



IUSSP ■ International Union for the Scientific Study of Population

Policy & Research Papers

Meeting Data Needs in Developing Countries: Questions of Quality, Quantity and Capacity

21

Vijay Verma
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and Capacity

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This Policy and Research Paper presents findings and recommendations from the Expert Meeting on Taking Stock of Data Needs and Monitoring for the Millennium Development Goals in Developing Countries, organised by the IUSSP in collaboration with the Centre d'Etudes et de Recherches Demographiques (CERED)–Haut Commissariat au Plan, Morocco, with the financial support of UNFPA. The Seminar was held in Rabat, Morocco, 25-27 January 2007.

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EXECUTIVE SUMMARY

Accurate and timely data are of paramount importance for policy and decision making. Monitoring of the Millennium Development Goals (MDGs) in developing countries is no exception. There are, however, serious gaps in the availability of relevant statistical information, the result of a lack of capacity in data collection, analysis and dissemination. The 2007 seminar on which this policy report is based was concerned with identifying specific data needs and constraints, and possible ways to address these needs and constraints in concrete terms.

Data collection needs and constraints

- *Poor quality of surveys and censuses.* Surveys and censuses are generally lacking or are of insufficient quality in many developing countries. Efforts to improve them need to be continued. Conventional data sources need to be supplemented by surveys and studies focussed on special, rare and elusive populations, and on populations in disaster and conflict situations. Other priority areas for work include gathering information on small domains and populations, further developing geographical information systems (in particular for measuring service access), expanding surveillance systems and, where possible, establishing or improving vital registration systems.
- *Absence of harmonization of different data sources and collection methods.* The harmonization of different data sources and collection methods across national ministries and sectors is very important. Legal, technical and finan-

cial obstacles can prevent access even when the data are present; as a result, a great deal of data are collected but left unused. Definitional issues challenge the accurate measurement of diverse phenomena such as reproductive health and access to services. It is necessary to strengthen and simplify measurement strategies and methods, and to refrain from contributing to the proliferation of indicators and reporting requirements.

- *Insufficient human resources.* Insufficient human resources in developing countries threaten MDG monitoring no less than problems with the data themselves; in this respect, there is a major capacity gap between the least developed countries, mostly in sub-Saharan Africa, and other more highly developed countries. Moreover, there is the question of the statisticians' and demographers' capacity to communicate their findings effectively to the general public, policy makers and other users.

Potential Data Collection Solutions

The long-term aim must be to invest in the development of sustainable health information systems (HIS) to replace the current fragmented data collection efforts. Two major aspects can be identified in this development:

- *Developing innovative techniques and technologies for data collection and exploitation.* Simple, empirically-focussed approaches suited for developing countries need to be developed and tested. Examples are small domain estimation techniques which combine the strengths of different data sources. Studying hard-to-reach populations and covert activities is another area where innovative approaches are needed to address methodological and practical challenges. Similarly, studying post-disaster and conflict situations requires the adaptation of traditional survey methods to exceptional circumstances. New technologies—geographic information and positioning systems (GIS,

GPS), aerial photos, handheld computers, personal data assistants (PDAs), computer assisted person interviews (CAPI), 'paperless' demographic surveillance systems (DSS), new census technologies—can all be used for improved data collection.

- *Improving capacity and skills.* The second aspect concerns the development of skills, facilities and partnerships for data analysis and dissemination. The problems are complex, with regional variation and a multitude of causes. A lack of skilled human resources continues to be a major problem in the developing world, particularly in sub-Saharan Africa. The dearth of qualified demographers is made worse by the 'brain drain' from developing countries to developed countries and international organizations. Regional population centres play a vital role in the development and replenishment of analytical skills. A systematic census of the needs of these centres would be useful. A number of suggestions have been put forth, such as providing scholarships to fund capacity-building efforts in the South, and raising demographers' salaries to keep experts from leaving employment in their respective countries. To encourage data analysis and dissemination, project funding must cover those aspects, and not merely deal with data collection. Skills such as modelling, multi-dimensional analysis and indirect estimation methods are increasingly important as adult mortality becomes a more critical policy issue. The training syllabus must be reviewed and updated accordingly.

