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Report on global initiatives to improve agricultural and rural statistics

Note by the Secretary-General

In accordance with a request of the Statistical Commission at its thirty-ninth session (see E/2008/24, chap. I.A.), the Secretary-General has the honour to transmit the report of the Working Group on Agricultural Statistics led by the Statistical Office of the European Union. The group comprised the World Bank, the Food and Agriculture Organization of the United Nations (FAO) and the United States Department of Agriculture. The report provides an overview of the main issues in agricultural statistics and a proposed framework of the "Strategic plan to improve national and international agricultural and rural statistics", which was discussed at an Expert Group meeting held in Washington, D.C., on 22 and 23 October 2008. The proposed plan identifies the key issues and challenges for agricultural statistics, the establishment of a core set of agricultural statistics that are comparable and relevant, methodologies to measure them, and a plan on how to support international, regional and national organizations to develop these statistics as the standard guiding their activities. The Commission is invited to comment on the report and endorse the proposed course of action.

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Report on global initiatives to improve agricultural and rural statistics

I. Introduction

1. The purpose of the present report is to inform the Statistical Commission of action taken during 2008 to develop a strategic plan to improve agricultural and rural statistics and to seek the Commission's advice on future steps. This paper is the result of input received from several countries and international organizations; the Commission is asked to provide additional guidance.

2. One of the outcomes of the 2007 Conference on Agricultural Statistics was the realization that there was a lack of direction given on the data requirements to meet the increasing demand for information about the Millennium Development Goals, the affect of agricultural subsidies, the environment, global warming, food versus biofuels, and globalization, to name but a few. There is also a lack of key data, insufficient financial support, and a dilution of knowledge on agricultural statistics. These are issues that go beyond national boundaries, and agriculture has a central role in the economic and social well-being of many countries. Since then, concerns about food prices have heightened the need for timely data on the basic supply and demand of agricultural commodities so that markets can operate efficiently and enable the making of timely decisions on food aid. The increasing demand for alternative uses of agricultural products raises policy issues that require information that is simply not available. These issues and questions come at a time when many countries, especially developing countries, are not meeting even the minimum requirements for agricultural statistics.

3. At the country level, especially in developing countries, agricultural and rural statistics are essential for policymaking and for monitoring progress towards the Millennium Development Goals. In addition, global markets have developed and are maturing, but the development of agricultural and rural data systems has not kept pace. Gaps in the readily available statistics include comprehensive land use data that goes beyond agricultural land for crop production and livestock pasture. A major gap includes microinformation to analyse farmers' decision-making. Both types of data exist to a limited extent and have been shown to be invaluable in understanding farmers' decisions about land use and provision of environmental or ecosystem services. These data are especially valuable when linked through geo-referencing. Other gaps include statistics to measure farm and rural poverty as well as statistics for monitoring steps to alleviate the situation.

4. Sustained economic growth and poverty reduction in most developing countries are only possible if agricultural productivity increases. The problem has been that many countries have been unable to invest in the statistical systems needed to generate reliable data on the agricultural sector to understand the situation and monitor progress. Without external support and investment in new techniques and technologies, it is likely that many years will pass before this situation changes. The deterioration in support for agricultural statistics has not only led to gaps in the data system, but has also affected data quality and statistical capacity for what has remained. One of the major conclusions of the recently completed evaluation of the role of the Food and Agriculture Organization of the United Nations (FAO) in

agricultural statistics is that the decline in countries' statistical capacity is by far the most significant of the quality issues affecting the FAO Statistics Programme.[1]

5. These concerns were discussed at a meeting of interested parties that was held back to back with the February 2008 meeting of the United Nations Statistical Commission and Eurostat subsequently informed the Commission about them. The Statistical Commission asked Eurostat to revert to this issue at the 2009 meeting of the Commission, with a proposal on how to go forward. Towards this end, Eurostat formed a working group to begin planning the preparation of a wider consultation on the issue, with the aim of drafting a strategic plan to improve agricultural statistics. The working group, under the guidance of the United Nations Statistics Division, included representatives from Eurostat, the World Bank, FAO, the United States Department of Agriculture, and the International Statistical Institute.

6. Using input from the working group and other stakeholders, the World Bank prepared a paper entitled "Framework to develop a strategic plan to improve national and international Agricultural Statistics". The present paper was the basis for the Expert Meeting on Agricultural Statistics held in Washington, D.C., on 22 and 23 October, 2008. The meeting was attended by heads and representatives of national statistical offices or ministries of agriculture from 27 countries, and also included the World Bank, Eurostat, FAO, the United States Department of Agriculture, the International Monetary Fund, and the Organization for Economic Cooperation and Development. Two major donor organizations also attended and made presentations.

