed under HIPC initiative, US$ **44.** Debt service as a percentage of exports of goods and services **45.** Unemployment rate of 15-24 year-olds, each sex and total[f] **46.** Proportion of population with access to affordable essential drugs on a sustainable basis

Goals and Targets (the Millennium Declaration)	Indicators for monitoring progress
Target 18: In co-operation with the private sector, make available the benefits of new technologies, especially information and communications	**47.** Telephone lines and cellular subscribers per 100 population **48.** Personal computers in use per 100 population and Internet users per 100 population

a For monitoring country poverty trends, indicators based on national poverty lines should be used, where available.

b Amongst contraceptive methods, only condoms are effective in preventing HIV transmission. The contraceptive prevalence rate is also useful in tracking progress in other health, gender and poverty goals. Because the condom use rate is only measured amongst women in union, it will be supplemented by an indicator on condom use in high-risk situations. These indicators will be augmented with an indicator of knowledge and misconceptions regarding HIV/AIDS by 15-24 year-olds (UNICEF - WHO).

c To be measured by the ratio of proportion of orphans to non-orphans aged 10-14 who are attending school.

d Prevention to be measured by the percentage of under 5s sleeping under insecticide treated bednets; treatment to be measured by percentage of under 5s who are appropriately treated. **e** OECD and WTO are collecting data that will be available from 2001 onwards. **f** an improved measure of the target is under development by ILO for future years.

Appendix B: Data availability of the 48 MDG indicators

All countries

Indicator	1989-1992		1998-2002		1989-1992 & 1998-2002		Average latest year
	No. of countries	% of population	No. of countries	% of population	No. of countries	% of population	
1	6	(1)	30	(38)	0	(0)	1996
1b[1]	28	(26)	24	(51)	5	(18)	1995
2	6	(1)	30	(38)	0	(0)	1996
3	10	(1)	38	(40)	0	(0)	1996
4	53	(62)	71	(48)	29	(36)	1998
5	91	(67)	111	(68)	88	(65)	1999
6	136	(77)	162	(76)	123	(72)	1999
6b[2]	110	(77)	89	(51)	64	(44)	1998
7	66	(42)	88	(66)	46	(37)	1997
8	138	(86)	138	(86)	138	(86)	2003
9[3]	148	(91)	190	(96)	141	(87)	2000
10	138	(86)	138	(86)	138	(86)	2003
11	186	(100)	119	(84)	119	(84)	1997
12	126	(90)	171	(97)	118	(84)	2003
13	187	(100)	192	(100)	187	(100)	2000
14	187	(100)	192	(100)	187	(100)	2000
15	169	(99)	173	(100)	169	(100)	1999
16	160	(99)	182	(100)	159	(99)	2000
17	46	(28)	77	(67)	21	(13)	1997
18	0	(0)	16	(3)	0	(0)	2002
19[4]	55	(54)	62	(39)	25	(14)	1997
20[5]	0	(0)	42	(11)	0	(0)	2000
21[6]	0	(0)	191	(100)	0	(0)	2000
22[7]	0	(0)	35	(11)	0	(0)	2000
23[8]	0	(0)	191	(100)	0	(0)	2000
24[9]	0	(0)	179	(95)	0	(0)	2001
25	197	(100)	197	(100)	197	(100)	2000
26	0	(0)	0	(0)	0	(0)	1997
27	119	(94)	122	(95)	199	(94)	2000

Indicator	1989-1992		1998-2002		1989-1992 & 1998-2002		Average latest year
	No. of countries	% of population	No. of countries	% of population	No. of countries	% of population	
28[10]	199	(100)	194	(97)	194	(97)	1999
30	74	(77)	146	(91)	73	(76)	2000
31	78	(77)	141	(88)	75	(77)	2000
33	21	(14)	22	(14)	21	(14)	2001
34	0	(0)	21	(13)	0	(0)	2001
35	17	(8)	20	(9)	16	(8)	2001
36	4	(28)	5	(28)	4	(28)	2001
37	202	(1)	201	(1)	36	(1)	2001
40	14	(12)	15	(12)	14	(12)	2001
43	0	(0)	0	(0)	0	(0)	2003
44	110	(75)	101	(76)	85	(71)	1998
45	73	(60)	82	(60)	64	(56)	1999
46	0	(0)	0	(0)	0	(0)	1997
47	206	(100)	209	(100)	205	(100)	2001
48[11]	51	(44)	206	(99)	51	(44)	2001

This summary has been computed with the data reported in the UNSD web page (http://unstats.un.org/insd/mi/mi_goals.asp) in July 2003. For 5 indicators the UNSD does not report any data (29, 32, 38,39, 41). Some of the indicators are monitored only for certain sub-group of countries, thus number of available estimates and their population share are expected to be low (this is especially the case for indicators 20, 22, and 33 to 44).

[1] Poverty HC with national poverty line; [2] Completion rate; [3] Ratio of girls to boys in primary school; [4] Condom use to overall contraceptive use among currently married women aged 15-49; [5] Orphans (both parents) aged 10-14 school attendance rate as a % of non-orphans attendance rate; [6] malaria death rate; [7] use of insecticide-treated bed nets in population <5; [8] Tubercolosis death rate; [9] DOTS detection rate; [10] Carbon Dioxide Emissions; [11] Internet users.