MAIN ISSUES AND FINDINGS

Improving Data Availability and Use

Data needs and availability are far from uniform across the developing world, with the greatest dearth of census and survey information occurring in sub-Saharan Africa. Non-existent civil registration in most countries of the region (Guilmoto 2007) compounds the problem: only 50% of the population in Africa was covered by a census between 1994 and 2004, compared with 95% in Asia (Dupriez 2007). One possible explanation for this is that the infrastructure required for good quality civil registration systems is lacking in most developing countries. The data that do exist are usually incomplete, thus requiring adjustments and indirect estimation techniques to be useful. Sample civil registration systems, such as those in India and China, appear attractive, yet could arguably be a ‘trap’ out of which it is difficult to progress to a nationally-representative system (Feeney & Coullare 2007). Alternative strategies for the collection of vital data should be examined more closely.

The “active” collection of vital data, such as in an expanded version of a demographic surveillance system, could be an alternative strategy, though this approach has not been tested so far. Promising work is underway, for example in India, using sample registration coupled with verbal autopsy for establishing causes of death (AbuZahr and Stansfield 2007).

The emphasis of vital events registration is often on deaths, as is exemplified by the current policy focus of WHO. UNICEF, on the other hand, has prioritised birth registration as part of their work on the ‘rights of the child’.

Demand is increasing for wider and easier access to micro-data for research and for monitoring and evaluation. However, increased analysis of existing data will be impossible unless 'data owners' release the data to end-users, and the technical skills required to exploit the data become available.

Technology can sometimes provide a solution to data access and dissemination issues. Statistics Indonesia provides an example of how data can be made available on the web so as to facilitate access to surveys, censuses, and vital statistics from civil registration. District-level data and documentation, among other statistical resources, have been made more accessible through the web, as well as via CD-ROMs for those districts without internet access (Hartanto 2007).

Consistency and Coordination

The extent to which data must be perfectly harmonized across (and within) sources, time periods and countries for the purpose of monitoring MDG indicators is a controversial issue. Generally speaking, comparability requires harmonization, but to be useful the data must also respect local peculiarities, conditions and specific requirements. Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS) are, for instance, among the most important survey programmes currently operating in the developing world. However, many variables are not fully comparable between the two survey programmes, so that the data from the two cannot be combined in a coherent way.

Although it is important to maximise the alignment of definitions and information gathered, complete harmonization of data sources remains impossible. Even within the same set of surveys such as DHS, questions change over time to meet new demands and practical situations, and the concepts themselves can also evolve (Vaessen 2007).

Coordination between government ministries, moreover, is often poor, which constrains access to data and the dissemination of findings. This also hinders multi-sectoral work, for example, the linking of health and socio-economic

data. This situation is mirrored by a lack of coordination among international donor agencies, between them and national governments, and also between data providers and users at different levels. Another related issue is the public-private divide.

Sustainability of data gathering, data analysis, and monitoring systems requires commitments from both national governments and donor agencies. Sustainability and consistency is often adversely affected by frequent changes in government or donor policies. Furthermore, information can get ‘trapped’ in local offices where staff may lack the skills, resources and coordination to utilise data and make information available to higher levels where findings could be used to inform policy and programmes.

Funding for Data

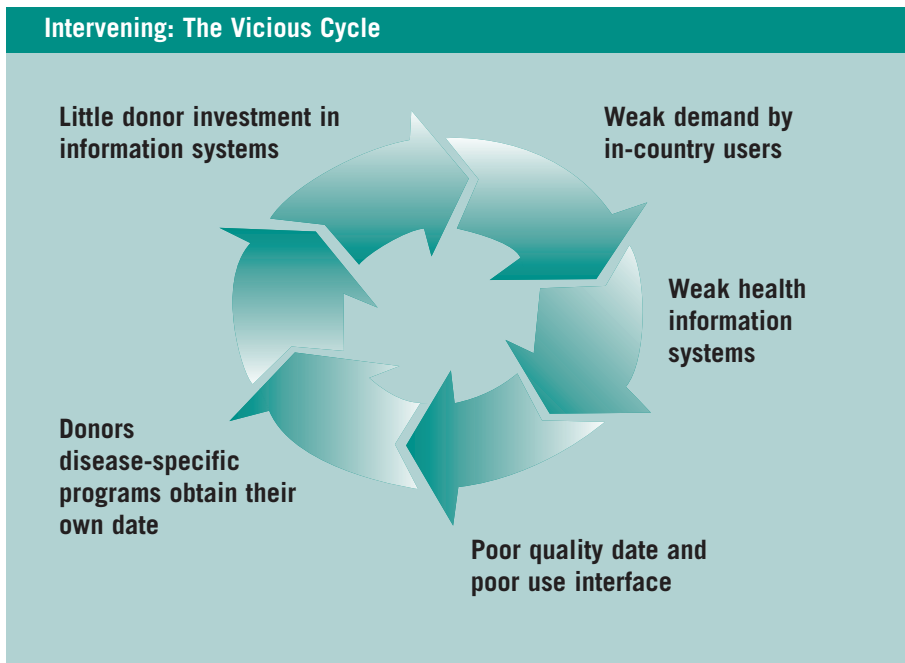
The monitoring of outputs and impact is only one concern amongst many when allocating development funds: providing money for interventions and medicines is, and should be, a higher priority. Yet, timely and accurate data collection, analysis, and dissemination also require funding. Without empirical evidence, there is no way to assess the situation or plan effective actions and interventions for achieving the MDGs (Feeney and Coullare 2007).