7. The major outcome of the meeting was a general consensus on the current unsatisfactory situation of agricultural statistics and the need for a strategic plan to improve them. The participants agreed that the long-term goal of such a strategic planning exercise would be to establish a globally agreed core set of indicators for agriculture and rural development under a United Nations mandate. The strategic plan will have to reflect the agreement reached among national and international statistical organizations, donors and other stakeholders. The development of the strategic plan to meet this goal will:

- Identify a minimum set of statistics that each country will pledge to provide and that combine current core agricultural statistical needs and emerging requirements, such as land use statistics for analysis of global warming, greenhouse gas emission policies and incentives for production of biofuels.
- Provide a blueprint for agriculture to ensure its integration with the national statistical system when national strategies for the development of statistics are developed and implemented.
- Provide advocacy for national statistical organizations and ministries of agriculture to obtain funding to meet the agreed international requirements.
- Establish the basis for statistical capacity-building by identifying a suite of methodological tools based on the premise that these will be integrated into the national system.
- Establish agreement among donors to coordinate efforts to improve agricultural and rural statistics.

[1] Independent evaluation of FAO's role and work in statistics, Rome, October 2006.

- Enable integration of overlapping data requirements across other sectors, such as health, education, and the environment.

8. The strategic plan will highlight the importance of the population census and will stress the need for a core module of agricultural production and land use. This will provide a framework for subsequent sample surveys and/or censuses as well as a set of data integrating household characteristics to key agricultural production aggregates. Because of the timing of the 2010 round of decennial censuses, the United Nations Statistical Commission should support the requirement to include the agriculture module. These data would provide a better understanding of many components of the Millennium Development Goals, and also provide benchmarks against which to assess some of the economic, social and environmental impacts of climate change over the next decades.

9. In summary, the strategic plan will provide the framework to integrate a core set of agricultural and rural statistics into the national and international statistical systems, identify a suite of methodologies for data collection, provide a framework for integrating agricultural and rural statistics with the overlapping data requirements of other sectors and address the need to improve statistical capacity. Finally, it will propose a governance structure for coordination, not only between the national statistical organizations and other country ministries, but also between national statistical organizations of other countries, donors, and regional and international organizations.

10. A key element of the strategic plan will be the integration of agriculture into the national statistical system. The outcome of this exercise will affect other sectors and will provide a precedent for their integration into the national system as well.

11. Section II below provides a brief overview of the current situation of the quality and scope of agricultural statistics across regions and a summary of efforts that have already been undertaken to improve agricultural statistics. Section III comprises a review of issues regarding the scope of the strategic plan and section IV presents the strategy for determining the data needs for the twenty-first century, especially how to determine a core set of data that everyone can and should provide. Section V presents the argument that agricultural and rural statistics should be fully integrated with the national statistical system that follows. This concept is reflected in sections VI and VII on methodology and governance, respectively. The final section of the paper (sect. VIII) presents a summary of issues for consideration by the United Nations Statistical Commission.

II. Background

12. The purpose of this section is to provide a “status of the quality of the world’s agricultural statistics”. It is not easy to give quantitative information on the quality of statistical results and compare the quality from the past with today. However, the FAO independent evaluation showed convincing anecdotal information that national statistical capacity for agricultural statistics has deteriorated over time because of a decline in resources at the national level and a lack of donor interest. One reason for the decline can be the lack of capability to provide meaningful analysis of the existing data. With the data not being adequately used, resources are cut, leading to a vicious cycle of a reduction in content and data quality. While the decline in quantity and quality has occurred mainly in developing countries, some countries of

the developed world have also suffered the same fate; in addition, many countries in both categories have not kept up with the new challenges.

13. A review of statistics in the FAO database showed a high level of imputation being done because countries did not submit data. For example, the FAO database showed wheat production data for 118 countries for 2007. For 67 of those countries, data was either imputed or came from semi-official sources and a deeper look revealed that data was imputed for about 70 per cent of the African countries. However, data was also imputed for countries from every other region of the world, including some from the Organization for Economic Cooperation and Development. The FAO database showed that, for 2007, rice production was imputed for 10 of the 16 Asian countries. A review of the same data for 2006 makes for an interesting comparison; the amount of data imputed for wheat in Africa dropped from 67 to 34 countries and to zero for rice in Asia. While this is a positive sign, it is telling when one considers the timeliness factor. There are three dimensions of statistical quality: accuracy, relevance, and timeliness. Given the fact that we are near the end of 2008, the response to FAO for 2007 fails the timeliness test.