Sub-Saharan Africa

Indicator	1989-1992		1998-2002		1989-1992 & 1998-2002		Average latest year
	No. of countries	% of population	No. of countries	% of population	No. of countries	% of population	
1	2	(3)	4	(7)	0	(0)	1995
1b[1]	11	(19)	6	(18)	1	(2)	1994
2	2	(3)	4	(7)	0	(0)	1995
3	1	(0)	5	(8)	0	(0)	1995
4	18	(53)	30	(72)	13	(46)	1998
5	39	(84)	40	(93)	38	(83)	1999
6	34	(73)	41	(78)	32	(70)	1999
6b[2]	38	(91)	33	(86)	29	(81)	1998
7	25	(47)	29	(57)	19	(35)	1997
8	41	(94)	41	(94)	41	(94)	2003
9[3]	39	(96)	45	(77)	37	(75)	2000
10	41	(94)	41	(94)	41	(94)	2003
11	45	(100)	8	(12)	8	(12)	1992
12	31	(50)	44	(91)	29	(41)	2003
13	48	(100)	48	(100)	48	(100)	2000
14	48	(100)	48	(100)	48	(100)	2000
15	42	(98)	44	(99)	42	(98)	1999
16	45	(100)	46	(100)	45	(100)	2000
17	14	(44)	25	(68)	9	(37)	1998
18	0	(0)	15	(30)	0	(0)	2002
19[4]	17	(63)	27	(72)	12	(48)	1998
20[5]	0	(0)	36	(90)	0	(0)	2000
21[6]	0	(0)	48	(100)	0	(0)	2000
22[7]	0	(0)	27	(50)	0	(0)	2000
23[8]	0	(0)	48	(100)	0	(0)	2000
24[9]	0	(0)	43	(98)	0	(0)	2000
25	48	(100)	48	(100)	48	(100)	2000
26	0	(0)	0	(0)	0	(0)	1997
27	20	(77)	20	(77)	20	(77)	2000
28[10]	46	(99)	45	(98)	45	(98)	1999
30	26	(77)	43	(98)	26	(77)	2000

Indicator	1989-1992		1998-2002		1989-1992 & 1998-2002		Average latest year
	No. of countries	% of population	No. of countries	% of population	No. of countries	% of population	
31	28	(76)	43	(98)	28	(76)	2000
33	0	(0)	0	(0)	0	(0)	-
34	0	(0)	0	(0)	0	(0)	-
35	0	(0)	0	(0)	0	(0)	-
36	15	(28)	15	(28)	15	(28)	2001
37	6	(1)	6	(1)	6	(1)	2001
40	0	(0)	0	(0)	0	(0)	-
43	0	(0)	0	(0)	0	(0)	2003
44	42	(83)	26	(73)	25	(66)	1997
45	1	(2)	2	(7)	0	(0)	1997
46	0	(0)	0	(0)	0	(0)	1997
47	48	(100)	48	(100)	48	(100)	2001
48[11]	4	(8)	48	(100)	4	(8)	2001

This summary has been computed with the data reported in the UNSD web page (http://unstats.un.org/insd/mi/mi_goals.asp) in July 2003. For 5 indicators the UNSD does not report any data (29, 32, 38,39, 41). Some of the indicators are monitored only for certain sub-group of countries, thus number of available estimates and their population share are expected to be low (this is especially the case for indicators 20, 22, and 33 to 44).

[1] Poverty HC with national poverty line; [2] Completion rate; [3] Ratio of girls to boys in primary school; [4] Condom use to overall contraceptive use among currently married women aged 15-49; [5] Orphans (both parents) aged 10-14 school attendance rate as a % of non-orphans attendance rate; [6] malaria death rate; [7] use of insecticide-treated bed nets in population <5; [8] Tubercolosis death rate; [9] DOTS detection rate; [10] Carbon Dioxide Emissions; [11] Internet users.

Least Developed Countries

Indicator	1989-1992		1998-2002		1989-1992 & 1998-2002		Average latest year
	No. of countries	% of population	No. of countries	% of population	No. of countries	% of population	
1	1	(1)	4	(7)	0	(0)	1995
1b[1]	8	(11)	9	(41)	1	(2)	1995
2	1	(1)	4	(7)	0	(0)	1995
3	1	(1)	4	(10)	0	(0)	1996
4	20	(63)	27	(67)	13	(42)	1998
5	35	(90)	36	(99)	34	(89)	1999
6	33	(86)	41	(93)	29	(81)	1998
6b[2]	34	(82)	36	(91)	29	(81)	1999
7	21	(34)	30	(76)	15	(25)	1997
8	38	(91)	38	(91)	38	(91)	2003
9[3]	38	(91)	44	(91)	34	(83)	1999
10	38	(91)	38	(91)	38	(91)	2003
11	43	(100)	5	(27)	5	(27)	1992
12	28	(61)	42	(80)	24	(49)	2002
13	49	(100)	49	(100)	49	(100)	2000
14	49	(100)	49	(100)	49	(100)	2000
15	38	(98)	40	(99)	38	(98)	1999
16	43	(100)	46	(100)	43	(100)	2000
17	14	(12)	20	(56)	7	(9)	1997
18	0	(0)	6	(9)	0	(0)	2002
19[4]	16	(70)	23	(61)	11	(46)	1998
20[5]	0	(0)	27	(53)	0	(0)	2000
21[6]	0	(0)	49	(100)	0	(0)	2000
22[7]	0	(0)	23	(40)	0	(0)	2000
23[8]	0	(0)	49	(100)	0	(0)	2000
24[9]	0	(0)	45	(98)	0	(0)	2001
25	48	(100)	48	(100)	48	(100)	2000
26	0	(0)	0	(0)	0	(0)	1997
27	14	(64)	14	(64)	14	(64)	2000
28[10]	46	(99)	45	(98)	45	(98)	1999
30	19	(62)	45	(98)	19	(62)	2000