Lack of sufficient funding is a major constraint for data collection, analysis, and interpretation, and limits the capabilities for MDG monitoring. There is a need to engage considerably greater donor interest in data issues. Donor representation, for example, was noted to be weak during several recent meetings organised by UNFPA and Paris21 to discuss the funding problems of African censuses, which are an important data source in a region where other statistics are generally weak (Dekker 2007).

Censuses remain an essential source of information. However, funding is a major issue for developing country censuses, as most receive only a mixed bag of international support, implying competing agendas and requirements that

negatively affect the data collection process and its quality. The same is also often true for other data sources. Furthermore, donors' interests do not always reflect the needs and priorities of the recipient countries themselves.

There is indeed a 'vicious data needs cycle', as illustrated by the following diagram (AbuZahr and Stansfield 2007).



Closing the Capacity Gap

The availability of demographic skills, essential to collection and analysis of data relevant to MDG monitoring, is an increasingly important constraint. The problem is caused partly by the 'brain drain' and by the shrinkage in training courses.

A related problem is the dearth of demographic jobs outside of national bureaucracies in many developing countries, constraining career prospects, mobility, and research interests. A lack of funding and a declining number of training opportunities in developing countries, combined with ageing of the available population experts, has led to a shortage of key skills.

These issues demand attention both from the UNFPA and from countries, in particular from African states where the negative effects of ‘brain drain’ are felt most acutely. Some initiatives have been introduced to counter the skills loss. For instance, the African Population and Health Research Centre (APHRC), a regional institute in Nairobi, Kenya, was set up to promote African well-being through policy-relevant research and to build local research capacity by bringing African experts back to the Continent; the centre runs a variety of research projects, including a demographic surveillance system (DSS) in Nairobi’s slums – one of the few urban DSS in existence.

POLICY ISSUES

Improving Data Collection, Analysis and Dissemination

Accurate and timely data are of paramount importance for policy and decision making. However, data “have no value in themselves – value and relevance come only when they are analysed, transformed into meaningful information, and used” (AbuZahr and Stansfield 2007). Accordingly, a multi-pronged approach is required: a greater emphasis on analysis of existing data; collection and analysis of new data; and development (plus demonstration to donors) of cost-effective procedures for these purposes. Promoting standardised, operational definitions is also important in order to facilitate coordination between agencies and data sources. In addition, more inter-agency and cross-disciplinary work is needed (Phillips et al. 2007).

In certain areas, simplified and streamlined indicators are required. The development of an ‘indicators database’ would be helpful, but the more fundamental need is for better indicators, for example to measure access to and use of reproductive health care services (Slaymaker 2007). Some MDG targets have no adequate indicators for their measurement and evaluation, while others merely use process rather than proper outcome indicators. One example of this is the MDG 5 Indicator 17: the proportion of deliveries that take place with a skilled birth attendant. Nevertheless, as already noted, it is also necessary to refrain from contributing to the proliferation of indicators and reporting requirements.

Improved communication is also essential between researchers, donors, the public and other users. More transparent and open communication needs to be encouraged between governments and multilateral agencies.

The development community can learn from the past and share best practices with regard to what works and what does not. Health information systems (HIS) are not a new idea, and have been implemented in several countries, in Morocco for example for the past 20 years. Potentially, a wealth of practical experiences could be converted into policy lessons. Guidelines regarding institutions and budgets, data management, use of technology and human resources could all be drawn up, and articulated in the form of best practices, to provide guidance to countries, statistical offices and institutions. UNFPA, as the UN agency advocating population concerns, should emphasize the need for statistical and demographic capacity building, in parallel with the current focus on reproductive health. The overall policy aim of this should be to promote the creation of sustainable health information systems (HIS), including the capacity to monitor demographic processes.