14. Although costly, agricultural censuses have traditionally been considered to be the pillar of agricultural statistics because they provide both periodic benchmarks and a sampling frame. The information in the table below shows by region countries' participation in the 1980, 1990 and 2000 agricultural census rounds. The table also shows the time frame in which a number of countries conducted the most recent agricultural census.

Table 1
Time periods in which agricultural censuses were last conducted by countries (by region)

Region	*Before 1990*	*1990-1999*	*2000 or later*
Africa	10	10	22
North and Central America	4	6	12
South America	2	4	6
Asia	4	1	24
Europe			29
Oceania	1	4	9
Total	**21**	**25**	**102**

Source: United Nations Statistical Division.

Some 30 per cent of the 148 countries last did an agricultural census for either the 1980 or 1990 rounds and 21 countries have not conducted one since the 1980s or earlier. An issue that will need to be considered in the strategic plan is whether the results justify the cost and whether countries whose census results predate 2000 should be encouraged to conduct a census or consider other steps to improve their statistical programme for agriculture. Table 1 is incomplete because information about the remaining countries is not available. This points to the need for a baseline assessment of the international agricultural statistics system.

15. Another issue reviewed is the degree of responsibility vested in national statistical offices for agricultural statistics. Historically, ministries of agriculture in many countries provided much of the data about agriculture because they had a network of staff distributed throughout their country that would provide periodic information about agricultural production, prices, etc. The ministries of agriculture are losing funding support for statistics, and the national statistical offices have not been able to fill the gaps, also owing to a lack of funds. Consequently, the national structure of agricultural statistics is a significant issue that will need to be resolved for the strategic planning effort to move forward. For example, a FAO review of national systems for 49 African countries shows that the national statistical offices in only 4 countries have total responsibility for agricultural statistics. The statistical system is totally decentralized in 20 countries and partially decentralized in the remaining 25. In other words, these countries have little or no input in the agricultural statistics programme. A review of the structure in 16 Asian countries shows that only 5 have centralized data systems for agriculture; the remaining 11 are decentralized, according to FAO records. This is not a developing country issue as the United States and many European countries have decentralized systems. The degree of decentralization will have to be considered when dealing with the integration of agricultural statistics with the rest of the national statistical system.

16. The strategy for improving agricultural statistics will need to consider the wide range of statistical capabilities and resources among countries. It must also consider the fact that, where capacity is limited for agricultural statistics, the same may hold true for the rest of the statistical system. The issue of responsibility for statistics being shared between national statistical offices and ministries is not unique to agriculture; health, education, and labour sectors face similar situations. While these ministries contain the subject matter knowledge, they may not have the statistical resources available. The strategy will be to harmonize their individual efforts into a national statistical system.

17. There are a number of organizations leading and supporting efforts to improve agricultural statistics. There is a need to strengthen the partnership among those organizations so as to jointly develop and implement the strategic plan. The plan will also have to identify the main problems that have constrained investment in agricultural statistics in the past and identify the constraints facing different groups of countries, especially low-income developing countries. The process will include, but will not be limited to, the review of the following efforts already taken to improve agricultural statistics:

- *Tracking results in agricultural and rural development in less-than-ideal conditions.* This is a source book on monitoring and evaluation for agriculture and rural development prepared by the World Bank, FAO, and the Global Donor Platform for Rural Development. The purpose of the effort was to provide a common framework of results indicators to uniformly measure the effectiveness of development assistance. The source book provides a menu of core indicators that could be used to monitor indicators of progress at the project, national, regional, and global levels. It indicates that statistical capacity should be built up because it contributes to the national development goals that encourage economic growth and poverty reduction.

- *Handbook on rural households' livelihood and well-being jointly prepared by the UNECE, Eurostat, FAO, OECD, and the World Bank.* The handbook

responds to the question about the need for better data and indicators on the environment, rural economies, and the farm household itself. It provides a set of indicators with a focus on the farm household as the primary reporting unit. The emphasis is only on developed countries.