Indicator	1989-1992		1998-2002		1989-1992 & 1998-2002		Average latest year
	No. of countries	% of population	No. of countries	% of population	No. of countries	% of population	
31	22	(64)	45	(98)	22	(64)	2000
33	0	(0)	0	(0)	0	(0)	-
34	0	(0)	0	(0)	0	(0)	-
35	0	(0)	0	(0)	0	(0)	-
36	15	(30)	15	(30)	15	(30)	2001
37	10	(2)	10	(2)	10	(2)	2001
40	0	(0)	0	(0)	0	(0)	-
43	0	(0)	0	(0)	0	(0)	2003
44	41	(86)	27	(75)	27	(75)	1997
45	2	(22)	1	(21)	1	(21)	1997
46	0	(0)	0	(0)	0	(0)	1997
47	49	(100)	49	(100)	49	(100)	2001
48[11]	4	(5)	48	(97)	4	(5)	2001

This summary has been computed with the data reported in the UNSD web page (http://unstats.un.org/insd/mi/ mi_goals.asp) in July 2003. For 5 indicators the UNSD does not report any data (29, 32, 38,39, 41). Some of the indicators are monitored only for certain sub-group of countries, thus number of available estimates and their population share are expected to be low (this is especially the case for indicators 20, 22, and 33 to 44).

[1] Poverty HC with national poverty line; [2] Completion rate; [3] Ratio of girls to boys in primary school; [4] Condom use to overall contraceptive use among currently married women aged 15-49; [5] Orphans (both parents) aged 10-14 school attendance rate as a % of non-orphans attendance rate; [6] malaria death rate; [7] use of insecticide-treated bed nets in population <5; [8] Tubercolosis death rate; [9] DOTS detection rate; [10] Carbon Dioxide Emissions; [11] Internet users.

Appendix C: Household survey datasets

In this appendix we report the most common household survey typologies and provide information on databanks that on a smaller scale (regional or focused on specific topic) are constructing significant household survey databases. This list does not claim to be complete, but wants to offer an idea of some of the available resources.

Household surveys typologies

Multiple Indicator Cluster Surveys

These surveys were designed and promoted by UNICEF to provide data for assessing progress towards the 1990 World Summit for Children goals. There are two rounds of MICS datasets. The first is the mid decade assessment, which conducted 60 surveys around 1995. The second, the end-decade assessment, includes surveys in 66 countries conducted around 2000. Although, there exist some flexibility in the specific content of each survey, modules are quite standard and contain information on health, education, and demographic variables. UNICEF web site provides information on available household surveys, their content, and archives reports produced from the surveys.

www.childinfo.org.

Demographic and Health Surveys (DHS)

These surveys are supported by USAID, the first DHS survey was conducted in 1984 and in September 2003 they have been conducted in 69 different countries, half of them in SSA. Their main focus is on demographic and health issues, but the questionnaire contents can vary by country. Generally, the DHS includes a household and women questionnaire, but in some cases special modules on education are included and integrated with facility surveys and service provision assessments. Details on these survey, their documentation, and data are available at the following web page.

www.measuredhs.com.

Living Standard Measurement Surveys (LSMS)

The Living Standards Measurement Study was established by the World Bank in 1980 to explore ways of improving the type and quality of household data collected by government statistical offices in developing countries. The first surveys were conducted in 1985 in Peru and Côte d'Ivoire, and in September 2003 the LSMS web page contained datasets of 50 surveys conducted in 30 different countries. Although there are general guidelines on format and modules of the questionnaires (household and community questionnaires, with data on prices and facilities) the actual content of the questionnaire varies in each country (it reflects the needs of each country and it is the outcome of a dialogue with the national authorities). Generally LSMS surveys measure income poverty, education and health indicators.

Recently the WB launched a Comparative Living Standards Project in which the Bank is addressing issues related to data access, facilitating search of surveys by topic and creating an internationally comparative database with a subset of variables/indicators from the LSMS countries. The LSMS web site contains questionnaires, informative documents, and data access policies.

www.worldbank.org/lsms.

World Health Surveys (WHS)

This is a new WHO instrument that has been designed to collect information on health conditions, responsiveness of the health system, financing issues, health insurance etc. It aims at providing comparable information across countries. It has already been conducted in about 70 countries.

www3.who.int/whs/

Core Welfare Indicators Questionnaires (CWIQ)

The CWIQ was developed jointly by the WB with UNDP and UNICEF to monitor social indicators in Africa (first pilot surveys were in 1996 in Kenya and Ghana). The main feature of the CWIQ is its simplicity and the possibility to produce rapid results. On the other hand, its content can only be limited to some key indicators, it focuses just on outputs and not on factors that determine the outputs. Although the tool was designed for the African context (it has been implemented in about 15 SSA countries), currently there is an attempt to use this tool in Pakistan.

www4.worldbank.org/afr/stats/cwiq.cfm

National statistical offices generally conduct with frequency two important surveys: household budget surveys and labour force surveys.

Household Budget Surveys or Household Income and Expenditure Surveys

Household budget surveys (HBS) are conducted for three main purposes: to integrate information on national accounts; to provide weights for consumer price indexes; for welfare and poverty analysis. In many countries HBS have become multi-purpose household surveys containing a lot of important information. They are routine surveys in developing countries, but relatively frequent also in developing countries (for instance in Africa since 1980 there have been 60 of such surveys, excluding Integrated household surveys, LSMS, SDA, and PS). Generally they are conducted every 5 years.

We were unable to find organization that could provide systematic worldwide information about such surveys.

