Statistical Capacity Building (StatCaB) Programme

THE CENSUS OF AGRICULTURE

THE IMPORTANCE, DESIGNING AND PLANNING, ITEMS RECOMMENDED

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OUTLINE

1. DESIGNING AND PLANNING THE CENSUS OF AGRICULTURE
2. INDONESIA'S EXPERIENCE

01

DESIGNING AND PLANNING

The Census of Agriculture (CA)

Learning and adopting the 2020 WCA, by taking into account countries' particular condition

THE AGRICULTURAL CENSUS

Basic concept and when it starts?

- **Definition**: A census of agriculture is a statistical operation for collecting, processing and disseminating data on the *structure of agriculture*, covering the whole or a significant part of the country
  - Structural data includes number and size of holdings, land tenure, land use, crop area, irrigation, livestock numbers, and labour and other inputs

- **History of the WCA Program (World Programme for the Census of Agriculture**: Each round of WCA covered 10 years; WCA2020 is the 10th round covering censuses carried out between 2016 and 2025

  - WCAs provide methodological and operational guidelines to ensure international comparability; and reflect new statistical methodologies and technologies while ensuring historical comparison
  - FAO led WCA1950 - WCA2020; International Institute of Agriculture led WCA1930 & WCA1940

THE CENSUS OF AGRICULTURE

The importance

The importance of CA for DATA USERS

- **Supports** evidence-based agricultural planning and policy-making.
- **Provides** data to facilitate research, investment and business decisions.
- **Contributes** to monitoring environmental changes and evaluating the impact of agricultural practices on the environment.
- **Provides** information base for monitoring some key indicators of the Sustainable Development Goals (SDGs).
- **Provides** baseline data.

and many more..

The importance of CA for DATA PRODUCERS

- **Provides** a reliable benchmark for reconciling and improving current crop and livestock statistics.
- **Provides** frames for sample surveys in the agricultural survey programme, as well as information for building the Master Sample Frame.
- **Supports** the establishment or update of the statistical farm register.