- *Expert review of the entire FAO statistical programme.* An expert panel has prepared a comprehensive review of all aspects of FAO statistics and capacity-building programmes. The FAO mandate covers all countries, but is focused on developing countries, where it is often the sole international source of agricultural production and price statistics.
- *Paris 21 and African Development Bank guide to planning a coordinated national statistical system.* This provides a broad guide for integrating sectoral statistical systems such as agriculture into the national system. While it provides overall guidelines, it lacks sufficient detail about the content, scope and coverage requirements for agricultural statistics. However, this will be a critical component of the strategic planning activity because of the overlap of data requirements from the different sectors.
- *The recent review on Agricultural statistics for the Bureau of the Conference of European Statisticians/Economic Commission for Europe.* This provides a detailed description of the current situation in agricultural and related statistics in the EU countries, the neighbouring European countries as well as the North American and some South American countries (mainly Brazil).
- *World Bank living standards measurement survey — integrated surveys on agriculture.* This is an initiative funded by the Bill and Melinda Gates Foundation to improve household level data in sub-Saharan Africa. The project emphasizes the design and validation of innovative survey methods, the use of technology to improve survey data quality, and the development of tools to facilitate the use and analysis of the data. The project will include the collection of ground truth data to facilitate the use of remotely sensed data.

18. The above-mentioned initiatives are attempts to address the need for statistics that support policy decisions in agriculture and rural development. However, a complete statistical system must satisfy the other needs for data and information, which are to ensure that markets function efficiently and support investment decisions. The development of market systems that depend upon basic information on prices and supplies drives economic growth. The third ingredient supporting economic growth is investment in capital stock; again statistics must support decisions regarding investments in irrigation and land improvement, for example, as well as in processing plants and infrastructure, such as roads, etc. The strategy will be to enable the statistical system to not only meet the needs of government, but of all other data users as well.

III. Scope of the strategic plan

19. This section provides an overview of the scope of the proposed strategic plan, that is, what is to be considered as agriculture and also whether the rural dimension should be considered as well. Other issues address the need for data on land and water use and whether the household, instead of farms, should serve as a collection point for some data.

20. A first step will be to reach agreement on a definition of agriculture. A basic definition is based on the following three conditions being met: agriculture consists of the use of land, the culture of a living organism through more than one life cycle, and some kind of ownership. This separates aquaculture from capture fishery and silviculture from pure logging activities, and in principle, agriculture from picking berries outside forests or hunting. In both cases, farmers have a choice to use the land for other purposes than aquaculture or silviculture.

21. While fishery statistics, including aquaculture, are not under the agriculture umbrella in many countries, the industry provides a critical food source and needs to be considered when evaluating food security and poverty. Forestry statistics are also outside the agricultural realm in many countries, but they are closely related to agriculture because forestry constitutes major land use with considerable impact on the environment and global warming. Emerging data needs for forestry include those related to climate change (deforestation and forest degradation caused by actions taken to provide more cultivated land) and the effect on livelihoods and poverty from the sale of forest products. In many areas of the world, the important synergy effects between forestry and agriculture has led to the emergence of agro-forestry systems; this can cause problems for data analysis if not coordinated.

22. Land use ranges from mining to recreational. It is the foundation of much of agriculture and all of forestry and generates resources, both renewable and non-renewable. The type of land determines the choices for its use and the sustainability and productivity of agriculture. The use of land can have environmental consequences that range from pollution of waterways to global warming. The classification of land as agricultural or non-agricultural in the past has determined the scope and coverage of agricultural data collection and resulting statistics.

23. Closely related to land as a natural resource for agriculture is water. Increasing water scarcity poses a challenge to the world and has a direct impact on agriculture, which then affects food security, poverty and productivity. Irrigated agriculture accounts for about 70 per cent of fresh water withdrawals globally.[2] Statistics on the contribution of irrigated agriculture versus rain-fed agriculture are needed to understand the water-related challenges the world is facing.

24. Traditionally, the farm has been the unit of collection for agricultural surveys. Agriculture has been considered a business activity with data collections focused on the farm as the reporting unit. While the farm as a reporting unit is important when considering commodity production, resource use and structure, information about the farm household's sources of income, contributions to the labour force and consumption practices are essential elements in the elimination of poverty and hunger. These data requirements raise questions as to which situations require that the farm household, rather than the farm, become the unit of measure. In many countries, household plots contribute a significant part of the food supply; the household is the unit of measure for data collection to monitor progress towards meeting the Millennium Development Goals. For example, household income is a direct input into estimates of poverty. Social characteristics, such as health, education and issues concerning employment and income status, should be

[2] *World Development Indicators, 2008*, The World Bank.

measured using the household as the reporting unit. Both reporting units need to be preserved, but an effort must be made to determine the overlap between them.