Labour Force Surveys (LFS)

Labour Force Surveys are common in industrialised countries and conducted almost every year, but are more rare in developing countries (in Africa since 1961 only 10 countries conducted such survey). They provide information on employment and unemployment, but they always seek information on education and training and sometimes on other variables.

ILO collects these datasets that are the main source of labour statistics, it also provides a list of countries that make such surveys available online.

www.ilo.org/public/english/support/lib/howto/lfs.htm

Household Surveys Data banks providing variable harmonisation to facilitate international comparability

Luxemburg Income Study/ Luxemburg Employment Study (LIS/LES)

It collects income and labour surveys from OECD countries and standardize key variables for comparison purposes. It contains information on 29 countries and more than 100 surveys.

www.lisproject.org/

Improvement of the Surveys of Living Conditions (MECOVI)

It is a regional program of technical assistance for capacity building to improve the household surveys to measure living conditions and poverty in Latin America and the Caribbean. It contains a regional data bank, which introduced standardized data labelling for household survey data sets. Data access and dissemination is made easy. There are data from 7 Latin American countries.

www.iadb.org/sds/pov/site_19_e.htm

Household Expenditure and Income Data for Transitional Economies (HEIDE)

The HEIDE database standardized basic variables of household surveys conducted between 1993 and 1995 in 9 countries: Bulgaria, Hungary, Poland, Slovak Republic, Russia, Kyrgyz Republic, Estonia, Armenia, Latvia. Supportive documentation and data are available at the following web page.

www.worldbank.org/research/inequality/data.htm

Database on Child Growth and Malnutrition (WHO)

This database started to collect household surveys with nutritional data in 1986, and contains nutritional data from household surveys conducted around the world since 1960. It compiles, standardizes and disseminates results. There is a special effort to make data comparable across countries. It contains information on more than 800 household surveys.

www.who.int/nutgrowthdb/

The Panel Comparability Project (PACO)

The PACO Project is a centralised approach to create an international comparative database integrating micro-data from various national household panels. The PACO Database contains harmonised and consistent variables and identical data structures from 1983 to 1997 for each country included (Hungary, Poland, France, Germany, Luxemburg, UK and USA). The PACO Database increases the accessibility and use of panel data for research and facilitates comparative cross-national and longitudinal research on processes and dynamics of policy issues.

www.ceps.lu/paco/pacochar.htm

Household Surveys Data banks that list available surveys, provide documentation and contacts to access datasets

Africa Household Survey Databank

The Africa Household Survey Databank aims at enhancing the capacity of the national statistical agencies in survey data management, dissemination and documentation. It provides information on household surveys and censuses conducted in Africa since 1961, containing about 400 entries. Surveys can be searched by country, year and type. It gives general information on the characteristics of the survey, sampling procedure, documentation available and data access policy. In some cases questionnaires, reports and data can be downloaded from the web.

www4.worldbank.org/afr/poverty/databank/default.cfm

Data Base of Household surveys in Latin America and the Caribbean (PAHO/WHO)

This database contains information on household surveys that were conducted in Latin America and the Caribbean since 1985, and that have one or more modules on health. The database can be consulted by year, by country, or by type of survey (DHS, QDHS -Survey of mother Child health, or reproductive health-, Health surveys, LSMS, QLSMS, Multi purpose surveys, Labour force surveys, Income and Expenditure surveys). The database provides information on general characteristics of the surveys, their contents, especially in relation to health, and it also provides information on how to access the data.

www.paho.org/spanish/hdp/asp/encuestas.asp

Poverty monitoring database (WB)

This database provides key features and general information on income/consumption surveys (sample size, variables collected, data access information). It seems that the database relies on institutions or individuals signalling the existence of certain datasets, so lists of available surveys are not always complete.

www.worldbank.org/poverty/data/povmon.htm

Other datasets/surveys

IFPRI

In collaboration with institutions throughout the world, IFPRI is often involved in the collection of primary data and the compilation and processing of secondary data. The resulting datasets provide a wealth of information, both at the local (households and communities) and national levels. IFPRI is distributing selected datasets in order to encourage that they be widely and freely used in research and policy analysis. Focus of such surveys is on various topics related to food security, coping strategies, food production, with implications for poverty, education and health sectors.

www.ifpri.org

Literacy Assessment and Monitoring Programme (LAMP)

This program is launching a new survey designed by the UNESCO Institute for Statistics to collect information on literacy through direct assessment techniques. The survey is currently being piloted in different countries.

www.unesco.org

Rand Family Life Surveys

Household surveys conducted in Malaysia, Indonesia, Bangladesh and Guatemala.

www.rand.org/services/databases.html

Global working families

Household surveys conducted in 7 different countries.

www.hsph.harvard.edu/globalworkingfamilies/index.html

Appendix D: Size and characteristics of differences in international population estimates

It is not possible to give a full account of the countries in which different population estimates exist, mainly because these differences do change over time and are subject to continuous update. However, it is significant to provide some statistics on the size of these differences and some general features.

Comparing population estimates of UN Population Division, the World Bank, and the US Census Bureau[25] we found that for the year 2000, total population estimates presented differences higher than 10% (more than 10% or less than 10%) for more than 1 country in every 6, and this percentage increased to almost 1 in every 3 taking into consideration estimates of population aged between 0 and 14 (see table D1)[26].

