PRODUCING, USING, INNOVATING:

HOW 50x2030 IS CLOSING THE AGRICULTURAL DATA GAP

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I. Introduction

The 50x2030 Initiative to Close the Agricultural Data Gap aims to empower and support fifty low and lower middle-income countries (L/LMICs) to build strong national data systems that produce and use high-quality, timely agricultural survey data. Effective investment and policymaking directed at agriculture and poverty require an evidence-based foundation. In many L/LMICs, limitations in the scope, quality, and frequency of agricultural data collection severely constrain the effective planning, financing, and implementation of agricultural development policies. The gap in agricultural data in these contexts may lead to suboptimal policy design, which may result in failure to adequately address hunger and poverty. The 50x2030 Initiative addresses these problems with the goal of promoting evidence-informed decision making, especially to achieve Sustainable Development Goal 2 (Zero Hunger) in partner countries. Embedded in the Initiative, through its emphasis on capacity building and country partner ownership, is a significant contribution to SDG Indicator 17.18, which aims to "enhance capacity-building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data." The value of the Initiative extends well beyond these aims, enabling the monitoring of additional indicators and in-depth analysis.

To close the agricultural data gap, the 50x2030 Initiative supports a flexible survey system which facilitates (i) computing Sustainable Development Goals and regional indicators (e.g., Comprehensive Africa Agriculture Development Programme (CAADP) indicators; see Annex I for details); (ii) timely reporting of national statistics and production monitoring; and (iii) provision of high quality, integrated data for analysis and informed policymaking. The system builds on the experience of FAO's Agricultural Integrated Surveys Programme (AGRISurvey) and the World Bank's Living Standards Measurement Study - Integrated Surveys on Agriculture (LSMS-ISA) program. Just like those programs, the Initiative is designed to be an integral part of national statistical systems.

At the core of the Initiative is a Data Production component, which will support the design and implementation of national data collection activities. This component is supported by a Methods and Tools Development and a Data Use component. The Methods and Tools Development component is directed at ensuring that the Initiative promotes and incorporates innovation in data collection and utilizes and develops cost-effective data collection methods. The Data Use component aims to ensure that the data collection efforts supported by the Initiative are informed by policy needs, and that the data are effectively used for decision making.

This document provides an overview of the 50x2030 Initiative. Part I provides a description of its objectives and structure, while Part II describes the main thrust of the activities under the Initiative's three components: Data Production; Methods and Tools Development; and Data Use. Comparatively more attention is devoted to the Data Production component as this will comprise the bulk of the Initiative's activities and budget.

A. Objectives of the 50x2030 Initiative

The primary objectives of the 50x2030 Initiative are to **increase evidence-based decision making** in agriculture by empowering 50 L/LMICS to **build sustainable and strong national data systems** that produce and use **timely, high quality agricultural and rural data** through survey programs using **sound and cost-effective survey-related methods and tools**.

The vision of the 50x2030 Initiative includes, but extends beyond, the regular production of official agricultural statistics, such as aggregate crop and livestock production estimates. The Initiative produces data necessary to monitor the indicators of the Sustainable Development Goal 2 (Zero Hunger) that can be derived from survey data (2.3.1, 2.3.2, and 2.4.1), as well as other international, regional (i.e., CAADP), and national indicators. The system can also cater to the collection of seasonal or intra-annual agricultural data, for monitoring and forecasting for example, when that is a priority.

To meet data needs for policymaking, the 50x2030 approach goes beyond traditional agricultural statistics. It integrates economic, social, technical and environmental themes and rural development indicators to allow for analysis of the drivers of productivity and linkages between socio-demographic characteristics, management

practices, and productivity, among other policy-relevant relationships. Among the economic aspects covered are costs of production, marketing and finance practices, and productivity and farm income. In the socio-economic domain, the Initiative collects data on education, living conditions of people engaged in farm activities, intensity of agricultural activities, off-farm activities, and household income. Technical aspects are captured in data on farming practices, which is collected jointly with data about technical assistance and other sources of information. Data on environmental issues related to agriculture is also covered, such as conservation measures, waste management, the use of communal resources, and strategies to adapt to and mitigate climate change.

Special attention is given to gender issues in the 50x2030 framework. Sex-disaggregated data is produced for relevant aspects, from ownership of assets to the decision making process related to agricultural production and disposition, and SDG Indicator 5.a.1.

The minimum set of data to be produced from the 50x2030-supported survey programs will include the following Indicators of the Sustainable Development Goal agenda (refer to Annex I for more details):[1]

2.3.1	Volume of production per labour unit by classes of farming/pastoral/forestry enterprise size
2.3.2	Average income of small-scale food producers, by sex and indigenous status
2.4.1	Proportion of agricultural area under productive and sustainable agriculture
5.a.1 (a)	Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex[2]
5.a.1 (b)	Share of women among owners or rights-bearers of agricultural land, by type of tenure

Eight key principles guide the activities of the 50x2030 Initiative, with the aim of efficiently and effectively achieving the Initiative's above-mentioned objectives. The following interrelated principles are pervasive throughout the 50x2030 system, from survey design to data collection and data use.

1. Data Quality – This is the basic underlying principle of the 50x2030 initiative is data quality. Since low quality data may result in insufficient or incorrect policy guidance, high-quality data is of utmost importance. The quality of survey data depends on questionnaire design, sample selection, implementation methods, and other facets of the survey process. The 50x2030 questionnaire instruments have been designed based on existing methodological evidence and previously tested instruments to minimize bias from questionnaire design. Guidance on sample design and selection is provided to address potential quality limitations resulting from sampling. Most importantly, capacity building for staff in national statistical systems is prioritized in the 50x2030 Initiative in order to enhance quality across all phases of the survey process.

