

A New Paradigm for Building National Information Systems for Development

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Although there has been significant progress in improving development statistics, much remains to be done.¹

Introduction

Good data are critically important to good governance. The demand for relevant, reliable, and timely information at the sub-national, national, and international levels has increased tremendously during recent years. Such data are necessary for evidenced-based decision making and transparent and accountable governance. But in many countries, the infrastructure needed to produce and disseminate such information is weak. Underlying the hopes and plans for democratic decentralization are a series of frequently unmet assumptions about the availability, adequacy, and use of statistical data, both locally and nationally.² This is despite the major investments by multinational and bilateral assistance organizations stimulated in part by the Millennium Development Goals (MDGs)³. Indeed, many countries are a long way from having sustainable high-quality national statistical information systems, and it is the current position of the World Bank that:

Many national statistical systems are caught in a vicious cycle where inadequate resources restrain output and undermine the quality of statistics, while the poor quality of statistics leads to lower demand and hence fewer resources. Sustainable improvement

in the statistical systems of developing countries — true capacity building — requires programs to increase both the demand for and the supply of statistics.⁴

As noted in Building Statistical Capacity to Monitor Development Progress, statistical systems are often caught in a cycle of too much demand straining the system and resulting in poor quality data, which in turn reduces demand for data.⁵ All sectoral programs of interest to international donors as well as national policy-makers require good data for planning and evaluation. In health services, for example, there has never been higher quality data available to guide health service delivery in developing countries than at present. The emergence of new initiatives such as the MDGs, the President's Emergency Fund for AIDS Relief (PEPFAR), the U.S. government's Foreign Assistance Framework, and the Global Fund have brought beneficial funding and focus to public health issues, particularly HIV/AIDS and infectious diseases. However, these initiatives have also complicated the social sector environment by requiring higher quality measurement and evaluation data to guide program implementation. Structural changes in the organization and financing of services — decentralization and social insurance schemes, for example — are becoming more common and require

re-evaluation of the information systems that support their deployment. The mix of public health challenges can vary considerably from one context to the next and over time, which implies periodic rebalancing of priorities for knowledge generation and management structures. The same applies to other sectors, and there is a danger that the mixed results may be aggravated further by the ongoing and imminently forthcoming statistical improvement initiatives by the World Bank, the International Monetary Fund (IMF), and various branches of the United Nations.

In essence, the problems with past approaches are weaknesses in the paradigm that guides most efforts to create or strengthen national data systems. Building sustainable, high-quality national information systems requires recognizing and acting upon the interconnectedness of data supply, data demand, and the availability of technical skills and resources. Obstacles to building and sustaining capacity for efficient and effective national information systems in developing countries range from a lack of a clear and common vision among donors and between donors and the recipient organizations, differing objectives and types of expertise among providers of technical support, and a failure of some donors to recognize the important role of public laws and policies related to data ownership, freedom of access to public data, and standards and documentation related to quality control.⁶ This results in a multitude of data collection efforts to match the programs and priorities of different donors, which greatly complicates coordinated data collection planning and sharing of results.

“One of the things you find in government is that no amount of goodwill is enough, no amount of good policy direction is enough, unless you have accurate information at your disposal. And the use of taxpayer resources to achieve particular goals can be very frustrating if in fact the database on which these policies are based and the objectives pursued are inadequate, or worse inaccurate.” —Prime Minister, Hon. John Howard at the launch of the Australia Research Alliance for Children and Youth, July 2002

Furthermore, despite the addition of technical and financial resources from a host of sources over the past decade, the finite resources that can be devoted to gathering, synthesizing, and disseminating data are currently strained and are likely to be strained further as new economic, environmental, and public health challenges emerge. Only fractions of the data that are collected are used to their full potential. Current data users find themselves inundated with more information than they can absorb and lacking information presented in formats, or at levels, or in time frames that are useful for policy and regulatory implementation. A full range of potential data users is not included

in the current process, and consequently they are left without the abilities, individual and organizational, to make meaningful use of the data. In some situations, for example, women’s health organizations do not have access to vital health statistics such as HIV/AIDS prevalence, maternal mortality, or contraceptive use rates, which in turn limits their

ability to assess and advocate for women’s well-being.

This paper lays out a new paradigm for building high-quality, useful, and sustainable national information systems in emerging countries. Such systems encompass all aspects of the public and private sector policies, structures, and human and material resources necessary for the design, implementation, analysis, and dissemination of decision-relevant data for development decision making. The goal is for these systems to be multisectoral, to yield timely and accurate information relevant to evidence-based decision making, and to have the capacity to self-correct and self-enhance based on their own technical resources. Because sustainable systems are a key to success,

capacity building is an essential feature of this approach. The scope encompasses quantitative and qualitative household, health, environmental, and economic data. It recognizes the essential linkages between identification of data needs, appropriate and high-quality data collection and analyses, and dissemination. While it recognizes the centrality of national statistical agencies, it posits the importance of a more complex and multilayered set of key participants. It also assumes that while the data collected, analyzed, and disseminated must be consistent with MDG and other international funding agency needs, they must also be sensitive to the country environment to better facilitate decision making and administrative actions at the national and sub-national levels. The five principles that underlie and differentiate this paradigm are:

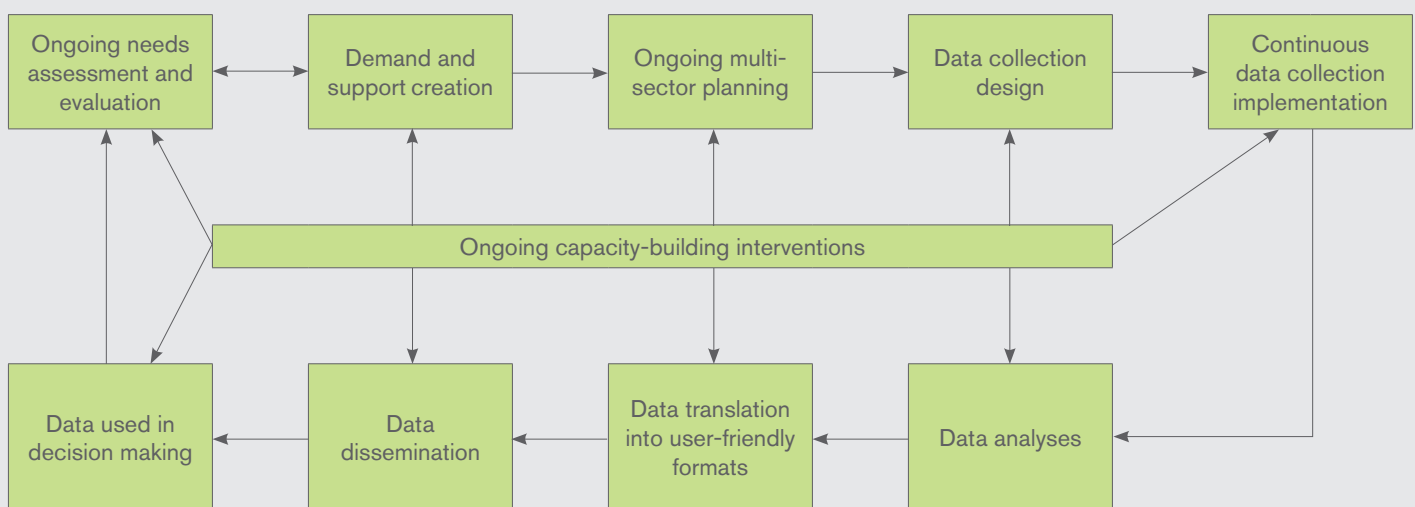
1. continuous measurement, which builds and sustains capacity
2. interdependency of sectors on similar population and economic data and the need for representative samples

3. private sector involvement as a prerequisite for sustainability, either as a data collection partner or as a countervailing force through data consumption and review
4. a time horizon long enough to evaluate a census or other major data collection effort before planning new ones
5. the creation of a culture of measurement

Figure 1 shows the operational model that we argue should guide the implementation of a successful capacity-building process. Included in the process are an ongoing cycle of assessments to determine the data needs of public and private sector policy-makers and managers, comprehensive and effective planning and coordination across sectors, strong sampling and data collection designs, careful data collection, appropriate and sophisticated analyses, and the dissemination of useful information. At every point in the process there are important capacity-building contributions to be made that can strengthen the human and material dimensions of the system.

FIGURE 1

Information System Capacity-Building Continuum



Support for the Differentiating Principles

A. Importance of continuous measurement — Continuous collection of data has become one of the most robust research designs developed for assessing changes in populations and economies. Cross-sectional surveys have played a key role in social research for many years. For identifying needs and preferences, studying trends, or monitoring changes over time, a standard approach is the one-time survey, or a series of surveys beginning with a baseline and followed by a series of widely spaced surveys conducted in a longitudinal design. This approach is built on many classic statistical assumptions that are rarely challenged. But the theory underlying such research has changed over the past 25 years. It now holds to the idea that key variables are dynamic and studies of behavior should have a time component and take place closer to the occurrence of change. In addition, recent advances in computer networking, information management, experimental methods, and analytical instrumentation have set the stage for improved and coordinated observations of our social, biological, and physical world.⁷ However, despite the fact that survey research as traditionally undertaken is a cumbersome and expensive form of data collection, there has been a tendency to cling to traditional research methodologies, and research designs have largely remained static.⁸ Factors that reinforce this traditional approach include challenges to changing academic training, a shortage of a workforce trained in the new methods (particularly in developing countries), and a reluctance of funding agencies to support approaches that require significant ongoing national capacity building and new survey infrastructure.

In the United States and Europe, major improvements in electronic communication, the development of computer assisted telephone interviewing (CATI), and subsequently computer-assisted personal interviewing (CAPI) greatly facilitated pioneering efforts in continuous data

collection, and its practice is gradually becoming the norm in well-developed data collection systems.⁹ Continuous data gathering was initiated in Peru in 2003 (dubbed the Peru Continuous Survey or PCS) and the process has operated successfully for the past four years. A recently completed independent evaluation of the effort documented the successes and remaining challenges of this experiment and provided recommendations and conclusions about applicability of the model in other countries.¹⁰ As countries elect to initiate the continuous data collection approach on a gradual basis, new information content, survey designs, and improved implementation tools and methods can also be introduced to improve data quality, timeliness, usefulness, and value. More precise costing of the support necessary to implement these new approaches will also become possible. Proposed improvements will be driven by host country and stakeholder needs and will be implemented with careful planning, testing, adaptive engineering, technical assistance and supervision, and intensive risk management.