THE AGRICULTURAL CENSUS

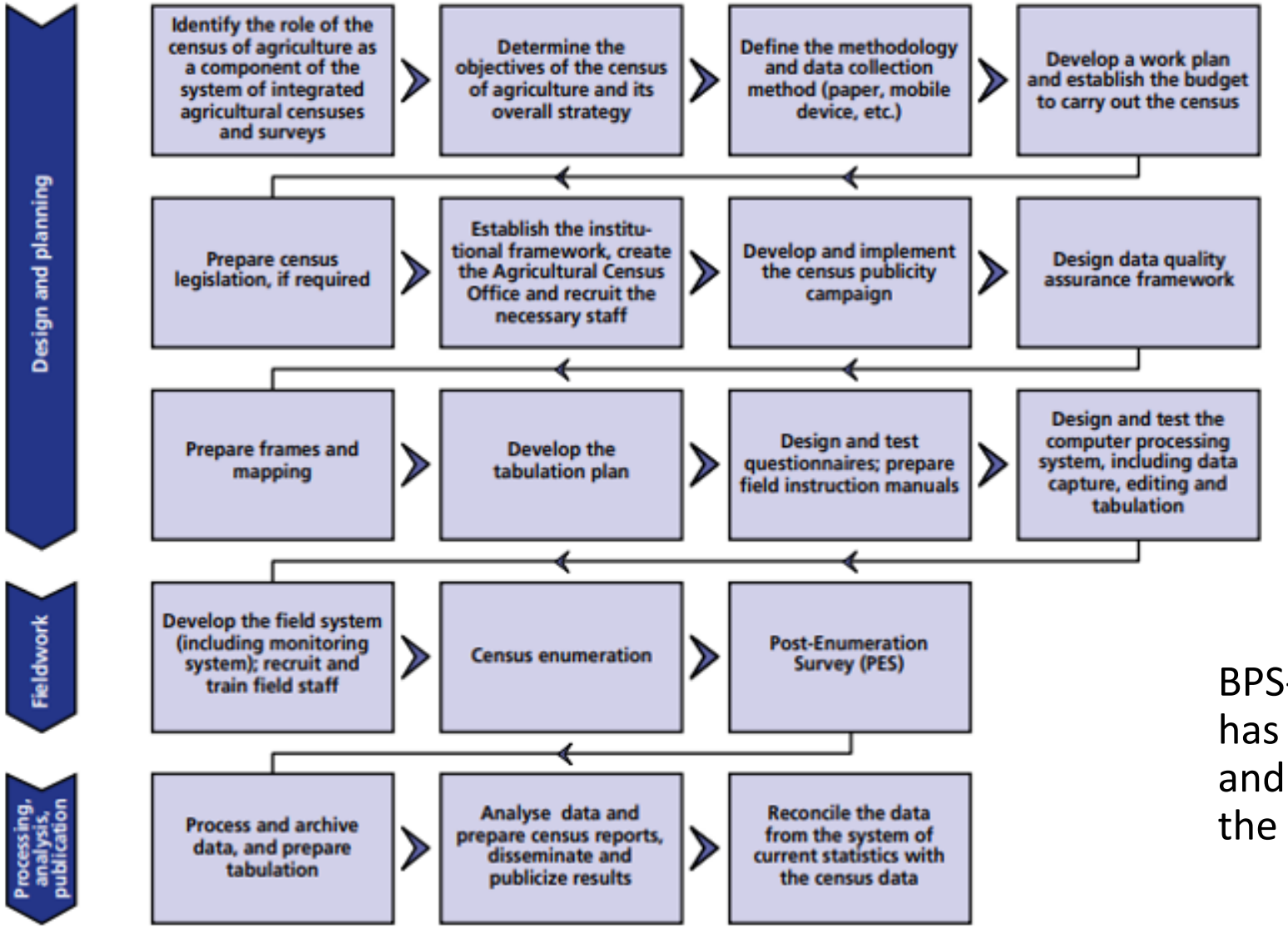
Objectives

Objectives: to provide

- Data on the **structure of agriculture**, especially for small administrative units, and to enable detailed cross-tabulations (e.g. holders by size and main crop cultivated)
- Data to use as **benchmarks** for and reconciliation of current agricultural statistics
- **Frames** for agriculture sample surveys