2. Cost-Effectiveness – The Initiative is designed with consideration for the heavy burden faced by national statistical systems. The need for comprehensive, high-quality data to inform national policies is balanced with the practical need for cost-effective implementation. To maximize cost-effectiveness, the 50x2030 questionnaire instruments have been designed to collect data at the

[1] Data for each of the mentioned indicators must be collected at least once during the period of 50x2030-supported implementation.

[2] If the sampling universe is appropriate, the survey can produce the related SDG 1.4.2 Indicator - Proportion of total adult population with secure tenure rights to land, with legally recognized documentation and who perceive their rights to land as secure, by sex and by type of tenure.

necessary level for ensuring the quality of data is high, and not overly disaggregated, while also emphasizing the rotation of questionnaire topics over time so as to not collect data more frequently than necessary. Optional extensions are made available for countries that are able to invest more in high quality data for certain topics (for example, objective yield measurement).

3. **Data Disaggregation –** The Initiative is committed to supporting the collection of adequately disaggregated and high-quality microdata. A special focus is disaggregation by gender, including of the Initiative's priority SGD indicators, to inform policy to foster gender equality. The 50x2030 survey tools are designed to enable reporting and analysis of rights to and ownership of land, and financial and physical assets, as well as intra-household decision making and control over production and use of income.

4. **Comprehensive Coverage of Agricultural Producers –** The 50x2030 Initiative provides a comprehensive view of the country's agricultural activities. It is designed to cover crop and livestock activities for both the household sector and the non-household sector, as well as fishery and forestry activities for those involved in crop or livestock production. The Initiative defines *agricultural holding* in line with the definition put forth by the FAO World Programme for the Census of Agriculture (WCA) 2020 (FAO, 2015). Consistent with this, the target population comprises small, medium and large holdings in the household sector as well as all holdings in the non-household sector such as those managed by corporations, cooperatives, government institutions, etc. The sampling frame(s) and sample design ensure such coverage. In addition to capturing the full range of crop and livestock producers[3], 50x2030 collects data for all relevant crops and livestock types for the given context, not only the primary products.

5. **Integration –** A guiding principle of the 50x2030 Initiative is integration: of agricultural data collection for both the household and non-household sectors; socio-economic data with agricultural data; agricultural and non-agricultural households; and survey data with other data sources. The resulting data goes beyond the production of traditional agricultural statistics. It allows for (i) the analysis of drivers of productivity and (ii) the interaction of socio-economic characteristics of the rural population, agricultural production methods, off-farm activities, and the environment with agricultural activities, amongst others. Ultimately, integration of survey samples and topics of data collection allows for agricultural and rural analyses, increasing the value of agricultural data exponentially beyond basic production indicators.

6. **Sustainability –** The Initiative is designed to support a long-term survey program, with data collection taking place year after year and continuous capacity building. The survey is envisioned to be integrated into a partner country's national statistical program, rather than a standalone effort. This includes progressive financial take over by partner countries as well as development and maintenance of staff capacity in national statistical systems.

7. **Innovation –** Related to the principles of cost-effectiveness and data quality, the 50x2030 Initiative strives to make use of technological and methodological innovations that improve the quality of agricultural survey data while ensuring implementation is feasible. The Methods and Tools Development component of the Initiative is tasked with validating improved methods of data collection. Validated methods that have been shown to be scalable to national level surveys have

[3] The 50x2030 system is not designed to capture nomadic farming. Nomadic farming is a specific case which requires an appropriate stand-alone survey, such as that described in GSARS (2016a).

been integrated into the design of the 50x2030 questionnaire instruments, which will continue to evolve as new technologies are developed and validated.

8. Open Data and Dissemination – Special attention is given to access to and use of the data collected under the 50x2030 Initiative. Open access to the anonymized microdata and related documentation, a key principle of the Initiative, maximizes the use and value of the data. Additionally, preparation of tabulation plans and construction of a calendar of dissemination and analytical products (bulletins, reports, etc.) as part of the survey preparation phase, coupled with technical capacity building, supports national statistical systems in delivering agricultural indicators and other products in a timely manner, to best inform national policy. Given the importance of open data, dissemination, and data usage, a component of the 50x2030 Initiative is dedicated to Data Use.

B. Structure of the 50x2030 Initiative

The 50x2030 Initiative, a holistic program covering the full scope of the data cycle, is made up of the following three components. The **Data Production** component, coordinated by FAO, the **Data Use** component, coordinated by IFAD, and the **Methods and Tools Development** component, coordinated by the World Bank. Together, and with oversight from a Partnership Council, and direct coordination by a Program Management Team, these components support country partners in meeting the objectives described above. More details on each are included in Parts II, III, and IV of this document, respectively.

Data Production	Data Use	Methods and Tools Development
This component supports countries in conducting either an Agricultural Survey Program or an Integrated Agricultural and Rural Survey Program. Country-specific customizations of the survey program are conducted in partnership with national partners.	This component aims to promote the use of data and evidence generated under the Initiative to inform decisions that will spur the agricultural growth needed to achieve development objectives. Activities include assessing constraints, capacity building, and improving communication systems.	This component aims to accelerate the development and adoption of innovative and cost-effective survey methods. It includes activities that produce new, better, and more cost-effective tools and methodologies for data collection and analysis.