- *Learning from Partnerships and Initiatives to Fill Data Gaps and Improve Access* Much can be learned from concrete efforts such as the following in order to put information back on the agenda.
- *The International Household Survey Network (IHSN)*. Established in 2004 as a partnership between international agencies, the IHSN aims to improve data collection through coordination for better survey planning, the harmonisation of concepts, survey questions and methods, and the provision of tools, guidelines and best practices to survey developers (Dupriez 2007).
- *WHO's Health Metrics Network (HMN)*. The HMN is a member of the IHSN and is an example of a global partnership that aims to increase the availability and use of timely and accurate health information, both in-country and globally, by catalysing the joint funding and development of core national health information systems. Its objectives are to increase access to and use of health information by establishing and disseminating a common framework and strengthening national systems.

- *REDATAM+SP (Retrieval of Census Data for Small Areas by Microcomputers).*

REDATAM+SP is another initiative aimed at simplifying data access, analysis, and dissemination. It is a database management tool that administers large volumes of micro data with a hierarchical (geographical) structure reaching down to the smallest census areas. It can treat (link) censuses and surveys, economic data, and educational and health statistics, all in encrypted format. Its intranet databank mainly holds information from Latin America and the Caribbean; this information can be readily distributed among end-users (universities, regional and local authorities, government ministries) who can download the free PROCESS Module software on the internet (Jaspers 2007). Its Indicators System can be used to monitor progress towards the MDGs and other programmes.

MONITORING THE MILLENNIUM DEVELOPMENT GOALS

The Millennium Declaration was signed by 189 Heads of State in the year 2000 who agreed to eight Millennium Development Goals (MDGs), putting “evidence at the centre of the global effort to reduce poverty and promote economic and social development” (Development Data Group 2004). This emphasis on evidence-based monitoring and decision-making highlights the great importance of accurate and timely data. There are serious gaps, however, in the availability of and access to the required information.

Sample Surveys and Censuses

Sample surveys are the main source of information for monitoring health-related and other MDGs in developing countries. They provide data on a very wide range of topics: child and maternal health, nutrition, service use, health care knowledge and practices, health-status evaluations and descriptions, determinants of health, knowledge and practices related to disease prevention and transmission (especially concerning HIV), household expenditure on health, unsafe sex, smoking and substance abuse, nutritional status, and so on (AbuZahr and Stansfield 2007). Therefore, they are important for monitoring almost every MDG.

The UN Millennium Development Goals*

1: Eradicate extreme poverty and hunger

Targets 1-2, Indicators 1-5

2: Achieve universal primary education

Target 3, Indicators 6-8

3: Promote gender equality and empower women

Target 4, Indicators 9-12

4: Reduce child mortality

Target 5, Indicators 13-15

5: Improve maternal health

Target 6, Indicators 16-17

6: Combat HIV/AIDS, malaria and other diseases

Targets 7-8, Indicators 18-24

7: Ensure environmental sustainability

Targets 9-11, Indicators 25-32

8: Develop a global partnership for development

Targets 12-18, Indicators 33-48

* For further details about Targets and Indicators: www.unmillenniumproject.org/goals/gti.htm

Civil registration

Civil registration is the only source of vital event data for small geographical areas and for precise time periods (Feeney & Coullare 2007:3), as well as providing nationally-representative information on mortality by cause of death. It is especially relevant to the measurement of adult mortality (most importantly to MDGs 4, 5, and 6). However, its coverage in developing countries is mostly incomplete, and this is unlikely to improve greatly in the near future. Sample registration systems can provide an alternative source of information, and efforts can be made to better exploit incomplete vital registration data through indirect estimation methods.

Demographic Surveillance Systems

Demographic surveillance systems (DSSs) aim to actively monitor vital events. They have the capacity to measure indicators relating to MDGs 1-6. Most collect longitudinal data on nutritional status, under-five mortality, child vaccination, maternal mortality, supervised deliveries, access to water, educational attainment and continuity of schooling, cause of death, and proportion persistently in extreme poverty (Phillips 2007). The use of DSSs for national monitoring, however, is limited, as they are usually confined to small, non-representative samples in rural areas. Innovations in DSS include 'paperless' systems such as the 'Iganga' model in Uganda, and the global coordination of DSSs as in the INDEPTH Network model. 'Small area surveillance' is another potential expansion of DSS activities, which would focus on MDG monitoring, rather than on epidemiological experiments, and employ a sampling design to produce statistically representative clusters of administratively meaningful units such as sub-districts (Bawah, et al. 2007). Such efforts could be coordinated as a single project, but high costs remain a major constraint on DSS expansion.