Table D1.   **Quantifying the differences between international population estimates, 2000**

	No. of countries with differences above:			Number of countries compared
	5%	10%	20%	
Differences in total population	81	37	11	204
Differences in group of people aged 0-14	99	56	17	186

Moreover, the analysis of the same data revealed the following general features[27]:

1) Differences are higher in less developed countries (this is because censuses tend to be more irregular and old, and there is more uncertainty about baseline data and demographic variables);

2) Differences are particularly high in Sub-Saharan Africa (where the problems mentioned in the previous point are particularly acute);

3) Differences tend to be smaller for bigger countries;

4) Differences are smaller for the overall country population than for specific age groups;

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[25] UN estimates were taken from the "World Population Prospects: the 2002 Revision" – Medium variant population, WB estimates from the "World Development Indicators, 2003" and for the US Bureau from the online International Development Database as for September 2003 – Mid year population.

[26] Estimates were considered differing more than 10% if in at least one out of three comparisons such a discrepancy was observed (comparisons are calculated as follows: $|A - B|/B$ where A and B are respectively the population estimates of: WB and UN; US Bureau and UN; US Bureau and WB.

[27] O'Neill and Balk (2001) also reach similar conclusions.

5) In developing countries differences tend to be higher for young and old age cohorts (uncertainty about fertility and mortality), while in developed economies they are higher in middle age groups (uncertainty about migration).

6) Even small discrepancies in assumed fertility rates can cause a substantial rolling effect on long term projections (when baseline data are relatively old), causing initially similar baseline data to be projected in divergent estimates;

7) Substantially different assumptions on the three demographic variables are sometimes concealed by similar population estimates, because of different adjustments in the baseline data

These characteristics are supported by the analysis of a country score of the differences. The score is computed as follows:

$$Score = \frac{|UN-WB|+|UN-US|+|WB-US|}{UN+WB+US}*100$$

where UN stands for the UN population estimate, WB for the WB estimate and US for the US Census Bureau estimate. The higher the score the bigger are the differences between population estimates of these three international organizations.

These scores are summarised for certain groups of countries: according to their income (table D2), population size of the country (table D3), and geographic areas distinguishing for differences in total country population and in the age group 0-14 (table D4).

Table D2.   Average score by income, 2000

	Low income	Lower middle income	Upper middle income	High income	All countries
Score of differences between country population	5.93	3.59	3.55	2.51	4.07
No. of countries	66	52	36	50	204

Table D3.   Average score by country size, 2000

	Less than 1 million	Between 1 and 10 million people	Between 10 and 20 million people	More than 20 million people	All countries
Score of differences between country population	4.95	4.82	3.00	2.65	4.07
No. of countries	51	75	30	48	204

Table D4.   Average score by geographic areas, 2000

	Asia	Africa	Europe	Latin America & Caribbean	Oceania	North America	All countries
Score of differences between country population	5.45	5.60	1.18	2.71	3.13	0.88	3.93
Score of differences between age group 0-14	7.00	7.78	1.67	4.29	6.12	2.02	5.53
No. of countries	49	52	39	31	12	2	185

Appendix E: Summary of indicators' characteristics

Goal 1: Eradicate Extreme Poverty and Hunger

Indicator and responsible agency	Availability and timeliness [a]	Main sources and processes used to report data	Use of international population data	Definitional and data management issues
1. Percentage of population below $1 (PPP) per day WB	Countries with at least one observation since 1998: 30 (6 in 1999, and 24 in 1998).	The WB directly analyses existing and adequate household surveys		
2. Poverty gap ratio WB	Countries with at least one observation since 1998: 30 (6 in 1999, an 24 in 1998).	The WB directly analyses existing and adequate household surveys		
3. Share of poorest quintile in national consumption WB	Countries with at least one observation since 1998: 38 (1 in 2000, 7 in 1999, 30 in 1998).	The WB directly analyses existing and adequate household surveys		
4. Prevalence of underweight children under 5 years of age WHO-UNICEF	Countries with at least one observation since 1998: 88 (1 in 2002, 12 in 2001, 48 in 2000, 17 in 1999, 10 in 1998).	WHO directly analyses existing and adequate household surveys and UNICEF reports estimates from existing and adequate household surveys		
5. Proportion of population below minimum level of dietary energy consumption FAO	111 countries in 1999 (average of results from three years 1998-2000).	FAO combines Food Balance Sheet, International population estimates, and information from household surveys to produce estimates Partly model based estimates	UN population estimates and their composition by age and sex are used to calculate the availability of calories per capita	

a) Availability and timeliness has been computed with the data reported in the UNSD web page in July 2003 (http://unstats.un.org/insd/mi/ mi_goals.asp).

Goal 2: Achieve Universal Primary Education

Indicator and responsible agency	Availability and timeliness [a]	Main sources and processes used to report data	Use of international population data	Definitional and data management issues
6. Net enrolment ratio in primary education UNESCO	Since 1998 162 countries have at least one estimate (133 in 1998, 133 in 1999, and 131 in 2000).	UNESCO combines information provided by countries (Ministries of Education) through special questionnaires and population age group estimates from international population data to produce this indicator	Specific school age groups are taken from UN population data	
7. Proportion of pupils starting grade 1 who reach grade 5 UNESCO	Since 1998 88 countries have at least one observation (68 in 1998 and 72 in 1999).	Using information provided by countries and collected through special questionnaires, UNESCO computes the survival ratio		
8. Literacy rate of 15-24 year olds UNESCO	Since 1998 138 countries have at least one observation (for these countries estimates are available every year up to 2002, however estimates are based on data that on average is 10 years old).	Censuses and household/labour surveys estimates are combined with international population data to compute the literacy rate. Model based estimates	Sex and age group literacy estimates are weighted by the respective populations as per UN population data (15-19 and 20-24 age groups by sex)	There is still need of promoting the definition of such indicator Lack of details on year and sources of data used in the model

a) Availability and timeliness has been computed with the data reported in the UNSD web page in July 2003 (http://unstats.un.org/insd/mi/ mi_goals.asp).