C. Partner Country Engagement

National partners will be the owners of the implementation process from the beginning. The support of 50x2030 Implementing Partners is, therefore, tailored to meet the needs of each individual country's data and capacity development needs, data user demands, and existing survey programs. Technical support is provided for all phases of the survey cycle, including but not limited to identification of data needs, questionnaire customization, sample design, enumerator training, final data curation for dissemination, and data analysis. For each country, this tailored support is expected to result in the following minimum deliverables:

- an **assessment of agricultural data needs** which takes into account national and regional data needs, the minimum set of core agricultural data[4] and SDG monitoring requirements;
- a **strategic plan** for the implementation of the country's agricultural survey program addressing the country's specificities and capacity development needs, in line with existing national statistical strategic plans;
- **implementation of several annual survey rounds** (at least two will be supported by the Initiative);
- the **dissemination of fully-documented, anonymized microdata** for each conducted survey round.

In line with the Initiative's principle of sustainability, critical additional deliverables are a **progressive technical takeover** of the data production activities by the national statistical system, and a **progressive financial takeover** of the resources necessary to sustain the survey system.

i. Engagement Process

The process for providing assistance to countries will be organized across the data production cycle. Activities will be initially planned in each participating country for a period of five to eight years, depending on the statistical capacity in the country. Due to the differences in technical and resource capacities of the partner countries, there are likely to be large differences in the resources each country requires. Those with an existing, regularly administered agricultural survey program will likely receive five to six years of support, while those with a more irregular agricultural survey program will likely receive seven years of support. Countries that do not conduct any agricultural surveys will likely have greater resources needs and will therefore benefit from eight years of support. The support starts with one to two years of preparation (governance, planning, administrative and technical preparation, trainings, piloting, and planning for financial and technical takeover), followed by three to four years of intensive support for annual data collection, processing and dissemination, plus one to two years of phase-out, which will include further support for data collection, processing and dissemination, capacity development as required, and administrative and financial preparation for the years following the end of the technical assistance. Potential areas of support are identified in Box 1.[5]

Before initiating any data collection activities, an assessment will be carried out to better understand the existing governance structures in statistics; the status of official agricultural statistics in the country as well as the availability of statistics generated by multi-topic household surveys; and the data dissemination policy, strategies and development plans available. The assessment phase builds on capacity assessments already

TECHNICAL ASSISTANCE

Survey Design
- Assessing country needs, priorities and capacity
- Developing a customized national program
- Developing customized questionnaires
- Conducting a pilot test survey

Sampling
- Developing Master Sampling Frames (MSF)
- Developing sample design and estimation procedures

Data Collection
- Preparing data collection instruments
- Training supervisors and enumerators
- Managing and controlling field work

Data Processing and Dissemination Support
- Processing and cleaning data, including imputation procedures
- Preparing tabulation plans
- Producing and disseminating aggregate data and reports
- Producing and disseminating anonymized microdata and metadata.

Technology
- Using GIS information for survey purposes
- Using computer-assisted interviewing
- Employing GPS and georeferencing in surveys

BOX 1. POTENTIAL AREAS OF 50X2030 TECHNICAL ASSISTANCE

[4] 2012 Action Plan of the Global Strategy to Improve Agriculture and Rural statistics http://www.fao.org/docrep/016/i3082e/i3082e.pdf

[5] Technical assistance is tailored to country needs. Areas of technical assistance are defined for each country at the beginning of the collaboration and periodically reassessed with the implementing partners.

available and starts with a desk review of the documentation, methodologies, questionnaires (if relevant) conducted remotely, and continues at country level, with one or more inception missions. In countries where the Strategic Plan for Agricultural and Rural Statistics (SPARS)[6] was not conducted, the preparation work may start based on prioritization exercises, that is, with workshops for data users and producers. The organization of these workshops is developed jointly with the Data Use component, to identify the priority data needs in the country. The Initiative leverages existing good practice from the Partnership in Statistics for Development in the 21st Century (PARIS21) initiative to build policy-responsive data systems, which is articulated around the Advanced Data Planning Tool (ADAPT)[7] and engagement strategy.

Throughout the engagement, and in working towards the above mentioned deliverables, participating countries are expected to embrace the eight key principles of the Initiative (outlined above). This requires that partner countries provide the staff required to manage the surveys.

II. Data Production Under the 50x2030 Initiative

A. 50x2030 Integrated Survey Programs

The 50x30 Initiative promotes an integrated approach to the agricultural survey system. At the level of data collection, the system is integrated in two ways: first, integration of the household and the non-household sectors, and second, integration of socio-economic and environmental data with agricultural data.

Integration of data collection for the household and the non-household sectors ensures that a country's entire agricultural sector is covered in a consistent fashion. Integration of socio-economic and environmental data with agricultural data ensures the program goes beyond the production of traditional agricultural statistics. This approach allows for the analysis of the drivers of productivity and the interactions between households' socio-economic characteristics, agricultural production methods, off-farm activities, and the environment with agricultural activities, amongst others, speaking to the needs of different data users. This integrated approach greatly increases the value of agricultural data beyond production of basic macro-indicators.

As well as ensuring comprehensive coverage of agricultural producers and adding analytical value, integration also increases the efficiency and cost-effectiveness of the agricultural survey system. It ensures concept standardization, coherent results, resource sharing, and optimization of field and desk work. Collecting data from the same sample and during the same operation results in obtaining more information at a lower cost.

The 50x2030 survey program achieves integration through a comprehensive sampling frame, representative both of the household and the non-household sectors, and through a set of best-practice survey tools which are administered as part of a modular survey system and cover the relevant topics in an efficient manner. The program is built around an annual core module which covers agricultural production, and rotating modules covering specialized topics. The two variations of the survey program supported by the 50x2030 Initiative, the Agricultural Survey Program and the Integrated Agricultural and Rural Survey Program, are described in the following sections. The 50x2030 technical paper, "A Guide to the 50x2030 Data Collection Approach: Questionnaire Design" (2020) presents the survey programs and tools developed by the Initiative in detail.

