

# Linking the population and housing census and the census of agriculture for the 2020 round: Advantages and challenges<sup>1</sup>

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**Abstract.** In many developing countries, Population and Housing Censuses (PHC) and Censuses of Agriculture (CAs) remain two key sources for basic and structural data on the characteristics of the population and the agriculture sector. However, these two operations are highly expensive and many countries find it difficult to conduct them in the internationally recommended time frame of ten years. This is particularly true for the CA, which is conducted with very irregular frequency (or not at all) in many developing countries.

In addition to funding issues, constraints include inappropriate institutional set-up often characterized by a lack of coordination and cooperation between the institutions concerned (particularly National Statistical Offices and Ministries of Agriculture), the non-integration or linkage of CAs with agricultural surveys, administrative sources and other major censuses and surveys in the national statistical system, particularly the PHC.

The adoption of the Sustainable Development Goals (SDGs) which have created increased data demands and emerging technological tools provide new opportunities that can help in better linking the CA with the PHC and a more integrated statistical system. This can result in a wider database for more in-depth analysis of interactions between agriculture and the socio-economic environment and contribute to monitoring the SDGs.

This paper will provide an overview of some of the advantages and issues of linking the two censuses in light of the new international guidelines on the PHC 2020 and the World Programme for Census of Agriculture (WCA) 2020, and present some country examples.

Keywords: Population and housing census, census of agriculture, integration, SDGs

## 1. Importance and conduct of agricultural census in the world

In many developing countries, the Population and Housing Censuses (PHC) and Censuses of Agriculture (CAs) remain two key sources for granular data on the characteristics of the population and the structural data on the agriculture sector. However, these two major op-

erations are highly expensive and many countries find it difficult to conduct them in the internationally recommended period of ten years. This is particularly true for the CA, which is conducted with very irregular frequency (or not at all) in many developing countries.

In most countries, the CA remains a unique source of key information on the agricultural sector and for establishing an effective agricultural statistics system. It provides information for building sampling frames for inter-censal agricultural surveys, benchmarks for reconciling current agricultural statistics, data for small geographical areas, data on rare and emerging commodities and for detailed cross tabulations.

<sup>1</sup>This paper is based on a paper presented at the 62nd session of WSC, Kuala Lumpur, Malaysia [2].

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Table 1  
Number of countries conducting agricultural census

Region	Rounds of WCA						Total countries in the region
	1960	1970	1980	1990	2000	2010	
Africa	29	25	21	23	25	22	<b>55</b>
America	29	33	28	23	22	28	<b>36</b>
Asia	20	20	21	14	31	29	<b>48</b>
Europe	17	24	22	21	33	36	<b>39</b>
Oceania	5	9	11	13	11	12	<b>19</b>
Total countries in the round	<b>100</b>	<b>111</b>	<b>103</b>	<b>94</b>	<b>122</b>	<b>127</b>	<b>197</b>

Source: FAO Statistics Division, Census Team.

However, despite its recognised importance not all countries in the world are conducting the CA on a regular basis. Table 1 shows that almost all regions have increased their participation in the WCA rounds since the 1990s, while in some regions like Africa this participation have declined and remain below 50% of the total number of countries in the region.

Although country participation in the WCA reached a new record of 127 in the 2010s (2006–2015), this number remains relatively small. Castano and Cara [1] showed that this number is rather low compared to the 214 countries and territories that conducted a PHC in the same period.

## 2. Making the case for linking the two censuses

FAO and the UN have included in their recent decennial guidelines, specific recommendations on better linkages between the the PHC and the CA [7,10]. In its latest World Programme for the Census of Agriculture 2020 [7], FAO advocates for a close relationship between these two operations in line with an integrated statistical system.