THE AGRICULTURAL CENSUS

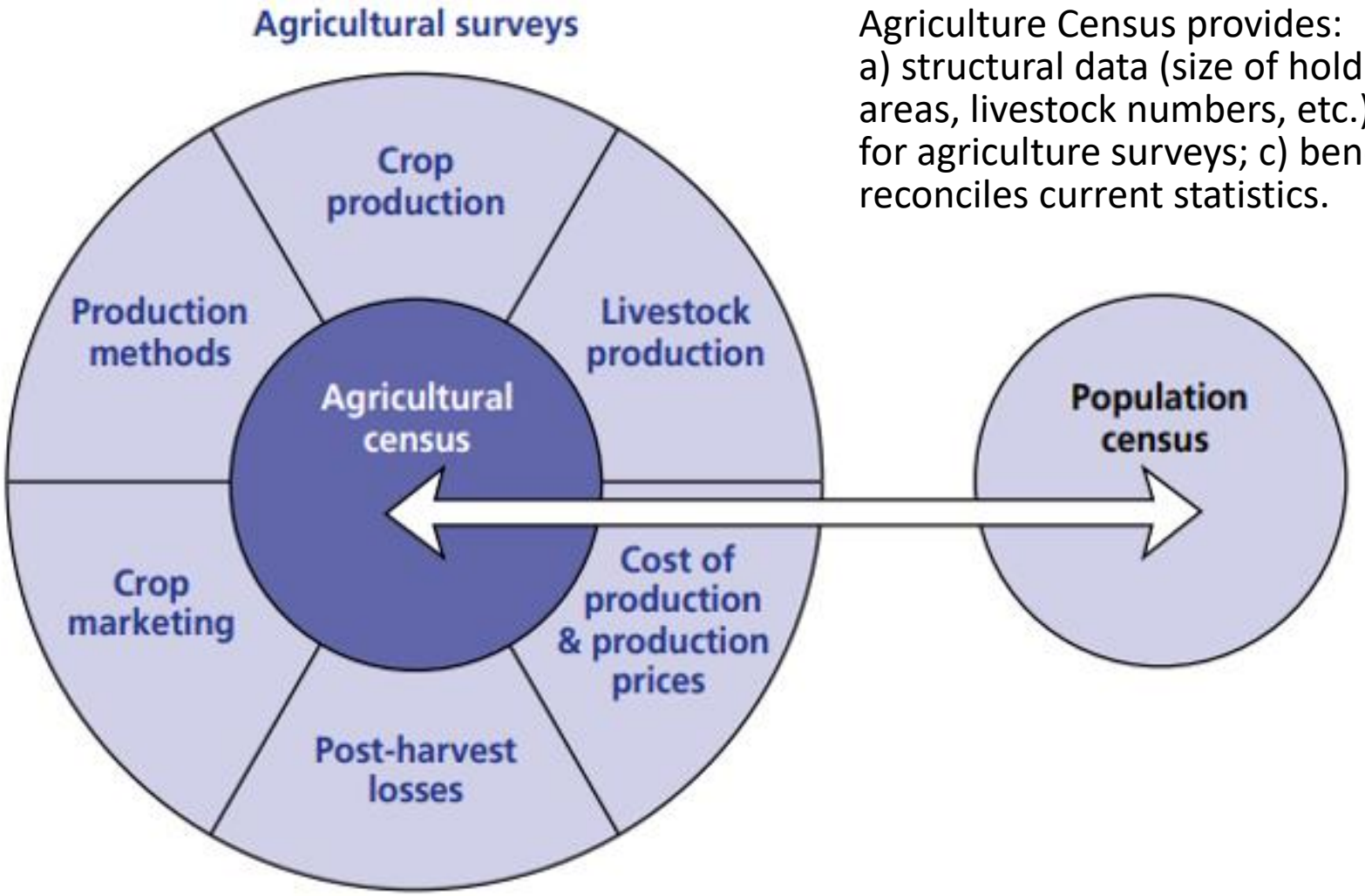
Steps in developing and conducting the CA



BPS-Statistics Indonesia has begun the designing and planning phase of the 2023 CA **since 2020.**

STEPS IN DEVELOPING AND CONDUCTING THE CA

The CA as a component of the system of integrated agricultural censuses and survey



Agriculture Census provides:
a) structural data (size of holdings, land use, crop areas, livestock numbers, etc.); b) sampling frame for agriculture surveys; c) benchmark and to reconciles current statistics.

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Define specific objectives of the CA

- **Provide key data** (mainly on the structure of agriculture):
  - At the national level and for small administrative units/geographic areas; and at community level if needed.
- **As benchmarks** for and reconciliation of current agricultural statistics
- **To provide frames** for agricultural sampling surveys and data needed for registers of agricultural holders
- To **collect data for select farm-based SDG indicators** as a baseline, if they are not already obtained in other surveys
- To **collect some additional data** on non-agricultural production households (if AC is widened)

Focus on the objective first!

STEPS IN DEVELOPING AND CONDUCTING THE CA

Define the methodology: modality (1)

The WCA 2020 **broadened the approaches** introduced in WCA 2010, acknowledging that the census of agriculture can be conducted in different ways, using four main modalities:

1) Classical approach;
2) Modular approach;
3) Integrated census and survey modality; and
4) Use of registers as a source of census data

Main aim is to help countries to implement a census in the most efficient way, taking into account countries' particular conditions.