25. The rural dimension is often mistakenly viewed as including only agriculture, but it includes agricultural and non-agricultural enterprises that compete for agricultural workers and add income to farm households, thereby alleviating their poverty. Rural space includes both farm and non-farm households, further complicated by the fact that a considerable amount of income to farm households comes from non-farm activities. Rural space is where over 70 per cent of the people in poverty live. It is most lacking in infrastructure, such as access to roads, transportation, and education, health and financial services.

26. The material in the present section raises several questions about the scope of the proposed strategic plan. There are strong arguments that it should include fisheries and forestry, at least as they relate to food consumption and land use; land and water use are important factors that are intimately associated with agriculture. Rural development is an essential element in the elimination of poverty and hunger. With 70 per cent of the people in poverty living in rural areas that are often closely associated with agriculture, the rural dimension will also be considered in the strategic plan. It will also be important in the future to consider the household as a unit of measure for agricultural and rural statistics in order to integrate overlapping data requirements from other sectors.

27. The strategic plan for agricultural statistics should not be developed in isolation from the rest of the national statistical system; agricultural statistics should be fully integrated into the overall national statistical system. Many of the data needs for agriculture overlap those required by other sectors such as health, education, land use, labour, and others. This is also true for other domains, such as the environment and socio-economic factors, where agriculture and the rural dimension are important variables.

IV. Strategy for determining a core statistical programme on agricultural statistics

28. The data requirements for all of these elements exceed what any country can provide for the same point in time because of capacity and resource constraints. Therefore, priorities have to be established. These priorities will be different across countries and will change over time. However, to start preparing a strategic plan a goal has to be set that can only start from defining a certain set of core statistical indicators that are universally needed and are comparable across countries and additive.

29. It is recommended that those countries needing to establish a statistical system, or reform an existing system should begin with these core statistics. If a country is preparing a national strategy for the development of statistics, the core items should establish the framework for the agricultural and rural components of the strategy.

30. A core data item can be defined as one that is used for a multiple of indicators needed to monitor and evaluate development policies, evaluate food security and ensure markets operate efficiently, monitor progress on meeting the Millennium Development Goals, and as an input to the national accounts. A core item enters into

global balances of supply and demand for food and other agricultural products. A core item should be a major user of land, contribute significantly to farm and household well-being, and affect the environment and global warming. A core item should be considered to be so important that it will be among the last to be removed from the statistical system if there are budget shortfalls.

31. The determination of the core items should be a building block to establish methodology and to integrate agriculture statistics with the national statistical system. Acceptance of the concept of core means agreement that they will be made available on an agreed upon time schedule.

32. In the report cited in paragraph 17 above on tracking results in agricultural and rural development in less-than-ideal conditions, it was also recommended that a set of core indicators be identified and a list of 19 was provided. The FAO independent evaluation provided a summary of input from data users which showed the most important data are trade and agricultural production and included emerging data needs for prices, biofuels, the environment and global warming. This input was used as a starting point to prepare a first set of "core" items to begin the discussion.

33. The determination of the "core" starts with major food and fibre crop statistics, and major statistics of animal production. Necessary data are hectares harvested, yield and production. Supply use data, such as stocks prior to harvest, quantities used for food, feed, biofuels, imports and exports, are also considered to be core. National annual average prices are also required. Following are three elements of core data:

(a) These data provide input into several indicators needed to monitor development policies, track food security, input to poverty calculations and measures to evaluate agriculture's impact on the environment and global warming;

(b) Note that it will be necessary for agricultural enterprises and administrative sources to provide some of the core data. For example, quantities used for biofuels will need to be provided by those processors;

(c) In order to use these data to assess land use and global warming initiatives, the farm or household data should be geo-referenced.

34. A key point is the reference to "major" crops. Because of cost and time constraints, it may not be possible to include every possible item on the core list. However, it is agreed upon, each country will be able to add items that are of importance to their economy.

35. Another concept relating to the core is that not all data will be required to be provided annually. Certain variables, such as land use, do not change rapidly from year to year. Items needed to measure household income or evaluate farm structure are difficult and expensive to survey and will therefore be provided on a rotating basis.

36. Table 2 below, provides the proposed core items that will be provided annually. The sources of the data are also shown in the table and presented for discussion purposes. Not all elements of the core need to be implemented at the same time. Countries should begin with the first column, which includes mainly production data, then over time move to include the data in the remaining columns.

