

Integrating Sectoral Statistics into the National System-the Agriculture Proposal

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A. Introduction

National Statistical Systems have been under pressure to meet the growing demand for better development data by improving the quality and coverage of official statistics. The international statistical system has been challenged to support this improvement which led to the initiative for countries to establish National Strategies for the Development of Statistics (NSDS.) While national statistical offices carry out the population censuses and compile and disseminate official statistics, much of the data to monitor development progress and poverty alleviation is generated by other agencies outside the national statistical system. One of the shortcomings of the NSDS approach is that it is mainly implemented by the national statistical offices leaving out the statistical programs residing in the line ministries such as those producing agricultural statistics.

A major problem faced when monitoring issues related to economic development is that data are collected by different sectors, often based on different sampling frames and surveys. Since there is no linkage across these data sources, it is not possible to measure the impact of policy actions taken in one sector on the other sectors. The different data sources often come from ad-hoc surveys with no linkage to a population frame making it difficult to integrate data from a variety of sources for in-depth analysis and cross classification of indicators.

The Global Strategy to Improve Agricultural and Rural Statistics (2010) takes the NSDS initiative one step further by providing the frame work to completely integrate agriculture into the national statistical system through the development of a master sample frame which will be the platform for an integrated survey framework. The Global Strategy provides the framework to ensure sustainability of the system through governance and capacity building. These actions have implications for the other sectors producing statistics and strongly suggest they also be integrated into the national statistical system.

The next section provides a brief overview of the main elements of the Global Strategy as they relate to the integration of sectoral statistics into the national statistical system. Section C will provide an overview of how the integration of agriculture will be achieved and what this means for other sectors. The paper then concludes with actions needed to achieve the integration.

B. Overview of the Global Strategy to Improve Agricultural and Rural Statistics

The Global Strategy was the result of an extensive consultation process with national and international statistical organizations as well as with agricultural and other line ministries. It provided an assessment of the data that users need and the quality of the data that are currently available. This assessment showed a serious decline in the quality and quantity of agricultural statistics. A major reason for the decline was the lack of institutional coordination resulting in different ministries producing statistics with conflicting results and lack of harmonization of scope and coverage. The lack of coordination leads to data that cannot be used across sectors leading to a loss of capacity for analysis in a policy perspective resulting in a waste of resources as data are not properly used or not used at all making it difficult to justify the costs for the data collection. This creates a downward spiral of budget cuts that further erodes data quality.

The decline in data quality was occurring at the same time many new data requirements were emerging. Among these emerging data requirements were those relating to poverty and food security. Three out of four poor people in developing countries live in rural areas with most directly or indirectly relying on agriculture for their livelihoods. Agricultural development is vital to achieving the Millennium Development Goals, particularly those related to poverty, food security, and environmental sustainability. Other new emerging data requirements were those relating to global warming, land and water use, and the increasing use of food and feed commodities to produce biofuels.

The assessment of data that users need led to a conceptual framework that brings in the social and environmental dimensions of agriculture in addition to the narrower, more conventional treatment of agricultural production in the economic dimension. The social dimension brings in rural development issues affecting both farm and nonfarm households. It is important to know the sources of both agricultural and non agricultural income across households, farms, and nonfarm businesses when making policy decisions about rural development. Household data are also important to understand the relationships between agriculture and other sectors in rural society. Farm and rural households are also users of social services such as health and education programs. The environmental dimension for agriculture includes land and water use and its affect on the environment. The use of land can have environmental consequences ranging from the pollution of waterways to deforestation caused by agricultural expansion which adds to global warming.

This conceptual framework and resulting data requirements identified the need to recognize the linkages between rural households, agricultural holdings or farms, and the land and natural resources they use and impact. One of the problems addressed by the Global Strategy is that the agricultural holding is the statistical unit rather than the household for the agricultural census and sample surveys providing agricultural statistics. When addressing issues such as poverty or food security or gender for example, the household is the unit of interest. Policy decisions about environmental issues have consequences to the farm as a holding as well as the farm household.

A major outcome of the conceptual framework was the need to recognize that the data dimensions require different statistical units for reporting. The farm or agricultural holding is the statistical unit for the economic dimension. The basic unit for social statistics is the household, and the land parcel for the environmental dimension. Not only are different statistical units needed, the conceptual framework called

for them to be linked to understand the inter-relationships between them. As a result of the conceptual framework, the Global Strategy is based on three pillars: identifying a minimum set of core data; the integration of agriculture into the national statistical system; and establishing governance and statistical capacity building to ensure the sustainability of the statistical system.

The Global Strategy provides a menu of indicators encompassing all of the data requirements for the data dimensions. This menu of required data exceeds the statistical capabilities of what many countries can provide annually; therefore, the first pillar—Minimum Set of Core Data—is provided to use as a starting point to develop the Global Strategy. This minimum set of core recognizes that only about 10 crops and 4 livestock species account for over 95 percent of the world's production of cereals, meat, and fiber. The Global Strategy identifies core items from each of the data dimensions, especially those whose data are used for a large number of indicators to monitor and evaluate development policies and food security. More important, it provides guidelines for each country to add items of national interest to the set of core and the frequency for which they need to be provided.