Goal 3: Promote Gender Equality and Empower Women

Indicator and responsible agency	Availability and timeliness [a]	Main sources and processes used to report data	Use of international population data	Definitional and data management issues
9. Ratio of girls to boys in primary, secondary and tertiary education UNESCO	For primary school since 1998 190 countries have at least one observation (163 in 1998, 168 in 1999, 164 in 2000).	Information provided by countries (Ministries of Education) through annual questionnaires and checked and elaborated by UNESCO		
10. Ratio of literate women to men of 15-24 year olds UNESCO	Since 1998 138 countries have at least one observation (for these countries estimates are available every year up to 2002, however estimates are based on data that on average is 10 years old).	Censuses and household/labour surveys combined with international population data to compute the literacy rate Model based estimates	Age group literacy estimates are weighted by the respective population as per UN population data	Provide details on year and sources of data used in the model
11. Share of women in wage employment in the non-agricultural sector ILO	Since 1998 119 countries have at least one observation (108 in 1998, 105 in 1999, 111 in 2000, 106 in 2001 and 4 in 2002).	ILO reports available estimates from population censuses, labour force surveys, administrative records and official estimates		Distinguish source of data and provide details of exceptional estimates (area or region of the country for which the estimate is valid) In some cases it is necessary to adjust tools of analysis in order to maintain definitional consistency and capture specific country characteristics
12. Proportion of seats held by women in national parliament IPU	Since 1998 171 countries have at least one observation (152 in 1998, 148 in 1999, 152 in 2000, 152 in 2001 and 162 in 2002).	Records of national parliaments		

a) Availability and timeliness has been computed with the data reported in the UNSD web page in July 2003 (http://unstats.un.org/insd/mi/ mi_goals.asp).

Goal 4 Reduce Child Mortality

Indicator and responsible agency	Availability and timeliness [a]	Main sources and processes used to report data	Use of international population data	Definitional and data management issues
13. Under 5 mortality rate UNICEF-WHO	Since 1998 192 countries have at least one observation (192 in 2000).	Vital registration systems, population censuses and household surveys Model based estimates		Provide details on year and sources of data used in the analysis
14. Infant mortality rate UNICEF-WHO	Since 1998 192 countries have at least one observation (192 in 2000).	Vital registration systems, population censuses and household surveys Model based estimates		Provide details on year and sources of data used in the analysis
15. Proportion of 1 year old children immunized against measles UNICEF-WHO	Since 1998 173 countries have at least one observation (173 in 1999).	Administrative data, household surveys and WHO-UNICEF estimates Data are collected through annual questionnaires and independent searches of household survey data		Distinguish estimates coming from household surveys and administrative data In some cases it is necessary to adjust tools of analysis in order to maintain definitional consistency and capture specific country characteristics

a) Availability and timeliness has been computed with the data reported in the UNSD web page in July 2003 (http://unstats.un.org/insd/mi/ mi_goals.asp).

Goal 5 Improve Maternal Health

Indicator and responsible agency	Availability and timeliness [a]	Main sources and processes used to report data	Use of international population data	Definitional and data management issues
16. Maternal mortality ratio UNICEF-WHO	We have information for 160 countries in 1990,, 183 in 1995 and 182 in 2000.	Vital registration systems, surveys, RAMOS (Reproductive Age Mortality Study), Household surveys, Censuses Model based estimates		
17. Proportion of births attended by skilled health personnel UNICEF-WHO	Since 1998 157 countries have at least one observation (157 in 2000).	Household surveys and some country official statistics		Distinguish source of data (survey data or administrative/official data) and provide details of exceptional estimates In some cases it is necessary to adjust tools of analysis in order to maintain definitional consistency and capture specific country characteristics

a) Availability and timeliness has been computed with the data reported in the UNSD web page in July 2003 (http://unstats.un.org/insd/mi/ mi_goals.asp).

Goal 6 Combat HIV/AIDS, Malaria and Other Diseases

Indicator and responsible agency	Availability and timeliness [a]	Main sources and processes used to report data	Use of international population data	Definitional and data management issues
18. HIV prevalence among 15-24 year old pregnant women UNAIDS-WHO-UNICEF	16 countries in the period between 1999-2002.	Routine Sentinel Surveillance		There is still need of clarity and promotion of the indicator's definition
19. Condom use rate of the contraceptive prevalence rate UNAIDS-UNICEF-UN Pop. Division-WHO	With reference to the condom use to the overall contraceptive use, since 1998 62 countries have at least one observation (12 in 1998, 13 in 1999, 31 in 2000, 7 in 2001).	Household surveys		There is still need of clarity and promotion of the indicator's definition
20. Number of children orphaned by HIV/AIDS UNICEF-UNAIDS	With reference to the ratio of school attendance, there are 42 countries with at least one observation since 1998 (5 in 1998, 4 in 1999, 32 in 2000, and 1 in 2001).	Household surveys		
21. Prevalence and death rates associated with malaria WHO	191 countries in 2000 (death rates per 100,000 - all ages) [a].	Various sources of data combined in a predictive model (epidemiological associations between climate and likelihood of stable malaria transmission, empirical survey-derived estimates of disease risk linked to epidemiological features of acquired immunity and models of pop. distribution)		
22. % of population in malaria risk areas using effective malaria prevention and treatment measures UNICEF-WHO	Since 1998 35 countries have at least one observation about prevention (4 in 1999, 27 in 2000, and 4 in 2001).	Household surveys		