One practical example of a successfully implemented continuous measurement design is the Gallup World Poll. Since 2006, the annual, internally funded World Poll has surveyed citizens in more than 150 countries, representing 95% of the world's adult population. The World Poll's target population is adults aged 15 and older, using nationally representative surveys. In sub-Saharan Africa, the World Poll covers more than 90% of the population aged 15 and older. In 2006, Gallup surveyed in 26 sub-Saharan African countries, completed 28 in 2007, and another 28 countries in 2008. The World Poll design includes oversamples in specific geographic regions. For example, in sub-Saharan Africa, the Nigerian, Kenyan, and Ethiopian World Poll surveys included oversamples to assure adequate representation for groups of special interest. This technique is particularly useful to examine issues below the national

level and, for example, assure that gender or other subgroup issues are given sufficient analytic attention.

The advantages of continuous surveying include:

- giving decision makers access to timely data and rolling estimates
- permitting greater flexibility in design with regard to updating of questions and geographic areas included
- enabling the continuous monitoring of process data and survey data to create the opportunity to modify the design during the course of data collection so as to improve survey cost efficiency and achieve more precise, less biased estimates¹¹
- spreading costs more evenly across years
- increasing the skills and capabilities of the management and technical teams responsible for designing and analyzing the data collection efforts
- allowing the use of much smaller data collection teams in a country, and facilitating their training over a longer period to build and strengthen their skills and capabilities
- providing outside donors and technical assistance providers the opportunity to offer diminishing levels of support over time until the countries are able to conduct the data collection satisfactorily on their own
- providing (e.g., through annual measurements) the opportunity for numerous methodological studies of the validity and reliability of self-reported and observational data, overcoming a severe limitation of the typical data collection model

The opportunity to use qualitative approaches to modify features of the design during the course of data collection is a particularly important benefit of the continuous data

collection approach. A continuous data collection design encourages the use of qualitative methods to investigate, for example, the meaning of quantitative responses to surveys and the validity of data obtained through administrative records. Constructing survey items that have the same conceptual meaning across cultures and language groups is a complex undertaking, and meanings can change with the passage of time. Insights and techniques from linguistics, anthropology, and the cognitive sciences need to be brought to bear in the design and redesign of data collection protocols. Similarly, the procedures that local administrative clerks follow when recording information or the operative norms governing the responses of citizens when reporting agricultural outputs or other economic information need to be verified and monitored if statistical data are to be collected accurately or interpreted appropriately. A continuous data collection strategy facilitates such uses of qualitative data approaches in the interpretation and refinement of quantitative statistical measures.

Equally important, the continuous data collection design model has beneficial effects not only on traditional measures of data quality, but also on the data analyses, communication of findings, and use of data for policy formulation and program development, and generation of growth in data demand. A continuous data collection approach supports and speeds the establishment and continuous expansion of the infrastructure for self-sustaining data-gathering capabilities and capacity, with reduced reliance on external technical assistance.

Perhaps most important of all, the continuous data collection design provides the basis for continuous involvement by public and private sector stakeholders, including data collection and analytic organizations and staff and the entire spectrum of data users in each country. Not only does it allow for sustained training and technical development, but it also builds demand for high-quality data. It is through creating a culture that demands high-quality and timely data for public and private sector decision making

that there will ultimately be a self-sustaining national information system. A continuous data collection approach will be far more effective in establishing permanent capacity compared to the occasional intensive bursts of activity that now must be organized and then disassembled for each periodic national census or health or economic survey. With the appropriate training and technical support provided to public and private organizations in each country, this model would promote, support, and enable related effective efforts to build capabilities and ensure sustainability and increase transparency at national and sub-national levels.

B. Interdependency of sectors on similar population data and the need for representative samples — Comprehensive national information systems encompass the specification, collection, analysis, and dissemination of a wide and diverse array of data. At first blush, responding to the needs of a country's entire multisectoral system for handling macroeconomic and financial data (real, fiscal, financial, and external sector data), as well as sociodemographic data, including indicators for population, health, education, and MDG and other poverty indicators, may seem overwhelming. And providing for the inclusion of increasingly important indicators of environmental conditions adds further to the daunting nature of the task. However, recognizing the overlapping data needs for policy and administrative decision making across sectors facilitates and can lead to significant system-wide efficiencies and opportunities for capacity building.