Table 2
Core data items required annually, by source of the data

Annual core data items	*Sample survey/ census/ farms households*	*Enterprise*	*Administrative*	*Remote sensing (for future consideration)*
Major food crops: sugar crops, oilseed	Acres harvested, yield, production, own consumption	Amounts in storage Amounts processed for food, feed, food oil, and fuel prices	Imports and exports, subsidies	Early warning of crop conditions link with land use
Fibre-cotton, flax	Acres harvested, yield, national annual average prices	Amounts ginned or processed, by products and prices	Imports and exports, prices, subsidies	Early warning, link with land use
Livestock: cattle, sheep, goats, swine	Inventory, meat, milk and wool production, own consumption, average prices	Amount processed into meat, milk, fibre, etc., prices	Food inspections, imports, exports	Geo-referenced to land use for environment and global warming monitoring
Poultry	Inventory, meat and egg production, own consumption	Amount processed into meat, egg production prices	Food inspections, imports, exports	Geo-referenced to land use for environment and global warming monitoring
Fishery production	Amount captured	Prices	Subsidies/income support	

37. Core data items not needed annually but, rather, on a periodic basis, include:

(a) Expenditures and quantities purchased for feed, fertilizer, chemicals, water and equipment;

(b) Expenditures to improve land, irrigation, breeding animals, etc.;

(c) Farm structure by type, such as household plot, small farm or commercial farm; by size; and by type of ownership, and source of labour, such as hired help or family;

(d) Rural household farm and non-farm income from sale of products, consumption of own production, input from family labour, and wages earned;

(e) Labour force survey: number of workers by enterprise in rural areas;

(f) Land cover/use classifications, such as cropland, pasture, woodland, forests, desert, urban or built-up areas;

(g) Water use and impact, for example, irrigated versus non-irrigated crop yields;

(h) Timber removal from private and public lands;

(i) Social/demographic data, such as age, education, health of farm and rural non-farm households.

38. The selection of core items remains open for discussion. However, a foundation of the strategic plan is the concept of a core to establish a minimum set of items for every country, regardless of size and capacity for their inclusion in their statistical systems.

V. Need for integration in the national statistical system

39. One of the shortfalls of the current statistical systems, not only in the agricultural sector but also in other sectors, and in developed countries and developing countries, is that the data collections for the core items listed above are often done independently. Furthermore, often, more than one institute of governmental organization is involved in the collection and analysis of agricultural data without sufficient coordination. Separate data collections take place for crop production and structural information, for example. This does not allow for analysis of productivity by size of enterprise, nor their use of resources such as fertilizer. A shortcoming is that the farm household is not connected to the farm as an enterprise. These examples point to a problem with current agricultural and rural statistics; many of the issues are considered independently, which does not allow for analysis across categories. Agriculture is a unique sector because of the connection between decisions made regarding the farming activities that affect the household and the degree of poverty of the household, all of which have consequences for the environment.

40. The first step at the national level to move towards integration should be to review the national statistical system and determine where linkages can be made to agricultural and rural statistics. One example is the labour force surveys done in many countries. These are enterprise based, but do not include farm enterprises in the data collection. Data collections for household income are often done in isolation from agricultural households or with sample sizes too small to disaggregate the data. The emerging data need not only point to a need for integration, they also require analysis best provided by panel surveys.

41. Section VII will address governance issues. The point to be considered in the strategic plan is how to fully integrate agricultural and rural statistics into the national statistical system. This should set the precedence for the same to occur with the other sectors — health, education, labour, land administration, etc.

42. The following paragraphs provide a vision for the future of agricultural statistics and how they can be integrated into the national statistical system. Once the vision is established, then a set of methodological tools will be needed to take into account the requirements of individual countries. The vision and set of tools will also provide the basis for statistical capacity-building and the framework for the national strategies for the development of statistics.

43. The long-term nature of the implementation of the strategic plan must be recognized. While only a few countries can now meet all of the requirements, there are others that first need to rebuild their statistical system. A large number of countries will have internal governance issues to deal with as well.

44. The vision for the future of agricultural statistics and its integration into the national statistical system contains three methodological components, the establishment of the sampling frame(s), the data-collection programme, and the data

management. The following sections summarize proposals for discussion on how to integrate agriculture into the national statistical system.