Indicator and responsible agency	Availability and timeliness [a]	Main sources and processes used to report data	Use of international population data	Definitional and data management issues
23. Prevalence and death rates associated with tuberculosis (TB) WHO	191 countries in 2000.	Model estimates based on TB incidence cases, case detection rates, average case duration (country notifications and survey data)		
24. % of TB cases detected and cured under directly observed treatment short curse WHO	Since 1998 179 countries with at least one observation (122 in 1998, 127 in 1999, 149 in 2000, 155 in 2001).	Officially reported data collected by WHO through annual questionnaires		

a) Availability and timeliness has been computed with the data reported in the UNSD web page in July 2003 (http://unstats.un.org/insd/mi/ mi_goals.asp).

Goal 7 Ensure Environmental Sustainability

Indicator and responsible agency	Availability and timeliness [a]	Main sources and processes used to report data	Use of international population data	Definitional and data management issues
25. Proportion of land area covered by forest FAO	197 countries in 2000.	National forest inventories, satellite images or other remote sensing information systems		
26. Ratio of area protected to maintain biological diversity to surface area UNEP-IUCN	196 countries in 1997.	Data collected from environment and other ministries		
27. Energy use per 1$ GDP (PPP) IEA-WB	Since 1998 122 countries with al least one observation (122 in 1998, 119 in 1999, 119 in 2000).	National energy balance sheet		
28. Carbon dioxide emissions (per capita) and consumption of ozone depleting CFCs UNFCCC-UNSD UNEP-Ozone Secretariat	For carbon dioxide emissions since 1998 194 countries have at least one observation (192 in 1998 and 1999, and 29 in 2000. For ozone depleting CFCs consumption since 1998 156 countries have at least one observation (153 in 1998, 151 in 1999, 144 in 2000, 128 in 2001)	Information collected through questionnaires from country energy and environment ministries		
29. Proportion of population using solid fuels WHO	NA.	Household surveys		

Indicator and responsible agency	Availability and timeliness [a]	Main sources and processes used to report data	Use of international population data	Definitional and data management issues
30. Proportion of population with sustainable access to an improved water source UNICEF-WHO	150 countries in 2000 (for combined estimates of urban and rural areas).	Country provided data and household surveys Model based estimates Information is collected through annual questionnaires and independent searches	Country estimates are calculated from urban and rural estimates applying the respective population ratios as per UN population data	Distinguish source of data (survey data or administrative/official data) In some cases it is necessary to adjust tools of analysis in order to maintain definitional consistency and capture specific country characteristics
31. Proportion of population with access to improved sanitation UNICEF-WHO	141 countries in 2000 (for combined estimates of urban and rural areas).	Country provided data and household surveys. Model based estimates Information is collected through annual questionnaires and independent searches		Distinguish source of data (survey data or administrative/official data) In some cases it is necessary to adjust tools of analysis in order to maintain definitional consistency and capture specific country characteristics
32. Proportion of population with access to secure tenure UN-HABITAT	NA.	Household surveys		

a) Availability and timeliness has been computed with the data reported in the UNSD web page in July 2003 (http://unstats.un.org/insd/mi/ mi_goals.asp).

Goal 8 Develop a Global Partnership for Development

Indicator and responsible agency	Availability and timeliness [a]	Main sources and processes used to report data	Use of international population data	Definitional and data management issues
33. Net ODA, total and to LDCs, as percentage of OECD/DAC donors' gross national income OECD	22 countries evry year from 1998 to 2001.	Estimates provided by countries		
34. Proportion of total bilateral, sector-allocable ODA of OECD/DAC donors to basic social services OECD	21 countries in 2001 and 1999.	Estimates provided by countries		
35. Proportion of bilateral ODA of OECD/DAC donors that is united OECD	Since 1998 20 countries with al least one observation (18 in 1998 and 1999, 19 in 2000 and 18 in 2001.	Estimates provided by countries		
36. ODA received in landlocked countries as proportion of their GNIs OECD	29 countries each year from 1998 to 2001.	Estimates provided by countries		
37. ODA received in small islands developing states as proportion of their GNIs OECD	Since 1998 36 countries with at least one observation (36 each year from 1998 to 2000 and 35 in 2001).	Estimates provided by countries		
38. Proportion of total developed country imports from developing countries and from LDCs, admitted free of duties UNCTAD-WTO-WB	NA.			
39. Average tariffs imposed by developed countries on agricultural products and textiles, and clothing from developing countries UNCTAD-WTO-WB	NA.			

Indicator and responsible agency	Availability and timeliness [a]	Main sources and processes used to report data	Use of international population data	Definitional and data management issues
40. Agricultural support estimate for OECD countries as percentage of their GDP OECD	15 countries each year from 1998 to 2001.	Estimates provided by countries		
41. Proportion of ODA provided to help build trade capacity WTO-OECD	NA.			
42. Total number of countries that have reached their HIPC decision points and number that have reached their HIPC completion points IMF-WB	28 countries in 2003.	IMF		
43. Debt relief committed under HIPC initiative IMF-WB	28 countries in 2003.	IMF		
44. Debt service as a percentage of exports of goods and services IMF-WB	Since 1998 101 countries with at least one observation (100 in 1998, and 95 in 1999.	WB and IMF		
45. Unemployment rate of 15-24 year olds ILO	82 countries with at least one observation between 1998 and 2002 (74 in 1998, 62 in 1999, 62 in 2000, 53 in 2001, 2 in 2002).	Household labour force surveys, administrative records, official national estimates and population censuses		In some cases it is necessary to adjust tools of analysis in order to maintain definitional consistency and capture specific country characteristics
46. Proportion of population with access to affordable essential drugs on a sustainable basis WHO	178 countries in 1997.	Interviews with country experts		