An important step toward identifying such interdependencies is the development of a comprehensive, well-prepared, and implemented national statistical development strategy. By the start of 2007, more than 100 developing countries, including 56 low-income countries that are eligible for concessional finance from the International Development Association (IDA), had initiated or prepared national statistical development strategies (NSDS). Many were already implementing their strategy.¹²

In developing countries, the need for data is particularly acute yet particularly difficult to build and sustain. Recognizing this need at the second International Roundtable, held in Marrakech, Morocco, in February 2004, the PARIS21 partners¹³ identified the development of an action plan for statistics as a core component of the results agenda and called for the mobilization of resources for investment and capacity building. The Marrakech Action Plan for Statistics (MAPS) has proved to be an important catalyst for improving the availability of statistics in the short term and building the institutional capacity to improve statistics in the future. The international development community, developing countries, and statisticians have all widely endorsed its six actions (see "MAPS" box). MAPS has also provided a framework for increasing coordination among agencies for building capacity at the country level and for actions by the international community to improve the availability of data, especially for the MDG indicators.¹⁴

MAPS

1. Promote **strategic planning** for development statistical systems
2. **Increase investment** in statistical systems
3. Prepare for the **2010 census round**
4. Set up an international network
5. Make **immediate improvements in key areas**, particularly the MDGs
6. **Improve coordination** and accountability of the international statistical system

Improvements in the process of preparing national statistical development strategies have contributed greatly in this regard. While many of the early national strategic plans focused primarily on a government's central statistical agency, the strategies did not cover other data sets that are important for national development. More recently, however, many countries are recognizing that a broad NSDS process can help reduce duplication of effort and increase

efficiency by fostering greater coordination and cooperation in statistics across agencies and sectors.¹⁵

But much is yet to be done. A recent report for the IMF concludes that member states have assigned a relatively low priority to the upgrading of sociodemographic data.¹⁶ And a recent, and as yet unpublished, “landscape paper” prepared at the request of the William and Flora Hewlett Foundation aimed at strengthening the collection, access and use of demographic and related development data was premised on the recognition that significant and diverse problems in data production is impeding development in many parts of the world.¹⁷

Essential to the sustainability of high-quality national data systems will be strategies and designs that recognize the interdependence among sectors as well as agencies of data needs and sources. Economic, health, and environmental surveys have a common need for basic demographic, income, and household practice data. Sometimes the data in common with other data collection efforts is greater than that which is uniquely being sought. Frequently, such surveys can be combined or linked using common sampling design and variables. Even when donor or other practical considerations dictate separate data collection efforts and reports, aggressively seeking ways to cooperate across sectors can reduce costs while enriching analytic results.

Increasingly, intersectoral and fully integrated solutions are being sought and implemented in countries from Armenia to Zambia. In the population, health, and nutrition arenas, there is more interagency collaboration, with public and private partnerships being formed among private foundations and international and local non-governmental organizations (NGOs) working together with members and stakeholders of civil society. Deaths from HIV/AIDS have created orphans and raised the awareness of the needs of youth and different family dynamics. The need to link food security, food aid, and nutrition to programs addressing HIV/AIDS and maternal-to-child transmission (MTCT) is but one challenge facing USAID Title II Food

Aid programs and PEPFAR. Innovations in technology are making more laboratory and physical examination data feasible for integration into household surveys, further increasing potential for intersectoral investigation.¹⁸

Most recently, the prices of fuel and food have threatened the livelihood of millions of people and thrown many into poverty. With so many livelihoods affected, childhood malnutrition and diseases are increasing. Civil strife and complex emergencies around the world are on the rise. Additionally, more refugees are crossing borders, putting additional pressure on host country resources.

Dietary changes occurring in most developing and emerging market countries from Latin America to North Africa to Asia and the former Soviet Union have led to increased cardiovascular disease among children and adults. The evolving HIV/AIDS pandemic and resurgence of diseases such as malaria and tuberculosis and the rise of more antibiotic-resistant strains are putting additional pressure on country resources, requiring changes in policy and research priorities. Many countries now need to pinpoint, target, and address childhood disease and malnutrition in parts of the country. They also need to focus on cardiovascular disease, diabetes, obesity, and lifestyle-related health conditions in different population segments, all with a public health budget and personnel that are already overstretched. Finally, they need to understand the impact that reduction in population productivity through these health conditions will have on their national and regional economic situation.

In the United States, the National Economic, Social, and Environmental Data Bank (NESE DB) covers an array of topics from a variety of government databases. The topics include U.S. economic and budget outlook, Bureau of the Census reports, business cycle indicators, Bureau of Justice statistics, crime and felony sentences, profiles of jail inmates, National Oceanic and Atmospheric Administration weather conditions, capital stocks, education statistics, Annual Energy Review, Federal Reserve Bank information,

health statistics, U.S. Industrial Outlook, the U.S. Environmental Protection Agency, and much more. Similarly, environmental public health tracking involves the ongoing collection, integration, analysis, and dissemination of data from environmental hazard monitoring, human exposure tracking, and health effect surveillance, with the Centers for Disease Control and Prevention (CDC) leading an initiative to build a national EPHT network that will meld data from these three components into a network of standardized electronic data systems. These systems will then provide valid scientific information on environmental exposures and adverse health conditions and the possible spatial and temporal relations between them.¹⁹ Ideally, the national data systems in every country would be of a similar scope. But for this to be economically and technically possible requires careful planning to minimize redundant

data collection efforts and ensure appropriate linkages among databases.