VI. Vision for determining methodology

45. The basis for the integration into the national statistical system starts by defining the sampling frame(s). It is important to note that these steps cannot be accomplished at the same time. The situation faced by each country should be to determine the subset of steps below and implement them in a priority order best suited to their needs:

(a) Ideally, population censuses will obtain sufficient information about agriculture to create a register of agricultural and rural households. All households, urban and rural/agricultural could be geo-referenced, for example, by village;

(b) Remote-sensing products could be used to create an area frame consisting of a digitized data layer divided into land cover or land use data layers, such as cropland, pastureland, forests, built-up areas, villages and other agreed upon classifications;

(c) This information could be used to create an area frame sample of the country identifying the different types of agricultural and meteorological conditions to ensure that the sample survey provides an overall picture of agricultural and rural conditions. The first stage sampling unit could be the village, where the population census could be used to establish the linkage between the farm household and the agricultural holding, which are then also geo-referenced;

(d) Some countries may be able to extend the village level population data to a master household register with households classified as urban, urban with agriculture, rural, rural with household plot, or rural with agricultural holdings;

(e) The geo-referenced area frame will be the basis for all household surveys and small farm surveys required by the national statistical system;

(f) A register of farms that are above a size threshold and which produce mainly for the markets will need to be established. These are generally specialty farms or those so large that it is difficult to establish a linkage with households;

(g) The area frame containing the geo-referenced master household register and the commercial farm register will be the basis for all data collections for use in estimating agricultural production;

(h) A business register will be established and geo-referenced. The commercial farm register will be a subset. Another subset of this register will be enterprises involved in servicing agriculture, such as storage facilities and firms that process meat, poultry, milk, eggs, cotton, wool and other products.

46. The vision for the data collection starts with the goal that it be sustainable and provide an annual work programme that is consistent from year to year so that the statistical staff is fully utilized over time. While an agricultural census is the gold standard for agricultural statistics, more and more countries are having difficulties because of the large peak in funding and workload required on an infrequent basis. The agricultural census is not included in the vision for the future of agricultural

statistics. Instead, agriculture will be embedded in the sampling frames and survey programme conducted as part of the national statistical system, as follows:

(a) A core set of data requirements will have been established for agriculture and rural statistics and divided into those required annually vs. on a periodic basis;

(b) Each country should define a similar set of core classified as annual and periodic for the remaining sectors of its statistical system;

(c) Once the core statistical system has been defined, the basic data collections for household and enterprise surveys should be defined;

(d) The data collections for items required annually will be determined by the seasonal nature of the subject matter, amount of recall required, and desired reference periods. Quarterly data collections from the master household and enterprise registers will spread the workload over the year;

(e) Official statistics should be disseminated in a timely manner and made readily available to all data users. Microdata should be made available for analysis, in a controlled environment using procedures consistent with country confidentiality requirements;

(f) A research programme will provide guidance for those components of agriculture that are difficult to measure. Examples are the estimation of area for multicropping situations and the estimation crop yields using farmer estimates and/or crop cutting.

47. The third element of the vision for the future of agricultural statistics involves data management; this is a long-term view. The proposed vision is that the concept of "one master file" for the national statistical system be implemented using data warehouse methodology. This concept means that each household or enterprise appears only once in the data warehouse and is geo-referenced. It will contain many data elements, including those from the population census and all subsequent household and enterprise, agricultural and non-agricultural data collections and will contain data across time. The "one master file" will not only be the basis for sample designs, but will also be critical for the estimation process. It will also provide the capability for microdata analysis, both cross-sectional for a point in time and longitudinal across time. The subset of steps follow:

(a) Data for agricultural and non-agricultural households will be geo-referenced together, enabling the linkage across the agricultural, health, education, labour and other relevant sectors;

(b) The data-storage and processing capabilities will be concentrated in one system for capacity-building purposes.

48. The three visions will be reviewed by all stakeholders for their input and suggestions. Once the elements of the three visions have been determined, the next step will be how to get started. Of course, specific circumstances and situations in the countries need to be taken into account to develop the countries' specific road map to improved agricultural statistics. The following, therefore, gives only a rough indication:

(a) Countries with the weakest capacity and those with no recent history of agricultural or population censuses should start by using remote sensing to develop a digitized data layer, as described above. This can be used as a sampling frame

using multiple stage sampling to select a first sample of households to begin the basic data collection;

(b) Countries with scheduled population censuses should integrate agriculture into them and begin the geo-referencing process.

VII. Strategy for determining governance

49. Governance needs to begin at the national level and deal with how to organize a national statistical system around the ministries involved in data collections for different sectors.

50. The national statistical institutes and ministries will need to consider the visions regarding the sampling frame, data collection, and data-management aspects of the statistical system to understand the need for data integration.