The UNSC [10] recommends that “*in planning the population and housing census, every opportunity for developing the relationship between this census and the agricultural census should be explored. This can take several forms. Definitions used in the population and housing censuses should be compatible with those used in the agricultural census so that meaningful comparisons can be made between the two data sets. The population and housing census can also be of use in the preparation of the agricultural census, such as in the demarcation of enumeration areas, the preparation of the frame for the agricultural census or, if applicable, the sample design.*”

Furthermore, the UNFPA and FAO issued in 2012 technical guidelines [6] that provides detailed guidance on conceptual and other methodological issues

for the linkage of the PHC with the CA with several country examples. This was supplemented by an E-learning course launched by FAO in 2017 and available at [gsars.org/en/e-learning-course-on-linking-population-housing-censuses-with-agricultural-censuses/](http://gsars.org/en/e-learning-course-on-linking-population-housing-censuses-with-agricultural-censuses/).

In addition to these guidelines and methodological considerations, the Sustainable Development Goals (SDGs) and emerging technological tools provide new opportunities and options for linking the PHC and the CA.

The adoption of the 2030 Agenda focuses on sustainability of development and introduces new dimensions in the development process and a close monitoring and evaluation process is required. The monitoring and evaluation of the SDGs create new challenges for countries for producing a large amount of data. This requires a better strategic statistical planning at national level and at the level of the agricultural sector in order to have a more coherent and cost-effective census programme. This requirement is underlined in the Cape Town Global Action Plan for Sustainable Development Data adopted by the United Nations Statistical Commission at its 48th Session in March 2017. The Cape Town Action Plan recognizes that “*Effective planning, follow-up and review of the implementation of the 2030 Agenda for Sustainable Development requires the collection, processing, analysis and dissemination of an unprecedented amount of data and statistics at local, national, regional and global levels and by multiple stakeholders*”.

The implication is that more than ever, a more integrated statistical programme is needed in countries to respond to the increased data requirements. The preparation of the new generation of National Strategy for the Development of Statistics (NSDS) promoted by PARIS21 [9] is an opportunity to take into account the data needs for monitoring the SDGs. The NSDS guidelines recommends that sectoral plans be prepared and integrated in the NSDS process in order to ensure own-

ership of the Strategy and better integration of the national statistics system. FAO, through the Global Strategy to Improve Agriculture and Rural Statistics [4], developed guidelines to assist countries in preparing their Strategic Plans for Agricultural and Rural Statistics (SPARS) to be aligned with the NSDS.

A key element of these strategic documents is a detailed action plan for all data collection activities during the period considered, including PHC and CA with corresponding budget. Planning the two censuses in an integrated statistical programme can bring more coherence and efficiency. It can also facilitate the mobilization of funds through an integrated advocacy programme.

In terms of emerging technologies, the 21<sup>st</sup> Century have seen phenomenal developments regarding new technological tools or improvement of existing technologies that are relevant for linking the PHC, the CA, surveys and administrative registers. Castano [3] discusses the increasing use of technology in the census of agriculture. These new tools facilitate the development of wider databases for more in-depth analysis of interactions between agriculture and the socio-economic environment and contribute to monitoring the SDGs.

### 3. Advantages of linking the Population and Housing Census and the Census of Agriculture

Coordinating and linking the PHC and the CA is an important aspect of the integration of agricultural statistics into the national statistical system while achieving cost-efficiencies. The coordination of these operations is particularly relevant in countries where both censuses are carried out as a household enquiry, meaning that most agricultural holdings are located in the household sector. FAO & UNFPA [6] list the following advantages of linking the censuses:

- Reducing the total cost of the two censuses: common infrastructure, logistics, personnel and equipment.
- Reducing the scope of the agricultural census: some agricultural items can be collected in the PHC.
- Enriching data analysis: a much richer data set for analysis.
- Ensuring regular CA operations: it allows the institutionalization of the CA.
- A reliable sample frame for the CA: when households with own-account agricultural production are identified in the PHC.

- Better defining the CA coverage: when livestock numbers and crop areas are collected in the PHC.

### 4. Challenges

As explained before, the CA is conducted with very irregular frequency (or not at all) in many developing countries. Some of the key issues that explain this have been analysed and discussed in detail [8]. They include: (i) the high cost of a census in a context of scarcity of resources, (ii) burden for respondents particularly in developed countries, (iii) long delays for results and (iv) questions on its relevance to a widening data needs with emerging issues.