To be useful for public and private sector decision making, surveyors will need to develop and implement the data collection activities to ensure representative samples at the sub-national levels and among sub-populations of interest. Simply having large numbers of respondents is not enough. The way in which people (or economic, political, or geographic units) are selected to take part is the basis of the reliability of the results. It is critical that the sample not be biased toward those most easily contacted, more interested in the topic, or people who in some way have the same characteristics. Sampling methods often focus on specific characteristics (including location), but once the overall characteristics have been identified, there should be no reason why one unit (person, organization, or place) that meets the criteria is selected over another, apart from chance. Everyone who is eligible to be included in the sample should have an equivalent non-zero probability of being selected to take part in the research. But the costs of this approach can be high, and there is a cost-quality trade-off in sampling approaches. From a systems perspective, the careful integration of data collection and analytic activities across and within sector studies can overcome these costs.

The continuous data collection approach just discussed also facilitates this integration and further reduces costs. In most countries, data can be collected within a specified geographic region by a dedicated field staff that rotates from study to study, building their competence through additional training and experience as time goes on.

C. Private sector involvement as a prerequisite for sustainability — Increasingly, countries see the preparation of an NSDS as an essential first step in improving the capacity of their statistical systems. The first and most important MAPS action has been to encourage and support countries in preparing and then implementing national statistical development strategies. And important lessons have been

An effective national strategy for the development of statistics:

1. has high-level political support
2. is mainstreamed within national development policy processes, building on what is already available
3. is the output of a nationally led, nationally owned, and inclusive plan for national statistics
4. sets out an integrated participatory process that draws on international standards, recommendations, and experience
5. provides the basis for the sustainable development of statistics with quality “fit for purpose”
6. assesses the current status of the NSDS and provides a vision and strategic statistical development program that is flexible enough to cope with change
7. outlines the financing requirements, but is realistic about resource needs
8. serves as a coherent framework for international support for statistical development

learned from this experience (see “An Effective National Strategy for the Development of Statistics” box). In most countries, the first three of these lessons imply some degree of private sector involvement. MAPS experience shows that efforts to improve the quality and availability of indicator-related data must focus on more than just the indicators themselves. They must also be concerned with the availability of technically skilled personnel, the collection of the raw data, and the other processes that are in place. Sustained improvements in national statistical systems require that these systems become more effective and efficient, and their resources increased. And this kind of change must be based on a nationally owned and managed process.²⁰

In some countries, the private sector (businesses and civil society organizations) is reasonably free to conduct household and economic surveys and can access governmentally produced, development-related information. In other countries, there are restraints, and in others, the limits are quite severe. In Guatemala, for example, there are very few constraints on data collection, while in Egypt all surveys are to have prior governmental approval, although — depending on the topic and the respondents’ characteristics — many are approved and may be privately carried out. Regardless of the political context, the private sector has an important role to play.

Where public policy allows, there are many important ways the private sector can contribute to strengthening a national information system. There are topics — public corruption, personal, or corporate security, attitudes toward government, legal compliance behaviors — on which non-governmental surveyors can obtain reasonably valid information that governmental ones cannot. In addition, where governments choose to use private sector organizations in the design or implementation of data collection activities, competition among potential service providers can spur technical quality and cost saving advantages. Such competition provides incentives for the private

organizations to maintain the highest technical standards and minimize costs — incentives that are absent when the government has a monopoly on information gathering or dissemination. Furthermore, the involvement of the private sector as a partner with the government in the design and collection of information, or as an alternative information source, enables the private sector to serve as an honest broker that can encourage, or if need be question, the legitimacy of publicly distributed data.

Even in those countries where central governments keep tight control over all aspects of data collection activities, there is an important substantive private sector role. Its members are, or should be, important users of information. For this reason the PARIS21 guide to developing a NSDS states that:

To be effective, the concept of the national statistical system as well as the strategic plan should be demand-focused and user-friendly to maximize the value-added of statistic outputs. To effectively serve their users, statistical managers need to have an understanding of who the customers for their data are and to develop mechanisms for getting regular feedback. Bringing users into the NSDS process is therefore essential. Users are the consumers of statistics, and no statistical system can be sustained unless the products and services it generates meet the needs of users.²¹

The guide goes on to make clear that “in any country there are a diverse and large numbers of users, including . . . civil society organizations such as NGOs and private sector organizations,” and that their, as well as the public sector agencies’ needs, should be taken into account in designing the system and their satisfaction with its outputs regularly monitored.²²

Even predating the guidance from PARIS21 and the lessons from MAPS, the 1994 International Conference on Population and Development (ICPD) Conference in Cairo, Egypt, urged developing countries to contribute

more to their national censuses and to start mobilizing resources internally from the private sector.²³ In many countries — including most of those served by the Gallup World Poll — private sector firms have talented resources that can assist government agencies design or implement their national data system plans. Often, there are cadres of well-trained and supervised data collectors with established procedures for quality control and initial processing of data. In some cases, there are also experts in sophisticated sample and questionnaire design. In others, there are experts in the qualitative methods needed to conduct needs or satisfaction assessments among business elites, to develop and test conceptually complex data items, or to lead focus groups and conduct ethnographic studies to assist in preparing sampling and analytic plans.