51. Each country, if it does not have a coordinated structure, such as a statistical council, should establish one which would be chaired by the national statistical office. Such a structure should include agricultural statistics. It may be determined that some ministries are best suited to conduct specific data collections. The basic concepts in the vision statements will need to be honoured; that is, data collections will be based on the sampling frame from the area master, data will be integrated into the national system and will be stored in the data warehouse.

52. The integration of all sectors into a single national statistical system will mean that international organizations will have to have a similar coordination. This will include FAO and others in the United Nations statistical system, as well as donor organizations. They will need to coordinate their efforts to support the overall visions for data integration. In other words, the integration of agriculture into the national statistical system will likely lead to a review of the integration of other sectors, as well as into one national statistical system.

53. The strategic plan calls for the introduction of methodology that will cut across the entire national statistical system. The use of remote sensing, both for early warning purposes and to create and provide the required land cover and land-use data layers, multiple frame sampling, and introduction of data warehouse methodology calls for expertise that is difficult to maintain in every national statistical office. Therefore, it is recommended that the establishment of regional centres be included in the strategic plan to provide a more cost-efficient way to support the national needs for those methodologies. It is recommended that donors consider supporting these centres of excellence.

VIII. Recommendations for consideration by the Statistical Commission

54. The present paper explains the need for a strategy to improve agricultural and rural statistics, and to make it relevant to deal with emerging issues for the twenty-first century. As the strategy has developed, several issues and concepts have emerged, as follows:

(a) The 2010 round of population censuses should contain an agriculture module to provide the linkage between households and agricultural aggregates;

(b) The scope of the strategic plan needs to include the rural dimension, land use, water, the environment, fisheries and forestry, because they are so closely tied to agriculture with overlapping policy issues;

(c) The data requirements exceed what is reasonable to produce annually or by all countries. Therefore, a set of core indicators required annually was defined, to be supplemented by another of periodic indicators;

(d) These indicators will be fully integrated into the national statistical system;

(e) The integration of the national statistical system will involve the introduction of methodology regarding sample frame(s), data collection and data management that will meet the requirement for full integration;

(f) The introduction of these three methodologies will form the basis for developing and improving statistical capacity and the implementation of the national strategies for the development of statistics;

(g) At the national level, a governance structure is needed, for example, starting with a national statistics council that also oversees agricultural statistics. International coordination of the strategy has to fall under the United Nations Statistical Commission;

(h) It is recommended that regional centres of excellence be established to support the implementation of new methodology in national statistical offices.

55. There should be an assessment of the performance of the international agricultural statistics system. This baseline will serve to further refine the strategic plan and track progress. The assessment should provide the following items for all countries:

(a) The most recent year data for core statistics on production of major agricultural commodities were reported to FAO. This should show what is reported and the frequency;

(b) The most recent year in which the population census was conducted; the year of the next census, and whether it will include an agricultural module. If an agricultural module is to be included, the type of data to be collected; that is, an indicator of production or actual quantitative data, such as hectares harvested and production, and animal numbers;

(c) The most recent year in which an agricultural census was conducted and the year of the next census. This should indicate whether the data were published and where they are available;

(d) The most recent year in which rural household surveys were conducted and whether agriculture components were included. This should include whether the data were published or made available to the public. The source of the data collection should be included, that is, whether the survey was conducted by the national statistical office or another ministry;

(e) Available sampling frames, reference period, updating method and year of the most recent update;

(f) Method of data dissemination (Web, printed) and timeliness; amount of time between data collection and publication of the results;

(g) National structure of the statistical system: the role of the national statistical office versus the Ministry of Agriculture or other source for agricultural statistics;

(h) Information on whether a national strategy for the development of statistics has been done, is under way, or planned for the future; shown by completion dates.

56. The preparation of the strategic plan will proceed in stages. The outcome of the United Nations Statistical Commission meeting will form the basis for the preparation of a more detailed strategy paper that will provide steps for implementation and an overall timetable. This strategy paper will be shared with stakeholders, such as data users, donors, and international organizations. Revisions from these discussions will be used to update the strategy paper.

57. There will be a satellite meeting of the August 2009 International Statistical Institute conference, at which the strategy paper will be presented to representatives of national statistical organizations.

58. The outcome of that meeting will be the basis for a set of final recommendations to be presented to the 2010 session of the United Nations Statistical Commission.

59. The actions of the 2010 United Nations Statistical Commission meeting will be used for the implementation of the strategic plan, which will be the primary basis for the International Conference on Agricultural Statistics to be held in Uganda in 2010.