Indicator and responsible agency	Availability and timeliness [a]	Main sources and processes used to report data	Use of international population data	Definitional and data management issues
47. Telephone lines and cellular subscribers per 100 population ITU	209 countries with at least one observation between 1998 and 2002 (207 in 1998 and 1999, 205 in 2000, 203 in 2001, and 100 in 2002).	Estimates provided by countries and collected through annual questionnaires by ITU		
48. Personal computers in use per 100 population and internet users per 100 population ITU	For personal computer 206 countries with at least one observation between 1998 and 2002 (189 in 1998, 200 in 1999, 203 in 2000, 204 in 2001, and 101 in 2002). For internet users167 countries with at least one observation between 1998 and 2002 (156 in 1998, 164 in 1999, 165 in 2000, 167 in 2001, and 57 in 2002).	Estimates provided by countries and collected through annual questionnaires by ITU		

a) Availability and timeliness has been computed with the data reported in the UNSD web page in July 2003 (http://unstats.un.org/insd/mi/ mi_goals.asp).

Appendix F: Introduction to the agency questionnaires

For 12 MDG indicators international agencies make use of questionnaires to gather information from reporting countries. In some cases these questionnaires are the main source of information for the international agencies, while in other cases the questionnaires represent only one of the methods to collect information about the indicators.

We attach to this document the questionnaires used by 1) UNESCO for education, 2) UNICEF and WHO for immunization, 3) UNICEF and WHO for improved water and sanitation, 4) WHO for TB, 5) ITU for telecommunications, 6) UNEP and UNFCCC respectively for consumption of ozone depleting CFCs and carbon dioxide emissions per capita.

Education – UNESCO

There are two files: questionnaire.pdf and manual.pdf. The first contains the standard education questionnaire, which requests raw enrolment data (and institution and teacher data). The second document is an instruction manual.

Every year the questionnaire and the manual are sent to the UNESCO National Commissions who then pass them on to the relevant national authorities (Ministries of Education, Ministries of Finance, the National Library, and so on). These questionnaires are completed by national experts and then returned to UNESCO UIS.

Countries need to follow the manual in order to fill the questionnaire and refer to the International Standard Classification of Education in order to map their systems to the international standard.

The deadline for submission of questionnaires is April 30th.

Information contained in the questionnaire is used for three indicators: "the net enrolment rate in primary education", "the proportion of pupils starting grade 1 who reach grade 5", and "the ratio of girls to boys in primary, secondary and tertiary education".

Immunization - UNICEF and WHO

There are two files: "Jointform.doc" and "Introductory letter.pdf".

WHO and UNICEF use the same reporting form, but it is sent through different channels (UNICEF's country offices and WHO regional offices) to the national authorities. Local offices of WHO and UNICEF are encouraged to approach the relevant authorities together, but in practice this is not always the case. Forms are sent every year around April/May. The questionnaire asks the relevant authorities to report all the available coverage estimates, both from administrative data and surveys, asking also to report factors that limit the accuracy of such estimates, and requires the country to provide an official estimate with explanatory comments.

Sometimes the two different questionnaires reach the concerned authorities at different times and, with the arrival of new data this can result in estimates from the second questionnaire being different from the first.

These official data are reviewed by a panel of experts who independently take into consideration alternative sources of information (households surveys), and provide a joint estimate on the coverage level of different type of immunization.

The joint form is one of the sources of information for the MDG indicator "the proportion of one-year-old children immunized against measles"

Water and sanitation - UNICEF and WHO

For indicators related to water and sanitation there is again full cooperation between WHO and UNICEF. Assessment questionnaires are sent to all WHO country representatives, to be completed in liaison with local UNICEF staff and relevant national agencies involved in the sector. Questionnaires are supplied with detailed instructions (attached there is only the questionnaire).

The questionnaire asks for an inventory of existing population-based data on access to water supply, particularly national census report, DHS, MICS, and LSMS. Official estimates of access must be based on these figures when available. Independently from the assessment questionnaires, household survey results are collected and reviewed. Questionnaires are used to monitor the existence of current sources of information, and official estimates are used whenever there are no other sources of information.

Information collected with this questionnaire is used for two MDG indicators: "the proportion of population with access to an improved water source", and the "proportion of urban population with access to improved sanitation".

TB – WHO

Every year WHO requests data from TB control programs (or relevant public authorities) via a standard data collection form. This form is distributed and collected via local WHO offices (the form is attached).

Two MDG indicators are reported using information collected in this questionnaire: "the prevalence and death rates associated with tuberculosis" and the "proportion of tuberculosis cases detected and cured under directly observed treatment short course (DOTS)"

Telecommunications indicators – ITU

ITU makes use of an annual questionnaire in which it enquires about telecom providers, telephone networks and information technology.

Information collected in this questionnaire is used to report two MDG indicators: "Telephone lines and cellular subscribers per 100 population" and "Personal computers in use per 100 population and Internet users per 100 population".

Indicators of sustainable development – UNFCCC and UNEP

In the case of indicators of sustainable development, some, but not all, countries have agreed through convention to regularly report on a number of indicators to the relevant international bodies.

Member countries report data on carbon dioxide emissions to UNFCCC and consumption of ozone depleting CFCs to UNEP.

Attached are the forms used by the member countries and sent to the relevant agencies.