Geographic Information Systems

GIS is another useful tool for tracking MDG progress, specifically MDG 1, 4, 5, and 7. It has been used in poverty mapping initiatives (integrating GIS data with DHS and MICS surveys, for instance), and for mapping service access, maternal and child health, and urban densities (Muñiz & Balk 2007). However, it is a new technique for developing countries, and a careful assessment of its enhanced accuracy relative to its costs and skill requirements is needed before it is chosen over simpler, more established approaches (Grundy and Cox 2007).

Lot Quality Assurance Sampling

Lot quality assurance sampling (LQAS), a method derived from production-line industry, has been advocated as an efficient means for evaluating the coverage rates achieved by child immunization programmes, and to produce indicators for many other types of health-related programmes. An LQAS survey aims to identify whether or not particular areas, programmes, health centres, etc. are performing satisfactorily. Over the past 15-20 years, extensive use of the LQAS technique has developed in the health field. The potential relevance of this type of survey to MDG monitoring is obvious. However, crucial questions are: Is the hitherto extensive use of this sampling methodology justified because it represents the best approach available for collecting certain types of information? Or does the popularity of this technique owe something to its indiscriminate and often inappropriate over-use? It was argued that there are indeed many examples of the technique being misapplied or used only to draw some obvious (hence trivial) conclusions of little practical value (Verma 2007a). In any case, LQAS has certain strengths and weaknesses which should be recognized by programme managers and planners before introducing the method (Sandiford 1993).

Information for Small Areas and Populations

The need for decentralised data is increasing, both for administrative subdivisions of the country and for sub-populations of special concern. Sample surveys cannot be made large enough to meet these requirements, and censuses cannot provide sufficiently complex and recent data. Special estimation procedures combining the strengths of different types of data sources are needed. For developing country applications it is recommended to explore simple and empirically-focussed small domain estimation techniques (Verma 2007b).

Conflict and Disaster Situations

Studying post-disaster and conflict situations is relevant for MDGs 1, 4 and 7, among others. It requires an adaptation of traditional methods to exceptional circumstances. Geographic information systems (GIS) can be used to estimate the population impact of natural disasters. Specialized surveys can be used to estimate indirectly the demographic impacts of conflicts (Bergouignan 2007). Conflict and disaster situations impose severe practical constraints on the process of survey-taking. Data from passive surveillance are rarely complete, even in stable circumstances, and are even less complete during conflicts and disaster situations, when access is restricted and fatal events could be intentionally hidden (Burnham et al 2006). Population-based sample surveys – despite difficult conditions of data collection – often remain the only reasonably acceptable alternative. Such surveys require different approaches and solutions to sample design and implementation and to data analysis, compared to surveys in ordinary circumstances (Verma 2007c).

Marginal and Elusive Populations

Monitoring progress towards the MDGs requires data collection approaches and estimation techniques that allow measurement of relevant phenomena

among difficult-to-reach populations. A very important area concerns child labour – especially ‘the worst forms of child labour’, such as using children for slavery, prostitution, drug trafficking or other illicit activities (Ofosu 2007). This is relevant to the achievement of several MDGs, notably MDG 1 (poverty and hunger), 2 (education), and 6 (addressing HIV/AIDS and other diseases). Innovative approaches must be used to address the methodological and practical challenges. Special sampling procedures (termed ‘adaptive sampling’) become necessary to capture rare, unevenly distributed, hidden or hard-to-reach populations and covert activities.

Adapting the MDGs to meet country-specific needs

Although the MDGs have a standardised set of targets and indicators for international comparisons, Morocco provides an example of how the MDGs have been adapted to suit the monitoring needs of an individual country and the contextual variations in data availability.

Morocco has tailored the UN’s targets and indicators to its own situation by using 69 indicators (31 of which are the original UN indicators and 38 specific to Morocco), and 27 targets (rather than the original 18). In Morocco, MDGs on gender equality, poverty, infant mortality, and primary education account for 61% of indicators measured, whereas the majority (58%) of indicators in the UN’s version of the goals relate to the global partnership for development (MDG 8), fighting HIV and other diseases (MDG 6), and poverty reduction (MDG 1).