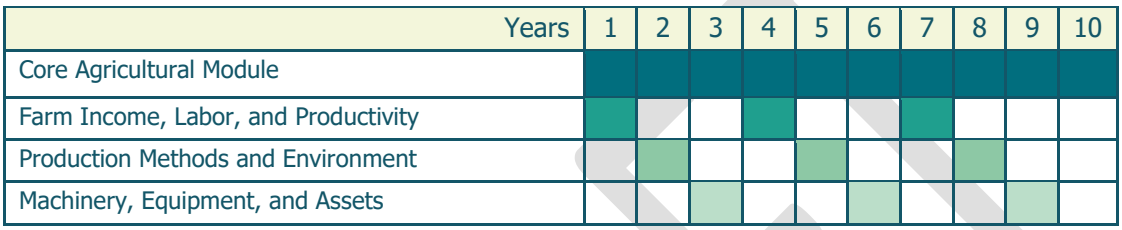
[6] SPARS is a long-term strategy to improve agricultural and rural statistics at the national level. It is a building block of the National Strategy for the Development of Statistics (NSDS) with the aim of understanding the impact of agricultural policy on statistical priorities, identifying data needs, deficiencies, duplications and inconsistencies, and defining future short- and long-term statistical programs and interventions.

[7] For information on the ADAPT tool, visit: https://paris21.org/advanced-data-planning-tool-adapt

i. Agricultural Survey Program

The 50x2030 Agricultural Survey Program covers a country's full agricultural sector, whether in rural or urban areas, sampling both household and non-household farms. It has a modular approach built around an annual core module (CORE), collecting data on production (crops, livestock, aquaculture, fisheries, and forestries) and other key agricultural variables needed on an annual basis. A set of rotating modules covers vital socio-economic and environmental variables. These contain topics such as production costs; agricultural income; labor and productivity; gender decision-making in agriculture; production practices and environmental aspects of farming. These specialized tools are administered less frequently. Its flexible modular approach creates a survey system that can respond to emerging demands at regional, national, or international levels. The Agricultural Survey Program is presented in Figure 1, although the implementation sequence may be altered according to country needs.

FIGURE 1. EXAMPLE OF THE 50X2030 AGRICULTURAL SURVEY PROGRAM



ii. Integrated Agricultural and Rural Survey Program

The 50x2030 Integrated Agricultural and Rural Survey Program expands the scope of the Agricultural Survey Program, integrating a household-based survey with the farm-based agricultural survey. It follows the same logic as the Agricultural Survey Program but incorporates a household survey tool and broadens the target population with a sample of rural non-agricultural households (as illustrated in Figure 2). Combining agricultural and household surveys, produces richer data, increases data interoperability, and is more cost-effective. The household survey tool (ILS-HH) covers socio-economic topics like off-farm income, employment, education, and welfare, offering a full picture of rural livelihoods. It allows understanding of the links between (i) rural development, structural transformation, and agriculture, and (ii) agricultural productivity and income (covering aspects of welfare and livelihoods, such as educational outcomes, non-agricultural income, and shocks and coping strategies).

FIGURE 2. EXAMPLE OF THE 50X2030 INTEGRATED AGRICULTURAL AND RURAL SURVEY PROGRAM

Both programs supported by the 50x2030 Initiative are designed to enable production of the required SDG indicators according to their recommended timeframe. The programs are tailored to individual country contexts, including their existing statistical infrastructure. Countries shape their work plans for their survey system, including the frequency of modules, depending on their priorities, data needs, existing statistical infrastructure, and available resources.

iii. Survey modules and data output

CORE-AG: The core agricultural module is the basic component of the survey programs, which is administered annually. It covers holding and holder characteristics, crop planting, production, and destination; agricultural parcel and plot area and use; input use (seeds and fertilizers, chemicals etc.); livestock numbers and production; aquaculture, fishery, and forestry production; land use and labor use of the holding.

ILP-AG: the Farm Income, Labor, and Productivity module focuses on income, labor and productivity data collection. It includes questions related to the costs of agricultural production, farm expenses, agricultural income, labor inputs, land tenure, gender dynamics in agriculture and drivers of agricultural productivity.

ILS-HH: the Non-Farm Income and Living Standards module captures socio-economic information about agricultural and non-agricultural rural households and their members. The ILS-HH is a lean, multi-topic household survey questionnaire covering education, labor and time use, food security and nutrition, housing conditions, shocks and coping, household enterprises, and non-farm sources of household income.

PME-AG: The Production Methods and the Environment module focuses on farming practices and environment. It covers energy and land use, soil conservation methods, irrigation methods, animal reproduction methods, use of veterinary products, organic farming, agroforestry, adaptation to climate change, and hazards.

MEA-AG: This instrument captures information about the use of machinery, assets and equipment in the agricultural sector.

The 50x2030 Initiative survey tools allow the production of a wide range of data. They provide inputs into the calculation of many relevant statistics and indicators about the agricultural and rural sectors while seeking to meet the needs of a variety of users. The tools presented in this section allow for the computation of the 50x2030 priority SDG indicators: 2.3.1, 2.3.2, 2.4.1, and 5.a.1. The survey instruments also address several CAADP indicators, including 2.4, 3.1i, 3.1ii, 3.1vi, 3.2iii, and 4.3, and can be adapted and expanded to include national priority indicators as well as additional SDG indicators. Refer to Annex I and Annex II for more detailed coverage of SDG and CAADP indicators, respectively.

In addition, the system allows and encourages the inclusion of specialized instruments and extensions, like crop-cutting, the inclusion of a consumption section to measure poverty at the household level or any other set of questions for specific purposes. A set of additional questions to compute the agricultural component of SDG indicators 1.5.2 – *Direct economic loss attributed to disasters in relation to global GDP* and 12.3.1 - *Global Food Loss and Waste* are under development.