In addition, many developing countries find it very difficult to conduct separately a PHC and CA in a short time frame given the high cost involved. Both national budget and donor funding have limitations and these two operations will be competing for the same sources of funds. Most often, this competition comes at the expense of the CA, which is seen as having a lower political and public profile as compared to the PHC. This is sometimes exacerbated by institutional competition between the National Statistical Office (NSO) organising the PHC and the Ministry of Agriculture advocating for the CA. As a result, in many countries CA projects remain unfunded for several years after they are formulated<sup>2</sup> or are abandoned after some time.

### 5. Ways of linking the population and housing census and the agricultural census

The linkage of the AC and the PHC can take several forms, from coordinating aspects of the two censuses to including key agricultural items in the PHC [7]. This can cover:

1. Coordinating aspects of the two censuses in terms of:
  - use of common concepts, definitions and classifications;
  - sharing field materials; building enumeration areas (EAs) which suit both censuses; organization of fieldwork (e.g. geographical distribu-

<sup>2</sup>In several cases these census projects are formulated with the assistance of FAO through its technical assistance programme (TCP) with the expectation that they will be funded by the Government and/or Donors.

tion of households with own-account agricultural production).

2. Using the listing of the PHC as a starting point for the frame for the household sector of the CA.
3. Collecting agriculture-related data in the PHC to identify households engaged in own-account agricultural production (either through few basic items or adding an agriculture module).

An increasing number of countries has linked the PHC and the CA. A review of the WCA 2010 round [5] shows that some countries included some screening questions (or even a section with agriculture-related questions) in the PHC aimed at identifying agricultural holdings. Some African countries piggybacked an agriculture module onto the PHC (e.g. Burkina Faso, Mozambique, Seychelles and Uganda) to provide a more complete frame for the agricultural census or for follow-up sample-based supplementary CA modules. Ethiopia is planning its 4<sup>th</sup> PHC in 2019 linked and to be followed by the CA. Brazil and some African countries such as Botswana, the Gambia, Lesotho, Malawi, and Namibia, used EAs from the PHC as PSUs in the CA.

The phase of cartography for the PHC is a critical step for delineating EAs, identification and localization of households that will be subject to complete enumeration during the PHC. With the availability, increased precision and low cost of handheld GPS, these tools are now widely used during the cartography of PHCs in most countries. This results in the availability of digital EA maps with geographic coordinates of the boundaries of the EAs, and (when included in the cartography) the GPS coordinates of the households.

A number of countries have taken the opportunity of the cartography of the PHC to include few questions for identifying households that are engaged in own-account agriculture and to take their GPS coordinates. By doing so, linkages can be established between PHC and CA at the household level and an effective frame can be made available for the CA regarding the holdings operating in the household sector.

The cartography and mapping exercise of the PHC 2019 of Kenya was conducted using smartphones and the information collected was used to produce EA maps, to facilitate the census. The Kenya National Bureau of Statistics (KNBS) staff in conjunction with chiefs and village elders identified boundaries of each village and listed all the homesteads and households within the villages. During this operation questions were asked on any agricultural activities conducted by the households. All households (including those

with own-account agricultural production) were georeferenced and all EAs and village maps digitized.

An increasing number of countries are considering linking the population and housing census and the agricultural census and countries are increasingly looking at new ways to strengthen this relationship.

## 6. Conclusion

In many developing countries despite the importance of PHCs and CAs, these operations are not conducted in the internationally recommended period of ten years. This is particularly true for the CA which is conducted with very irregular frequency (or not at all) in many developing countries particularly in the Africa region. Lack of funding, inappropriate institutional setup, non-integration or linkage of the PHC and the CA are some of the issues facing the countries. There are detailed international guidelines and recommendations on the technical linkage of these operations.

The coordination and linkage of these census operations is particularly relevant in countries where the bulk of the agricultural holdings are located in the household sector. This has become even more relevant in the actual context of monitoring the SDGs since the underlying data requirements is way beyond any single operation and require synergy and complementarity between various sources. The need for monitoring progress towards the SDGs and emerging technological tools provide new opportunities and options for linking the PHC and the CA. A more integrated statistical programme is needed in countries to respond to the increased data requirements for wider data analysis and informed national and regional policy decisions.

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