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Define the methodology: modality (2)

	Classical	Modular	Integrated census/survey	Use of registers and admin. data
Enumeration phases	One-off field operation	Multiple phases: a) core module b) supplementary module(s)	Multiple phases: a) census core module b) rotating thematic modules	One or more field operations and use of admin sources. Useful if register is complete and *up to date*.
Coverage of items	All census items collected in one-off operation	Core module includes items required at the lowest geo/admin level, and those to establish frames for supplementary module(s)	Census core module includes items required at the lowest geographic/admin level, and those to establish frames for rotating thematic module(s)	Census items are collected through field operation and use of administrative sources.
Enumeration method	Complete enumeration exclusively or combined with sample enumeration	Complete enumeration for core module and sampling for supplementary modules(s)	Complete enumeration for census core module and sampling for rotating thematic modules	Complete use of registers (if essential items provided by adm sources) or combined with census/sample enumeration

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Define the methodology: type of frames

Type of frame

- **The List Frame** is a list of agricultural holdings and/or households. However, when the list of agricultural holdings and/or households is missing, the list of EAs could serve as a starting point for the development of a census frame.
- **The Area Frame** is a set of land elements, which may be either points or segments of land.
- **The Multiple Frame**, in which part of the population is covered by a list frame (e.g. special holdings) and the remainder (e.g. other holdings) by an area frame.

STEPS IN DEVELOPING AND CONDUCTING THE CA

Define data collection method

Face-to-face data collection method

- **Paper and Pen Interviews (PAPI)**
  - Weakness: expensive, slow data capture and processing, high costs (printing and transporting questionnaires)
  - Strength: reduces procurement of IT equipment
- **Computer Assisted Personal Interviewing (CAPI)**
  - Weakness: requires procurement of significant devices and more training of field staff
  - Strength: increases timeless, improves data quality, reduces overall costs (due to free/open software)

Remote data collection method

- **Computer Assisted Telephone Interviewing (CATI)**
  - Weakness: requires procurement of sig. computers, more training of field staff, access to respondents by phone
  - Strength: increases timeless, improves data quality, reduces overall costs further by reducing travel
- **Computer Assisted Web Interviewing**
- **Mail-out/Mail-back and Drop-off/Pick-up**

STEPS IN DEVELOPING AND CONDUCTING THE CA

Define the methodology: the use of technology

Use of Remote sensing and aerial photos

- Support to field work of censuses/surveys
- Crop area estimation

Use of Hand-held GPS

- **Geo referencing holdings** using mobile device:
  - identification of housing units in each EA.
- **Measure the area** of plots on the field.
- **Optimizing logistics** and supporting enumerators:
- Monitoring census progress
- Mobile devices for **Computer Assisted Personal Interview (CAPI)**

STEPS IN DEVELOPING AND CONDUCTING THE CA

Develop work plan and budget

- **Detailed work plan** with different implementation stages clearly established
- **Detailed budget**, estimates of different components of spending and **time-table** of expenditures and funding
- The census strategy should aim at **minimising costs** without compromising the objectives and the quality of the data by:
  - (a) adopting **more efficient** data collection, data capture and data processing approaches and related technologies,
  - **(b) contracting out** appropriate parts of the operation,
  - (c) exploring possible sources of **alternative funding,**
  - **(d) international collaboration** and reuse of systems, and
  - (e) encouraging public to **self-complete forms** online or on paper where possible

BUDGET COMPONENTS	SHARE OF COST (%)
CENSUS MANAGEMENT	5-23
MATERIAL AND SUPPLIES	10-26
TRAINING/CAPACITY BUILDING	1-15
PUBLICITY/COMMUNICATION	2-5
FIELD DATA COLLECTION	40-60*
PROCESSING/ANALYSIS	5-15
DISSEMINATION	1-3