A more detailed list of the main data topics produced by the 50x2030 survey programs is found in Annex III. For a more detailed discussion of the questionnaire instruments and their implementation, refer to the technical paper, A Guide to the 50x2030 Data Collection Approach: Questionnaire Design (2020).

iv. Data collection

The Initiative's Data Production component will assist countries in customizing the data collection tools, sampling approach and sampling frames, and survey program timeline. This includes development of customized questionnaires and manuals, based on the 50x2030 reference survey instruments, cognitive and pilot tests, sampling design and training of field staff. The Initiative promotes the use of Computer Assisted Personal Interviewing (CAPI) technologies for data collection and provides support to shift from paper questionnaires to this mode of data collection. To this end, the 50x2030 reference questionnaires will be available in the World Bank's Survey Solutions CAPI platform which is being further developed under the Methods and Tools Development component.

The Initiative prioritizes coverage of indicators and data needs from partner countries, and also from the international and regional monitoring frameworks (e.g., SDG or CAADP indicators). Additionally, the Initiative promotes data collection on economic, social and environmental aspects, including gender-relevant data.

Staff from participating countries will be responsible for data collection in face-to-face interviews, but the Initiative's Data Production staff will support data collection with a careful revision of the paper and/or CAPI questionnaires and manuals, and by participating in the training and supervision of enumerators. During processing and analysis significant effort will be made to build the capacity of staff in partner countries to clean and validate the data and prepare it for tabulation and dissemination. The Data Production team will collaborate closely with national partners during the data processing stage and in the production of the statistical report, starting with the development of an agreed tabulation plan, which is executed by the national counterpart with inputs from the team. The Initiative promotes the adoption of a participatory approach during the report-writing phase to ensure the involvement of the data user community and guarantee that the generated statistics are useful and used at a later stage.

v. Data curation and dissemination

The 50x2030 Initiative aims to make statistics accessible to the public in formats that ensure greater readability, usability, interoperability, and findability of the data. In line with partner countries' data dissemination strategies(if available), the Data Production team provides support to improve dissemination policies and programs, helping to ensure dissemination programs become part of national institutional processes.

The Data Production team supports countries in setting up tabulation plans and dissemination programs for both macro- and microdata. The 50x2030 Initiative promotes the adoption of standardized digital dissemination formats (e.g., SDMX and DDI) and tools (e.g., open data technically compliant platforms and NADA microdata cataloging tool). Technical support on issues such as data curation, data documentation, data preservation, data anonymization, and data dissemination will be provided through technical workshops and retreats led by experts from the Implementing Partners (FAO, IFAD, and the World Bank).

The release calendar for agricultural statistics will be country-specific. To the extent possible, the Initiative promotes the dissemination of timely seasonal agricultural statistics (if relevant and available) and statistics for the entire agricultural year. The data should be disseminated within six to 12 months after data collection is completed. The dissemination of key findings will take place in one or more workshops and target data user/producer and donor communities at national level.

Microdata will be made available through FAO's recently-launched Food and Agriculture Microdata Catalogue (FAM) as well the World Bank's Microdata Library.[8] Links to national catalogues will also be provided so that users can contact the data-producing agency.

B. Sampling Considerations

A cost-effective sampling strategy is proposed for the survey program to fulfill requirements for the production of reliable and integrated data in a sustainable way. The strategy takes into account the main features of the sampling methods adopted by the FAO's AGRISurvey Programme and the World Bank's LSMS-ISA survey program. Countries should carefully consider the design of their samples since the scope of the survey program goes beyond that of traditional agricultural or household surveys.

i. Target populations and frames

The target populations of the survey program are (i) all households in rural areas and (ii) all agricultural holdings in the country. The Integrated Agricultural and Rural Survey Program covers all households in rural areas and all

[8] FAO's Food and Agriculture Microdata Catalogue: https://microdata.fao.org/; World Bank's Microdata Library: https://microdata.worldbank.org/

agricultural holdings (whether urban or rural, or in the household or non-household sector), while the Agricultural Survey Program considers only agricultural holdings.

Following the recommendations of the FAO World Census on Agriculture 2020, two types of agricultural holdings are considered: (i) holdings in the household sector and (ii) holdings in the non-household sector. In the household sector, agricultural holdings are those operated by members of agricultural households. Agricultural households are those operating agricultural holdings for their own account (either for sale or for own consumption). Agricultural holdings in the non-household sector are operated by non-household entities including corporations, government institutions like research institutes, farmers cooperatives, institutional households (hospitals, schools, prisons, religious institutions etc.) and non-profit institutions. Holdings operated by households with large/modern farms or specific agricultural activities for which income and expenditure flow from agricultural activities that can be separated from other household activities can be also considered part of the non-household sector when registered (considered as *registered quasi-corporations*).

A suitable master sampling frame for the 50x2030 survey program is a multiple frame composed of (i) the list of all agricultural and non-agricultural households in rural areas, (ii) the list of urban agricultural households and (iii) the list of agricultural holdings in the non-household sector. A complete list of agricultural and non-agricultural households in rural areas and urban agricultural households can be established from the population and housing census, provided it includes items on labor that identify own-account agricultural production. In case the most recent census data is considered obsolete (e.g., due to changes in the population since the census was implemented), a new household listing will be necessary. The inclusion of the population of urban agricultural households is optional depending on the importance of urban agriculture in the household sector in the country.