The example illustrates that concentrating only on the above-mentioned three issues in the UN’s version may not suit the needs and situation of every country (Chahoua 2007). What must be kept in mind is the balance between adapting the MDGs to meet national needs and capacity, and maintaining uniformity for cross-country comparability.

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Verma, V., 2007c. Surveys in Conflict/Disaster Situations: Aspects of the Lancet Study “Mortality after the 2003 invasion of Iraq: a cross-sectional cluster sample survey”. [IUSSP working paper*](#)

LIST OF PRESENTED PAPERS

List of papers presented at the Expert Meeting on Taking Stock of Data Needs and Monitoring for the Millennium Development Goals in Developing Countries, organised by the IUSSP in collaboration with the Centre d'Etudes et de Recherches Démographiques (CERED)–Haut Commissariat au Plan, Morocco, held in Rabat, Morocco, 25-27 January 2007.

Session 1: Data needs

- “Taking stock of data needs for developing countries” *by Sally Stansfield*

Session 2: Data sources other than household surveys and censuses

- “Civil registration-based vital statistics systems” by Griffith Feeney
- “Applying Demographic Surveillance Systems to monitoring progress in achieving Millennium Development Goals. The past, recent innovations, prospects for the future” *by Jim Phillips*

Session 3: Beyond conventional surveys

- “A review of Lot Quality Assurance Surveys” *by Vijay Verma*
- “Surveying difficult-to-reach populations: Examples from ILO work on child labour” *by Yaw Ofosu*
- “Le recours aux enquêtes rétrospectives dans l'analyse démographique des conflits. L'exploitation d'une enquête « spécifique » (ESDSR1 Burundi 2002) et d'une enquête « conventionnelle » approfondie (EDS2 Rwanda 2000)” *by Christophe Bergouignan*

- “Surveys in Conflict/Disaster Situations: Aspects of the Lancet Study “Mortality after the 2003 invasion of Iraq: a cross-sectional cluster sample survey” by *Vijay Verma*

Session 4: The conventional survey

- “The conventional survey: problems and prospects” by *Martin Vaessen*
- “Multiple Indicator Cluster Surveys (MICS)” by *Edilberto Loaiza*
- “Enquêtes par sondages et suivi des Indicateurs de Développement : Aperçu des problèmes et solutions proposées.” by *Olivier Dupriez*

Session 5: Small domain estimation techniques

- “Small area domain estimation techniques: A brief overview” by *Vijay Verma*
- “Applying Demographic Surveillance Systems to monitoring progress in achieving Millennium Development Goals. The feasibility of small area DSS: The Case of Ghana” by *Jim Phillips*

Session 6: The spatial dimension in demographic monitoring and research

- “The spatial dimensions in demographic monitoring and research: Use of GIS data” by *Maria Muñiz*
- “The use of GIS in measuring service access” by *Chris Grundy*

Session 7: Measurement issues

- “Taking stock of data needs for developing countries, with particular reference to the measurement of maternal mortality” by *Sally Stansfield*
- “Challenges in measuring migration in developing countries” by *Graeme Hugo*
- “Universal access to reproductive health by 2015: how do we measure progress towards this target?” by *Emma Slaymaker*

Session 8: Census and survey data access, analysis, and dissemination

- “Census data processing for the 2010 Round: new technology and lessons from the past” *by Arij Dekker*
- “REDATAM+SP as a tool for data processing, analysis, and dissemination” *by Dirk Jaspers*
- “Web-based data for decentralised planning” *by Wendy Hartanto*

Session 9: Training and use of data for planning and programming

- “Objectifs du Millénaire pour le développement au Maroc : Besoins en données pour le suivi et l'évaluation” *by Saïd Chahoua*
- “Needs and capabilities of demographic centres” *by Christophe Guilmoto*

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- 19 *Population Ageing in Industrialized Countries: Challenges and Issues.* Gustavo De Santis, 2001
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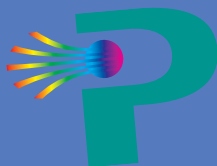
Meeting Data Needs in Developing Countries: Questions of Quality, Quantity and Capacity

This Policy and Research Paper presents findings and recommendations from the Expert Meeting on Taking Stock of Data Needs and Monitoring for the Millennium Development Goals in Developing Countries, organised by the IUSSP in collaboration with the Centre d'Etudes et de Recherches Démographiques (CERED)–Haut Commissariat au Plan, Morocco, with the financial support of UNFPA. The Seminar was held in Rabat, Morocco, 25-27 January 2007.

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