* In the case of Italy, for example, this share can be up to 88 percent

STEPS IN DEVELOPING AND CONDUCTING THE CA

Communication and publicity

- A well-planned census **communication** and **publicity** is essential to sensitize public about the purpose of the census of agriculture and to ensure the cooperation of holders/respondents to provide complete and accurate data.
- A communication and publicity **strategy** involves**:**
  - ✓ Situation analysis to identify opportunities or issues that need to be taken into account
  - ✓ Definition of the target audiences **(who)**
  - ✓ Messages to be communicated, logos & slogans **(what)**
  - ✓ Communication channels and promotional tools **(how)-** radio, television, newsprint, social media
  - ✓ Implementing the strategy **(when)**

STEPS IN DEVELOPING AND CONDUCTING THE CA

Design data quality assurance framework

- **The main goal:** to **prevent and minimize potential errors** at design stage and detect errors as soon as possible for timely remedial actions.
- Six key dimensions of **statistical quality** aim to ensure data is **fit-for-use**
  - ✓ Relevance
  - ✓ Accuracy and reliability
  - ✓ Timeliness and punctuality in disseminating results
  - ✓ Accessibility
  - ✓ Coherence and comparability of statistics
  - ✓ Clarity/Interpretability
- **Quality management** should be comprehensive and cover *all activities:* planning, development, data collection, processing, evaluation and dissemination.
- The main **techniques** during data collection and data processing phase:
  - ✓ Complete verification
  - ✓ Sample verification: acceptance sampling or statistical process control

STEPS IN DEVELOPING AND CONDUCTING THE CA

The tabulation plan

- **The tabulation plan** is a set of prototypes of statistical tables (dummy tables) prepared to present the main census results, based on users' primary needs.
  - Should be based on **user consultation.**
  - Needs to be undertaken **at early stages** of census preparation
  - Defines census content and the census questionnaires.
- Preparing a tabulation plan is an **iterative process**: census questionnaire and methodology are conditioned by the data to be tabulated, and *vice-versa*.
- The plan should allow for key historical and international comparisons.

STEPS IN DEVELOPING AND CONDUCTING THE CA

Questionnaires and instruction manuals (1)

- The questionnaire(s) is designed by a working group and users-producers consultations to **collect relevant information** in a systematic manner.
- **Aspects to be taken into account** in developing questionnaires**:**
  1) Harmonize concepts and definitions in questionnaire with other (agricultural) statistics programmes.
  2) Ensure questions, concepts and definitions used are easily understood by the holder and census field staff.
  3) Reasonable size (length).
  4) Different languages in multi-lingual countries.
- After development, **pre-test /feasibility test questionnaire(s)** with respondents and enumerators, revise and pilot test.
- **Manuals** establish criteria and procedures for supervisors and enumerators, roles and the work expected to be carried out during the census.

STEPS IN DEVELOPING AND CONDUCTING THE CA

Questionnaires and instruction manuals (2)

Box 16.1 - Example of a possible structure of census questionnaire

Section 1: Identification and general characteristics
Section 2: Land
Section 3: Irrigation
Section 4: Crops
Section 5: Livestock
Section 6: Agricultural practices
Section 7: Demographic and social characteristics
Section 8: Work on the holding
Section 9: Aquaculture

Note that the items in these sections include the 23 essential items recommended by the WCA 2020

STEPS IN DEVELOPING AND CONDUCTING THE CA

Questionnaires and instruction manuals (3)

Reference:
WCA2020

FAO distinguished the variables in WCA2020 to be:

- **23** Essential Variable
- **15** Frame Variable
- **96** Additional Variable

Theme	Essential Item
Identification & General Characteristics	0101. Identification and Location of Agricultural holding
Identification & General Characteristics	0103. Legal status of agricultural holder (type of holder)
Identification & General Characteristics	0104. Sex of agricultural holder
Identification & General Characteristics	0105. Age of agricultural holder
Identification & General Characteristics	0107. Main purpose of production of the holding
Identification & General Characteristics	0108. Other economic activities of the household
Demographic and social characteristics	0801. Household size by sex and age groups
Land	0201. Total area of holding
Land	0202. Area of holding according to land use types
Land	0203. Area of holding according to land tenure types
Crops	0402. Area of temporary crops harvested (for each temporary crop type)
Crops	0406. Area of productive and non-productive permanent crops in compact plantations(for each permanent crop type)