Business registers of farms are used to build the frame for agricultural holdings in the non-household sector. These include the national business register and informal business registers of farmers' organizations and making efforts to handle the likelihood of significant overlap between them. In addition, all other relevant registers should be considered, including the list of government institutions (agricultural research centers, schools, hospitals, prisons etc.) and non-government organizations that operate farms. For the Agricultural Survey Program, a multiple frame consisting of an area frame and two list frames (landless holdings raising livestock and large commercial agricultural holdings) is an alternative to the recommended sampling frame.

ii. Sampling designs

Stratified two-stage sampling design is recommended for the household sector. The Primary Sampling Units (PSU) are enumeration areas (EAs) from the population and housing census. The PSUs should be stratified and in each stratum, a sample of PSUs is drawn with probability-proportional-to-size approach (PPS) (without replacement). The measure of the size of the PSUs is usually the number of households (agricultural households for the Agricultural Survey Program) within that enumeration area. The Secondary Sampling Units (SSU) are households. Within each sampled PSU, a sample of SSUs is to be selected by means of stratified simple random sampling (or systematic sampling) without replacement.

A stratified one-stage design is usually suitable for the holdings in the non-household sector. The stratification criteria may be the agricultural production systems (crop/livestock/mixed) or another ad hoc typology. This design is also suitable in most cases for urban agricultural households and landless holdings raising livestock.

The calculation of the sample size based on the precision of key variables of interest is necessary in each estimation domain. For the Integrated Agricultural and Rural Survey Program, the household sample size must ensure a reliable estimate of the key household-related variable (income) in the population of rural households, and reliable estimation of the agricultural area from the subpopulation of agricultural households. In the framework of two-stage sampling design, to maintain control of the final sample size by household type (agricultural and non-

agricultural), it is recommended to make a first-level stratification and allocation of the EAs in terms of the proportion of agricultural households in each of them.

iii. Subsampling for objective measures

Subsampling can be used as a cost-effective strategy for various purposes. It can be useful, for instance, for generating information for which reliable estimates are needed only at the national rather than subnational level and whose collection is costly and/or associated with high respondent burden. In the 50x2030 Initiative, subsampling is considered a viable option for collecting information about crop cutting and collecting farm-level data on post-harvest losses, for example, when full-scale implementation is not possible. Subsampling can also be a practical strategy for the inclusion of other objective measures of key variables such as soil health or crop variety.

iv. Longitudinal data collection option

While the standard 50x2030 survey programs are designed as repeated, cross-sectional surveys, partner countries may elect to modify them to collect longitudinal data. Longitudinal data offers several analytical advantages stemming from observation of the same holdings, households, and individuals over time. For repeated surveys , such as those supported by the 50x2030 Initiative, there are three alternatives: (i) selecting a new sample every year (repeated cross-section); (ii) using the same sample for a number of years (panel); or (iii) maintaining a portion of the sample from one year to another and drawing a partial new sample (partial rotation). There are advantages and tradeoffs to each approach. Use of the repeated cross-section approach, for example, generally requires the need for a new listing operation to update the sample frame each year. The panel approach, on the other hand, requires tracking operations to locate survey respondents from year to year, and may eventually suffer from limited representativeness due to attrition and/or structural changes in the population. A partial rotation approach may be used to mitigate the issues of representativeness in panel surveys while also reducing the extent and cost of listing. The Data Production team will collaborate with partner countries wishing to explore the possibility of implementing the 50x2030 program in a longitudinal fashion. It will draw on the decade-long experience of the LSMS-ISA panel data collection effort as the basis for considering and implementing such a feature.

C. Capacity Development

The expected result of capacity development activities undertaken by the Initiative is the achievement by partner countries of the full suite of technical expertise necessary to operate agricultural and rural survey operations independently and sustainably. This encompasses all stages of the survey process, including survey preparation, data collection, data processing, and data dissemination. The capacity development activities will involve both formal and on-the-job training of partner country staff as well as the strengthening of other national resources (e.g., software and tools for data collection and analysis). Capacity building activities will be heavily emphasized during the first one to two years of engagement with the Initiative, i.e., the survey system preparation phase. Potential areas of technical support and capacity building are summarized in Box 1.

III. Data Use

A. Targeted Results and the Theory of Change

The main objective of the 50x2030 Initiative is increased and sustained evidence-based decision-making in agriculture, particularly to help achieve SDG2. To reach that objective, the Data Use component will focus on promoting and encouraging key stakeholders in low and lower-middle income countries (L/LMICs) to use survey data in more and better ways.

The Initiative identifies three primary types of stakeholder in the data cycle: Data Producers, Data Intermediaries, and Decision Makers. A **Data Producer** is an individual or entity that produces data through the steps of collection, curation/preparation, and dissemination. In 50x2030, the Data Producer collects survey data, generating the

datasets and survey reports to be used by others. **Data Intermediaries** are researchers and analysts who take existing summary reports, summary tables, and microdata sets and add value to them by conducting analyses and interpreting them to answer questions and possibly make recommendations for action. As described above, for 50x2030 implementation, a **Decision Maker** is an individual or entity that applies the data to answer questions and inform decisions related to programs, policies, or investments.

These three stakeholder groups carry out essential functions within the **data ecosystem**. The Initiative builds on the Open Data Institute's[1] definition of data ecosystem as the community of actors, stakeholders, and entities who engage with data, the data assets (datasets, data products, platforms, tools, technologies) with which they interact, and the rules, norms, and structures that govern those interactions (policies, cultures, organizational structures, etc.). Numerous factors must be present within the data ecosystem in order for data to be used.

The 50x2030 Initiative has developed and uses the Data Use Framework to understand, examine, prioritize and address the enabling factors. These also become the most binding constraints when absent. The Framework identifies seven factors that promote data use: Demand, Expertise, Availability, Access, Awareness, Utility, and Trust.

B. Data Use Activities

Data Use activities will begin immediately once a partner country joins the 50x2030 Initiative. Activities follow a sequence of assessing, planning and designing, followed by implementation.