In addition, in some low-income developing countries, where communication is difficult and administrative systems are not well developed, the unit costs of data collection may be substantial and financial assistance from non-governmental sources for investments in infrastructure, people, and equipment and to cover recurrent costs are a necessity. This is particularly the case with respect to collecting and reporting data at sub-national levels, which is critical to data-based decision making in decentralizing or democratizing countries. Where there are fundamental shifts in the economic, social, and institutional environments that diminish the dominance of central government institutions, there are important implications for the production of statistics. This has been noted, for example, with respect to agriculture, where there have been important institutional changes in most countries and a diminishing role of the public sector in such areas as forest resource management and a corresponding increase in private sector efforts.²⁴

While the past decades have seen some encouragement of private sector involvement, the focus of most international development efforts to increase the quality of national data systems has been on central government statistical

agencies. This is a natural byproduct of the funding requirements of the World Bank, United Nations agencies, and others.²⁵ But unless special efforts are made, the private sector, with the possible exception of politically connected civil society organizations and academics, is largely ignored. This, in turn, limits the depth of political support for improvements in the data system, reduces the potential of private sector cost sharing, and limits the options of the government in terms of obtaining competent data collection and analysis support. This is particularly true when national data sets are difficult for private sector analysts to access and use. The role of the private sector as a secondary analyst of national data is important because the private sector data operations can function as a countervailing force that advocates for better data quality, identifies data inconsistencies, and serves as a conduit for repackaged national data useful in business and marketing endeavors. Efforts to support better communication and partnership between national statistical agencies and secondary private sector data analysis firms will have large benefits for quality and transparency. These efforts will also increase data demand.

D. A time horizon long enough to evaluate a census or other major data collection effort before planning new one —

Capacity building requires a significant and sustained commitment of financial and human resources. As noted by the WHO, “capacity building takes a long time and requires long-term commitments from all involved.”²⁶ But just as a continuous surveying strategy yields generally more useful and economically obtained results than periodic major data collection efforts such as a decennial census, so too does a strategy of continuous monitoring and evaluation. Systemic improvement is a complex and time-consuming process, and if planned and executed with care, its evaluation processes can contribute more to building systemic capacity than will occasional major evaluations of completed data collection efforts.

Two major conclusions of a recent International Development Research Centre study of approaches to evaluating capacity building are:

- *Involving people in evaluating their own processes and institutions is important* — “The main benefits of an evaluation of a capacity development effort can be the individual and organizational learning that takes place while undertaking it. . . . During the evaluation process, participants can learn a great deal, not only about capacity development, but about evaluation methods as well.”
- *An iterative approach to evaluation is most effective* — “Cycles of reflection and analysis are at the heart of the evaluation process. The main benefits of an evaluation often come from the insights obtained during the evaluation process, rather than from the results presented in a report. Frequently, important questions and issues come to the surface during an evaluation that requires adjustments to planned data collection or analysis.”²⁷

Post hoc evaluations of major data collection activities are necessary and provide important information regarding the quality of the data (e.g., coverage and validity). So too do qualitative studies of stakeholder satisfaction and data use. They contribute to achieving the ultimate goal of a high-quality and sustainable system for data collection, analysis, and dissemination. A time horizon that recognizes the complexity of systemic capacity strengthening and provides an opportunity for iterative evaluations is required.

E. Creating a culture of measurement — What is measured improves. This old saying is still valid in modern times and developing countries. This is especially true when it comes to performance measurement of organizations or complex systems. Embracing a culture of measurement can lead to a powerful cycle of continued improvement within a system or an organization. On the other hand, recent reports on U.S. public diplomacy efforts after the 9/11 terrorist

attacks conclude that government agencies responsible for U.S. public diplomacy did not have a “culture of measurement,” which would lead them to systematically gauge the effectiveness of their programs. When congressional members asked more specifically about program measurement and evaluation, government officials mainly argued that, given the complexity of public diplomacy effects, such results are hard to measure.²⁸

Improving the quality and sustainability of national data systems requires the development of a culture among all system stakeholders supporting a commitment to open and spirited discussion of what and how to measure national conditions and the performance of programs and policies. Among the benefits when this occurs are:

- increased strategic agreement among the stakeholders
- a common language to communicate strategy and key values
- better alignment within and among organizations
- a more holistic perspective for managers and policy-makers²⁹

The previously discussed principles underlying our national data system capacity-building paradigm each interacts with and contributes toward creating this measurement culture. Continuous measurement and a time horizon long enough for meaningful and useful evaluation processes provide stakeholders the opportunity for continuous learning. Recognizing the interdependency of sectors provides the opportunity to identify data needs in common across sectors and build in efficiencies throughout the system. And the involvement of the private sector provides human and technical resources as well as essential political support.

The private sector — businesses and civil society organizations — can play a particularly important role in fostering a measurement-oriented culture. Even in countries where

governments tightly control access to data, the private sector can stimulate demand by publicly raising questions and pointing out weaknesses and privately persuading governmental elites of the economic and political value of improving the quality and availability of development-related statistical information. And in somewhat more open systems, they can collect and make available alternative sets of data, thereby encouraging improvements system-wide.

Programmatic Approaches Suggested by the Principles

Flowing from the previously discussed principles and Gallup's long and varied experience in institutional strengthening as well as data gathering and dissemination are a set of elements that we believe to be essential to building high-quality, self-perpetuating national data systems. The following pages briefly describe these elements.