STEPS IN DEVELOPING AND CONDUCTING THE CA

Questionnaires and instruction manuals (4)

Reference:
WCA2020

FAO distinguished the variables in WCA2020 to be:

- **23** Essential Variable
- **15** Frame Variable
- **96** Additional Variable

Theme	Essential Item
Crops	0407. Number of permanent crop trees in scattered plantings (for each tree crop)
Crops	0411. Use of each type of fertilizer
Livestock	0501. Type of livestock system
Livestock	0502. Number of animals
Livestock	0503. Number of female breeding animals
Work on the holding	0901. Whether working on the holding is the main activity
Work on the holding	0902. Working time on the holding
Work on the holding	0903. Number and working time of employees on the holding by sex
Irrigation	0302. Area of land actually irrigated: fully controlled and partially controlled irrigation
Agricultural practices	0601. Use of agricultural pesticides
Aquaculture	1201. Presence of aquaculture on the holding

STEPS IN DEVELOPING AND CONDUCTING THE CA

Post-Enumeration Survey (PES)

Aim	**to assess the magnitude of non-sampling errors in terms of coverage errors and content errors (quality of census data collected).**
Recommendation:	
Plan	should be carefully planned and synchronized with the planning of the overall AC activities.
Staff	assign the best supervisors and enumerators assigned to other EAs to ensure the best quality of data.
Design	a sample survey to be conducted independently from the AC enumeration.
New listing	agricultural holdings must be listed again in sampled areas (e.g. EAs).
Timing	it should be carried out **soon after** the census enumeration is completed. In the cases of the modular and integrated sample/survey modalities, soon after the core modules.
Data collection	on key selected census variables. It should attempt the use of physical measurement of area and actual count of livestock and trees.
Reference period	must be the same as for the census enumeration

STEPS IN DEVELOPING AND CONDUCTING THE CA

Dissemination strategy and plan

- **Widely promoted, well-organized, and discussed with users.** Data from national censuses represent a valuable public good that should be widely promoted by national census offices (COs). It should also be well organized and discussed with stakeholders and main users.
- **Key elements of the dissemination strategy:** identifying user categories and data needs; dissemination policy; dissemination products and the media; quality assurance; available financial and human resources.
- **A standard dissemination plan** should be developed as part of census preparation.
- **Dissemination product and service:** Reports (Report on preliminary results, Report on final results, Analytical/thematic reports, Technical report); Data products and services (Tabulated data, providing access to macro-databases and to micro-databases); and other products (Brochures and flyers, atlases and other geographic products)

02

INDONESIA'S EXPERIENCE

In preparing and conducting the 2023 CA

2023 AGRICULTURAL CENSUS IN INDONESIA

The history and legal framework

History of Censuses of Agriculture (CA):

- BPS has conducted the CA since 1963; **the 2023 CA** is ***the seventh*** agricultural census.
- 1963 – 1st CA,1973 – 2nd CA, 1983 – 3rd CA,
  1993 – 4th CA, 2003 – 5th CA, 2013-6th CA, 2023 – 7th CA

Legal Framework:

- Statistics Law No. 16 of 1997 about Statistics (CA is carried out every 10 years in year ending 3)
- Government Regulation No. 51 (1999) on Administering Statistics
- Presidential Regulation of the Republic of Indonesia No. 86 (2007) on BPS-Statistics Indonesia.
- Presidential Regulation of the Republic of Indonesia No.39 (2020) on One Data Indonesia.
- BPS-Statistics Indonesia Regulation No. 7 (2020) on the organization and working procedure of BPS Statistics Indonesia
- BPS-Statistics Indonesia Regulation No. 8 (2020) on the organization and working procedure of the Regional BPS Office

2023 AGRICULTURAL CENSUS IN INDONESIA

Institutional framework

Institutional Framework:

- BPS is the office responsible for technical and administrative matters, including planning, organization, fieldwork, data processing, presentation and analysis of CA results.
- A high-level steering committee was formed, involving members from different ministries or institutions.
- The technical committee was formed by the second- and third-level authorities of those entities.
- The CA is funded by the Indonesian National Budget

A strong collaboration is essential to ensure the success of Agricultural Census.