The second pillar—Integration of Agriculture into the National Statistical System-- meets the need to address overlapping data requirements, to remove the duplication of efforts in producing statistics, and to lead to a harmonization of concepts and standards. This pillar addresses the need to link the farm as an economic unit with the household as a social unit and the land they occupy and use. The Global Strategy provides the framework to establish a Master Sample Frame for Agriculture that will provide a linkage between the economic, social, and environmental data dimensions. The principle guiding the use of the Master Sample Frame is that it is the basis for all sample surveys of agricultural holdings and rural households (farm and nonfarm) with the samples designed so that data can be analyzed across surveys. Another principle recognizes that while different institutions may still have a mandate to produce agricultural statistics, they should jointly develop and use the Master Sample Frame. The joint use of the Master Sample Frame points to the need to also integrate data collection efforts with national institutions agreeing on the content of the surveys and the frequency which data are provided. The Global Strategy also provides the framework for an integrated survey framework that focuses on the core data items and supplemental information at the national level. The integration of agriculture into the national statistical system should support the dissemination of data that are clearly identified by source and time and are comparable for aggregation purposes.

The third pillar—The Sustainability of Agricultural Statistics through Governance and Statistical Capacity Building—recognizes that multiple governmental organizations will continue to be involved in the collection of data. Therefore, it spells out a governance structure to coordinate the development of the Master Frame, and to collect and disseminate data. It also recognizes that countries will differ considerably in their statistical capacity. Many countries will need to revise their National Strategies to Develop Statistics to ensure they reflect the integration. The third pillar also recognizes that the Global Strategy is a long range plan different levels of technical assistance and training across countries.

The following section provides how the Master Sample Frame will be developed and the implications that has to integrate other sectoral statistics into the national statistical system.

C. Implications of the Integration of Agriculture into National Statistical Systems on other Sectoral Statistical Programs.

The development of the Master Sample Frame begins with what is available in each country. Even countries with limited statistical capacity may have the statistical framework provided by their population

and/or agricultural censuses in the form of enumeration areas for data collection. These enumeration areas are used in multi-stage sampling for farm or household surveys where a sample of enumeration areas is selected, then screened for farms or households from which a sub-sample is selected. Because of the need to link the economic and social dimensions with the land use aspects of the environmental dimension, the next starting point involves the use of satellite imagery of the country's area. This imagery should be broadly classified by major land use categories such as cultivated land, woodlands, grassland, idle land, and urban areas. Unless land use is rapidly changing, this imagery only needs periodic updating. Once this land-use classification is available, the census enumeration areas should be geo-referenced to the land use imagery. In addition, administrative areas such as districts, counties, townships, and villages should also be geo-referenced. The result is the country's statistical and political infrastructure is linked to land use.

The Global Strategy offers alternatives for the construction of the Master Sample because countries differ in their statistical infrastructure and capacity. One approach outlined in the Global Strategy starts with the population census where during data collection it is determined whether the household is associated with a farm and if so obtaining some indicators of size and type. This establishes the capability to link the household characteristics with those to be collected at another time about the farm. Because the enumeration areas have been geo-referenced to the satellite imagery, the farm and household characteristics can be linked to the land use at the enumeration area level. This linkage to the land can be improved over time if individual households and farms are geo referenced.

A second approach is to use the agricultural census with its enumeration areas geo-referenced to the satellite imagery if they differ from those used for the population census. While the farm is the statistical unit for the agricultural census, information about the related households should also be obtained during the census data collection. Countries with a large number of commercial farms would want over time to develop a register of farms geo referenced to the satellite imagery.

A third approach is to simply use the satellite imagery classified by land use where there is not a recent population or agricultural census. This area frame provides the capability to obtain the set of core data. The area frame can be supplemented over time with registers of commercial farms.

Any of the three approaches provides the framework for a Master Sample Frame for households geo referenced to land use. This means that the data requirements for households for any sector could be met by using samples selected from this master frame which allows data from different sectors to be linked for analysis purposes. The Master Sample Frame could be extended to contain business registers (including commercial farms) geo referenced to land use. The costs of each sector creating its own sample frame can be directed to the Master Sample Frame. While the national statistical offices have experience with statistical methodology that other ministries may not have, it is the line ministries that have the subject matter expertise. The use of the Master Sample Frame builds off the strengths of both types of organizations.