First, an **Agricultural Data Ecosystem Mapping and Assessment** exercise is undertaken to inform the design of all future activities. This identifies the components of the data ecosystem (actors or stakeholders, data assets, and the structures that govern them), how they interact, and where enablers and constraints to data use reside. The Assessment uses information surveys and interviews with key stakeholders, along with existing written materials, to define the current state of the data ecosystem. The Mapping exercise employs a visual technique for understanding the actors, relationships and data flows in the particular country and will be accompanied by a written narrative that identifies key characteristics and findings related to the ecosystem. Stakeholders will be engaged through collaborative workshops to validate the Mapping and Assessment Report draft. The final product serves as a communication tool to support engagement and buy-in across the data ecosystem.

Based on the findings of the Data Ecosystem Assessment and Mapping exercise, country stakeholders will jointly develop a multiyear approach to promote data use, which will be included as a section of the broader 50x2030 Program Implementation Plan (PIP). The targeted approach will be developed through a participatory process between the Initiative, the NSO, the MoA, and any other relevant government organizations. The Data Use section of the PIP will delineate the specific activities, timeline, and budget for the full period of the project. The Data Use activities will take into account and harmonize with the data production schedule, in particular with regard to data dissemination activities.

Activities under the jointly-developed data use activity plan of the PIP will be designed to strengthen the data ecosystem, improve data sharing and communication practices, and monitor data use. All of these activities will be designed and implemented using the Data Use Framework as the theoretical framework to achieve the desired outcome of the Initiative.

The activities designed to **strengthen the data ecosystem** will aim to enhance the relationships and interactions between Data producers, Data Intermediaries, and Decision Makers. This will be achieved through increasing or enhancing **demand** for the data**,** improving its **utility**, and building **trust** between the three groups. Specific activities will vary by country, based on identified constraints, and include a combination of actions such as:

- Training for Data Producers in basic statistical analyses and developing easy-to-understand reports for needed audiences.

- Training for Data Intermediaries in conducting detailed analysis and presenting their results to Decision Makers for specific policy or programmatic needs.
- Training for Decision Makers to understand, interpret, and apply data to decisions.
- Collaborative workshops to share information between Data Producers, Intermediaries, and Decision Makers.
- National-level sensitization workshops and seminars for Decision Makers.

Activities to improve data sharing and communication practices will seek to enhance evidence-informed decision making by improving **access** to the survey data and ensuring Decision Makers are **aware** of the survey data and its uses. (Data **availability** will already be addressed under the Data Production component.) Specific activities will include:

- Technical assistance to strengthen data sharing and communication technologies, platforms, and practices. This will include recommendations and facilitation of key technologies, platforms, and processes that could address identified constraints to access.
- Technical assistance and guidance on the policy reforms needed for improved data sharing.
- Dissemination and advocacy via a global annual conference and regional conferences (not country-specific, although countries' contributions can be planned). These will be coordinated with similar initiatives or programs as far as possible.

Activities for monitoring data use will include forms of technical assistance to design a monitoring framework and corresponding methods to track data use. Monitoring activities will form a feedback loop to inform stakeholders of the current status of the data ecosystem, data-sharing practices, and whether actions to promote data use are generating the desired results. In-country monitoring should align with the indicators in the 50x2030 Results Framework as far as possible.

Data use activities must be developed and tailored according to the needs of each country. The activity groupings above demonstrate the various types that can be tailored and designed to address the target outcomes and constraints. As such, all possible activities will be in the form of technical assistance (expert consultants and guidance), trainings, workshops, and conferences.

IV. Methods and Tools Development

The aim of the work program of the Methods and Tools Development is to generate knowledge that enhances the quality, relevance and cost-effectiveness of the outputs and activities of the Data Production and Data Use components. Its primary output is the adoption of better and more efficient agricultural survey-related tools in national data systems. Implementing Partners will work together with Partner Countries to build capacity around and increase uptake of improved methods and tools for agricultural and rural data collection in national statistical systems.

The work program of the Methods and Tools Development component aims to (i) improve the measurement and understanding of agricultural productivity and rural livelihoods; (ii) contribute to SDG monitoring, with a specific focus on agricultural and rural statistics; and (iii) go beyond indicators, to produce actionable, analytical research that can inform policymaking and program development. Related to the latter, the scope of work under the Initiative should support the production of data to inform analyses that result in a better understanding of socio-economic phenomena and their relationship to agriculture, producing actionable recommendations for policies and programs to advance progress towards development goals.

This component strives to add value to the overall Initiative. Due to the fact that priorities and needs for methods research and tool development will change as the Initiative progresses, so too will the focus and activities under this section. Priorities will be assessed every three years, based on evolving country and international needs,

advances in methodological research, and changes in technologies. Throughout this process, the relevance of the component's methodological work will be ensured via the direct involvement of NSOs and MOAs in participating countries and operational staff of the Implementing Partners.