2023 AGRICULTURAL CENSUS IN INDONESIA

Coverage, approach, reference period

Coverage

- **Subsector:** Food crops, horticulture, estate crops, livestock, fisheries (aquaculture and capture fisheries), forestry, and services for agriculture.
- **Statistical Unit**: individual/household, agricultural establishment, and other agricultural holding.
- **Region**: all regions in Indonesia (urban & rural).

Approach: Integrated Census and Survey Modality. Thematic surveys will be conducted after the 2023 CA, including: 1) Agricultural Economy Survey; 2) Production and Environment Survey

Reference Period

- Reference day (Census Day) - 1 May 2023, for inventory items.
- Reference year – May 1st, 2022 to April 30th, 2023, for other items (e.g. harvested area, production, income etc.)

2023 AGRICULTURAL CENSUS IN INDONESIA

Method, timeline, frames, field staff, and maintaining data quality

Data collection mode: PAPI, CAPI, and CAWI.

Data collection will be conducted in two stages:

- **Complete enumeration** of households **01 June – 31 July 2023**
- **2 follow-up Sample surveys:**
  - Agricultural Economic Survey
  - Production and Environment Survey

Frames: Using a **combination of several sources** as a list frame to identify agricultural households (e.g. 2020 Population Census; population and civil registration; Farmer Group Member Data and Business Licensing, MoA; etc)

- complete enumeration (door-to-door) for (rural) agricultural concentration areas
- snowball sampling in urban areas /agricultural non-concentration areas

Field Staff: >190 thousand persons involved as enumerators and team coordinators

Census data quality: PES will be conducted immediately after the completion of the data collection process and independently from the census enumeration

2023 AGRICULTURAL CENSUS IN INDONESIA

What is new?

- **Data collection mode**
  - Utilizing PAPI, CAPI, and CAWI
- **Dissemination**
  - Tabular & geospatial
  - Capturing the current strategic issues related to SDGs, indicator:
    - 2.3.1 Volume of production per labour unit
    - 2.3.2 average income of small-scale food producer,
    - 2.4.1 productive and sustainable agriculture,
    - 5.a.1(a) proportion of total agricultural population with ownership or secure rights over agricultural land, by sex and
    - 5.a.1(b) share of women among owners or rights-bearers of agricultural land, by type of tenure)

WHAT CAN WE LEARN FROM THE EXISTING AND UPCOMING CA?

Key Take-Away

- **A comprehensive preparation.** Preparation of the 2023CA has been conducted since 2020, including the training of WCA2020, building the grand design of the 2023CA, inter-ministerial meeting, establishing steering committee, initiation of theme song, logo and tagline, etc.
- **Best practices from other countries.** It is important to learn from the implementation of CA in other countries and adopt the best practice that is relevant to the country's conditions.
- **A great collaboration.** Collaboration between NSO and line ministries in each stage of CA implementation is essential (pre-list preparation, enumeration, and the utilization of CA results) to ensure the success of CA. besides, international collaboration is also needed.
- **Ensuring cost-effectiveness.** Numerous strategy need to be deployed to minimize the costs such as by adopting more efficient data collection and data processing approaches and related technologies.
- **Knowledge management system.** The increasingly broad accumulation of knowledge during the process, knowledge management system is needed (*BPS strategy*: the formation of a secretariat called "Agro").
- **Focus on innovation.** The existence of great knowledge management system is expected to support the organization to focus on developing innovation.

THANK YOU

TERIMA KASIH