The Global Strategy also presents a vision for an integrated survey framework using the Master Sample Frame. The proposed integrated survey is based on the minimum set of core data and the need for data across the social, environmental and economic dimensions. Table 1 from the Global Strategy shows an example of a replicated survey design and the use of rotating panels to annually obtain core data, and over a 4-year period obtain supplemental data for the different dimensions. Every year, the same set of core data is obtained. Since the overall data requirements exceed what is practical to collect every year; it is proposed the subject matters be divided and used on a set of rotating panels in a way that by year 4 all of the subject matters will have been included, and linked to the core and other panels. Such an integrated survey could be used to bring in household data requirements from other sectors where household income and characteristics

are needed to evaluate policy issues that cut across sectors.

Table 1—Example of Replicated Design with Rotating Panels over time for the integrated survey system

Replicate Year	Rep 1	Rep 2	Rep 3	Rep 4	Rep 5	Rep 6	Rep 7	Rep 8	Rep 9	Rep 10	Rep 11	Rep 12
1	A	A	A	A	A							
2		B	B	B	B	B						
3			C	C	C	C	C					
4				D	D	D	D	D				
5					A	A	A	A	A			
6						B	B	B	B	B		
7							C	C	C	C	C	
8								D	D	D	D	D
9									A	A	A	A
10										B	B	B
11											C	C
12												D

Detailed Questionnaires for Rotating panel surveys

Every replicate receives the same core questionnaire every year for annual core data items and plus obtains data for one following rotating panels:

A. Economic items including farm structure, expenditures, income

B. Environmental items including inputs, chemicals, tillage, water use, land use

C. Household income, consumption, employment

D. Items of national interest

The remaining aspect of the integration of agriculture into the national statistical system is to develop integrated data bases for dissemination purposes. The compilation of supply and utilization accounts, food balance sheets and other economic and environmental accounts needs consistent data coming from different sources. These indicators for agriculture should be prepared in parallel with similar indicators from other sectors using the same concepts, classifications and accounting methods.

D. Actions to Achieve Integration

The third pillar of the Global Strategy calls for governance and statistical capacity building to ensure the statistical system is sustainable. The Global Strategy provides a governance framework for a national statistical council that includes the different sectors providing agricultural statistics. The integration of agriculture into the national statistical system does not tell the countries what is to be done by the different ministries and the national statistical offices leaving that for them to decide. It does mean that organizations with overlapping data requirements jointly develop and use the Master Sample Frame and coordinate data collection and dissemination activities.

The current poor state of agricultural statistics resulted in a Global Strategy that calls for a re-engineering of the statistics system. It probably goes without saying that the same point can be made about statistics from other sectors. The United Nations Statistical Commission at its 41st session in 2010 endorsed the Global Strategy and urged an implementation plan be developed. Specifically, the Commission recommended that comprehensive technical assistance and training programs be established for statistical capacity building. It also called for a research agenda to develop methodological guidelines for difficult to measure items. The Commission's final statement was to extend the scope of the integration to include other statistical domains.

The Food and Agricultural Organization (FAO) and the African Development Bank (AfDB) are collaborating on the development of standards for technical assistance and training targeted to the implementation of the Global Strategy. One thing coming from these standards is that there is a common statistical language and set of methodology that cuts across the entire national statistical system. Technical assistance on sampling for an agricultural survey is not really different from that required for any other sample survey. The same can be said for training and technical assistance for data validation, estimation, and analysis methods.

For these reasons, there should be a holistic view of the approaches to improve the quality of the national statistical system by bringing all sector statistical programs into the national system. Technical assistance and training could then be targeted to the statistical system and not to a specific sector where the outcome is not easily transferred to other sectors.

The closing point in the Global Strategy is still relevant: "The Global Strategy provides a ground-breaking effort to improve agricultural statistics that has implications for other sectors in the national statistical system." Hopefully, the implementation of the Global Strategy can be linked to the improvement of the overall statistical system.

REFERENCES (RÉFÉRENCES)

The World Bank, 2010, "Global Strategy to Improve Agricultural and Rural Statistics" Report number 56719-GLB, The World Bank, Washington, DC

RÉSUMÉ (ABSTRACT)

The Global Strategy to Improve Agricultural and Rural Statistics prepared by the World Bank in collaboration with the UN Food and Agricultural Organization under the auspices of the UN Statistical Commission addresses the declining quantity and quality of data in developing countries. It also responds to increasing demand from policy makers for information to deal with sky-rocketing food prices and emerging issues relating to the use of bio-fuels, the environment, climate change, and monitoring progress toward meeting the Millennium Development Goals.

The Global Strategy responds to the current poor state of agricultural statistics and the rising demand for a broader scope by providing the basis for a re-engineering of the statistical system. The Global Strategy provides the framework to integrate agriculture into the national statistical system by the development of a master sample frame for agriculture, its use in an integrated survey system, and the implementation of a data management system. The master frame will provide a linkage between the farm as a business with the household as a social unit and the land they use. The Global Strategy provides a choice of methodologies to achieve these linkages. The paper will provide the steps to achieve the integration of agriculture into the national statistical system and also the implications this has for other sectors.