- A. ***Recurring cycle of needs assessment and evaluation*** — Consistent with the principle of a culture of measurement, it is essential that system strengthening activities be based on knowledge of existing conditions and needs and continuously monitoring and evaluating results. As noted by the PARIS21 Secretariat, countries will not be starting from scratch and prior to any major capacity-building intervention. “It is desirable to carry out an in-depth assessment of the current status of the system, including from a user perspective and taking into account existing improvement programmes.”³⁰ Depending on the scope of the intervention, surveyors can rapidly complete these assessments. But they should be sure to identify key stakeholders and their capacities and needs. And surveyors should design them with an eye to ongoing measurement and the accomplishment of specific objectives for which indicators are identified in advance.
- B. ***Building support for action*** — Building broad agreement on information needs is a key to the ultimate success of a self-perpetuating, high-quality national information system. Building of support for action related to data demand should take place within a broad context of cooperation and collaboration among information stakeholders (i.e., public and private and domestic and international potential users of the data). Achieving broad agreement regarding information needs in complex decision-making environments will be an ongoing process that has periodic inflection points of intensive interaction with stakeholders, as well as ongoing dialogue among stakeholders to reduce bottlenecks, improve processes, and facilitate use.
- C. ***Having long-term, not fast turnaround, relationships*** — Consistent with the principle of recognizing that systemic capacity building is a long-term undertaking, capacity-building interventions, for the most part, should be built on relationships that are allowed to deepen over time. The goal should be for the recipients of technical support to replace the technical assistance providers. For this to be achieved requires a gradual process, with roles changing over time.
- D. ***Centrality of central government institutions*** — National data systems are complex and should involve many institutional actors. But consistent with the lessons of MAPS and the wisdom of most international donor organizations, there needs to be a lead government agency responsible for coordinating the development and implementation of the national statistical development plan and for its ongoing review and updating. That agency should be committed to developing a culture of measurement and be as isolated as possible from domestic political pressures.

E. *Complimentarily of the public, civil society, and private sectors* — Just as important as the role of a lead government statistical agency is the need for an open process. So too is the resistance of the government’s central statistical agency from the bureaucratic temptation to over-regulate and control. Lessons from the MAPS process include the importance of widespread political support and a demand from throughout the society for high-quality and timely statistical information. Civil society organizations, private sector firms, and sub-national political units and central government agencies can all play active roles in advocating for improved data quality and can directly participate in bringing about improvements in data collection, analyses, and dissemination.

F. *Having a public sector empowered to buy wisely rather than having to do it all* — While the central statistical agency and other public sector organizations have important roles to play, they should not attempt to do it all. Among the many reasons are the benefits of competition and the dangers of over-bureaucratization. Public sector agencies must have first-class expertise in design, data collection, and analytic methods and skills in information dissemination. These in-house experts must determine their needs and manage and assess the processes of data collection and analysis. But they need not — indeed generally ought not — collect and analyze all the data on their own.

G. *Developing public sector contracting skills and processes* — It is important that public sector agencies not totally rely on contracting with non-governmental organizations. Contracting at the expense of public sector capacity building can have a negative effect. However, well-implemented competitive contracting processes can reduce costs and encourage the application of state of the art

practices and technologies. Well-planned and managed contracts with clear scopes of work and performance measures can provide the system with the flexibility, efficiency, and high-quality data that the ever-evolving demands of a national data system require.

H. *Improving behavioral and public opinion measures* — Insights into the political economy of developing countries (on which sound policies and programs depend) can come from well-designed and implemented surveys such as Gallup’s World Poll or Seligson’s work in corruption victimization and political culture.³¹ Data from well-designed and executed surveys such as the Balkan Monitor³² can also be the basis for assessments of programs in the health, economic, and environment sectors. But to serve this function such surveys require appropriate sampling frames and procedures, carefully designed data collection instruments and protocols, well trained and supervised data collectors, and the application of appropriate analytic techniques.

I. *Developing and implementing a continuous and coordinated schedule of data collections* — There are many advantages to a program of continuous surveys, as opposed to a cycle that includes nationwide annual surveys plus surveys of one or more sub-country regions per year to collect in-depth survey and qualitative data. This allows for the use of much smaller data collection teams and for working with them over a longer period to build and strengthen their skills and capabilities. It also allows more in-depth, region-specific research that responds to local demands for data and for data to be made available almost immediately to satisfy local needs and donor demands, as well as aggregated, for example, every four years, if

desired, without diminishing the value or validity of the data.

- J. ***Designing efficient samples*** — One of the main requirements for efficiently designing a sample survey is a well-constructed sampling frame that, among other things, should be up to date and provide adequate coverage of the target population to be surveyed. It should also ideally contain adequate information on relevant auxiliary characteristics that can help design a representative sample. In many situations, it constitutes a basic problem as appropriate sampling frames are either not available or have to be compiled from various sources. Even when a frame is available, maintaining such frames on a regular basis is extremely important to ensure that it is free to the extent possible from errors (omissions, duplications, and other inaccuracies) and that the units are clearly identifiable for the purpose of sampling. The continuous data collection approach described previously provides a framework for regularly updating the sampling frames based on information that becomes available over time. The information on suitable auxiliary characteristics in the sampling frame may be used quite effectively for the purpose of stratification, optimal sample allocation, sample selection, and efficient estimation for surveys in future years. It may also be helpful for oversampling certain sub-populations of interest (specific geographic regions or racial/ethnic groups) that may not otherwise be adequately represented in a simple random sample without any targeted oversampling.
- K. ***Developing standards and expected outcomes related to international best practices and processes for evaluating performance*** — A process through which individuals or organizations can participate in data collection and analyses activities and can become certified at different skill levels is an important

element of a self-perpetuating, high-quality data system. The certification process might include training in specialized areas such as sampling and qualitative research, and then certified individuals and organizations could eventually qualify to serve as mentors to others. This could also form the basis for judgments about their readiness to receive diminishing levels of support over time until the countries are able to operate the system satisfactorily on their own.

- L. ***Ensuring that there are sub-national centers of technical excellence*** — Efficiencies associated with continuous measurement will be realized if technical capacities to collect and analyze data are geographically dispersed. Building sub-national centers of excellence at academic or civil society institutions able to identify local information needs, review data collection designs, and assist in or critique tailored analyses will contribute substantially to improving national systems. In the short run, this may not be realistic in very poor or very small countries, but even in such places, building a national network of high-quality and potentially competing data collection organizations could accomplish similar ends.
- M. ***Workforce development and prevention of brain drain*** — Ongoing training of personnel is critical to system strengthening. But preparing skilled persons without providing them with adequate opportunities to apply their skills undermines long-term improvement activities. A major advantage of continuous measurement is that it affords the opportunity to train and retain skilled personnel, and the involvement of the private sector on a competitive basis provides incentives and rewards for doing so.
- N. ***Concurrent access to and upgrading of information technology*** — Developing processes that ensure

maintaining access to the latest in hard and soft technology for data collection and analysis is also critically important. Just as the Gallup data collection expertise has moved over time to encompass face-to-face, telephone, and electronic techniques, developing countries will need to have mechanisms in place that keep their experts up to date with the latest in global imaging, satellite, and other technologies, and similarly keep them abreast of developments in sampling and advanced statistical techniques.

- O. *Establishing networks of national and regional expertise and consultation* —Important to sustaining a high-quality system are networks of consultation and support throughout the country and internationally. Creating such networks where they do not exist or strengthening them where they do will contribute greatly to achieving the goal of self-perpetuating, high-quality national data systems.

Conclusions and Recommendations

The quality of statistical data for development decision making has improved considerably in recent years. Currently, many internationally funded surveys are intended to yield data that developing countries can use to inform policy and monitor and evaluate programs. Most are well-implemented and useful. However, the way they are currently being implemented does not provide the platform for sustainability, timely and continuous data generation, demonstrable influence on policy and decision making, or adequate access by non-traditional users.³³ In short, they do not contribute to capacity building. Indeed, in some cases they may actually undermine achieving the goals of MAPS and other internationally supported efforts to develop and implement national statistical data strategies and to build national systems that over the long term can become self-perpetuating producers of useful, timely, and high-quality

data across the full range of public and private policy and management decision-making needs.

Countries around the world are in differing places on the road to the ideal of having a comprehensive, self-perpetuating, high-quality national information system. The details of the most appropriate form of technical assistance to enhance the capacity of these countries will vary with where they are at the time. The 100-plus countries that have responded to the MAPS call to develop national strategies have taken important first steps and, in some cases, many more. But much more needs to be done for demographic, economic, health, and other data to be collected, interpreted, and disseminated in real time so that stakeholders and decision makers can draft policies, design programs, redirect resources, and train personnel to deal with rapidly changing situations in their countries.

In the words of the former President of the Brazilian Institute for Geography and Statistics³⁴, for national systems to respond with credibility to their large and diverse set of stakeholders, they must:

- Establish and maintain scientific credibility. Statistical agencies should work according to the best practices of statistical, social, and economic analysis and should be known as doing so.
- Carefully guard their institutional autonomy. Statistical agencies cannot function well under the principle that its authorities are political appointees who can be dismissed at will if a minister does not like their data. Nor can the scientific integrity of their partners or contractors be sacrificed to the economic interests of their owners.
- Attend to their public image. Statistical offices should work constantly to explain what they do and the meaning of the information they provide.

Technical support designed to build lasting capacity must recognize that maintaining scientific integrity consistent

with international standards³⁵ and being responsive to stakeholder demands for timely data presented in a comprehensible way are foundational to building the level of public support and institutional partnerships that national data systems should possess. To be effective, such support needs to be guided by a holistic vision. It should be based on the clear understanding that designing and implementing a technically solid census or other major data collection activity is not the real goal. Rather, it is to facilitate stakeholders in each country to increase their own technical skills and to build systems and processes that span the worlds of science, government, economics, and the environment. These stakeholders are many, and their requirements vary. For some, what is most critical at a particular moment may be sophisticated assistance in techniques for small area estimation or the visual display of data. For others, it may be elements of the contracting process, assessing the quality of survey data, or appropriate uses of qualitative techniques. It is through open processes that the efficiencies, economies, and utility of a system that produces and releases accurate data can be maintained. Technical assistance that helps countries' lead statistical agencies assess and respond to their systemic needs in ways that are consistent with the underlying principles and international experience discussed previously is what is required for the vision of self-perpetuating, high-quality national information systems to be achieved.

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