The initial work program of the Methods and Tools Development component, which was built on previous areas of research identified by the Global Strategy to Improve Agricultural and Rural Statistics and methodological research conducted by the World Bank's LSMS team, revolves around the following three pillars:

i. **Integration of survey approaches.** The activities under this pillar, in coordination with the Data Production component, include the convergence of the AGRISurvey and LSMS-ISA surveys into one modular, integrated survey system. This entails developing and testing an integrated sampling approach and a harmonized set of questionnaires, modules and data collection instruments. In the first three-year cycle, this pillar includes the areas of integrated sampling, integrated data analysis, and integration of survey instruments.

ii. **Integration of technology; updating of methodologies.** The activities under this pillar will define, update and document the core set of survey methods in priority topics, for adoption by Initiative-supported surveys. The work will focus on (i) strengthening the use and further updating of the World Bank's Survey Solutions CAPI Program software; (ii) developing and testing new data collection approaches in thematic domains of relevance to the Initiative; and (iii) emphasizing the integration of sensors and modern technologies for objective and cost-effective microdata collection. In the first three-year cycle, this pillar includes research on the measurement of labor inputs, land area, land tenure, soil fertility, crop variety, post-harvest losses, and women's empowerment in agriculture. Additionally, the Component will support further development of the World Bank's Survey Solutions CAPI Program to improve existing tools and develop additional ones for use in agricultural and rural data collection operations.

iii. **Integration with other data sources.** Activities under this pillar will develop methods for the integration of survey data with different data sources, including but not limited to, census, geospatial and possibly administrative data, with the aim of enhancing the value of survey data in policy-relevant analysis and research. Emphasis will be placed on enabling surveys to feed into and validate remote sensing applications that aim to produce actionable, high-resolution key indicators at scale. In the first three-year cycle, this pillar includes integration of surveys with satellites and Earth observation data and the integration of survey data with other data sources, such as administrative and/or census data.

These pillars will enhance the sustainability of the data production systems supported by the Initiative and the accuracy, relevance and timeliness of survey data underlying evidence-based decision making. They will emphasize translating rigorous methodological research into practical guidance for survey practitioners in the form of guidelines and capacity development activities, which will feed directly into the activities of the Initiative's Data Production Component.

V. References

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VI. Annexes

Annex I. Production of SDG Indicators under the 50x2030 Initiative

While the 50x2030 Initiative was designed with the aim of collecting data on SDG Indicators 2.3.1 and 2.3.2, the scope of the program extends beyond this. The table below provides an overview of the high-priority SDG indicators promoted by the 50x2030 Initiative, the standard questionnaires that can be used to collect the required information, and the recommended frequency of data collection.

TABLE A.1 – SDG INDICATORS THE INITIATIVE AIMS TO PRODUCE [9]

SDG #	INDICATOR TITLE	RECOMMENDED FREQUENCY	QUESTIONNAIRE(S)
2.3.1	Volume of production per labour unit by classes of farming / pastoral / forestry enterprise size	3 years	ILP-AG
2.3.2	Average income of small-scale food producers, by sex and indigenous status	3 years	ILP-AG
2.4.1	Proportion of agricultural area under productive and sustainable agriculture	3 years	PME
5.a.1.a	Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex.	3 years	ILS-HH (in the Integrated and Rural Model) ILP-AG (in the Agricultural Model)
5.a.1.b	Share of women among owners or rights-bearers of agricultural land, by type of tenure	3 years	ILS-HH (in the Integrated and Rural Model) ILP-AG (in the Agricultural Model)

The table below lists **additional SDG indicators** that can be collected with the 50x2030 standard survey instruments. It indicates the questionnaires via which the required information is collected and their frequency.

TABLE A.2 – ADDITIONAL SDG INDICATORS PROMOTED BY THE INITIATIVE

SDG #	INDICATOR TITLE	RECOMMENDED FREQUENCY	QUESTIONNAIRE(S)
1.4.2	Proportion of total adult population with secure tenure rights to land, with legally recognized documentation and who perceive their rights to land as secure, by sex and by type of tenure *	3 years	ILS-HH (in the Integrated Ag and Rural Survey program)
1.5.2‡	Direct disaster economic loss in relation to global GDP **	To be determined	CORE; ILP; MEA through set of optional questions
12.3.1	Global food losses ***	3 years	Harvest and Post-Harvest Losses (HPHL) (under review).

* *Indicator can be computed only if the survey covers non-agricultural households (i.e., in the Integrated Agricultural and Rural Model) and urban areas.*

** *Partial computation only: The optional set of questions allows only the computation of losses in the agricultural sector, which is just one component of indicator 1.5.2 which encompasses all economic loss. Methodology under development.*

*** *Coverage under 50x2030 will be limited to 12.3.1a (Food Loss Index) and to losses at the farm level (the main critical loss point in low-income countries). It will not cover losses incurred as a result of transport, wholesale activities, off-farm storage or processing.*

[9] Indicators may not be available for all subgroups as identified in the SDG Indicator methodological notes.

‡ *Questions for measuring Indicator 1.5.2 are currently under review. They will be added and/or amended in the 50x2030 questionnaires upon finalization.*

Annex II. Production of CAADP Indicators under the 50x2030 Initiative

The Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods is a set of goals with very specific targets for achieving this vision for Africa. The Comprehensive African Agricultural Development Programme (CAADP) establishes indicators that should be used to track progress toward the Malabo Declaration goals in agriculture and food security. To date, many countries lack adequate data sources to quantify key indicators for CAADP achievement.

The survey instruments promoted through the 50x2030 Initiative allow the monitoring of nine CAADP indicators. The table below provides an overview of such indicators indicating the questionnaires where the required information is collected and their frequency.

TABLE B.1 – CAADP INDICATORS THE INITIATIVE AIMS TO PRODUCE

CAADP #	INDICATOR TITLE	RECOMMENDED FREQUENCY	QUESTIONNAIRE(S)
2.4	Proportion of men and women engaged in agriculture with access to financial services[10]	3 years	ILS-HH (in the Integrated Ag and Rural Survey Programme)
3.1i	Fertilizer consumption (kg of nutrients / ha of arable land)[11]	annually	CORE
3.1ii	Growth rate of the size of irrigated areas from its value in the year 2000 *	annually	CORE
3.1iv	Proportion of farmers with access to agricultural advisory services	3 years	Rotating questionnaire. Placement to be determined
3.1vi	Proportion of farm households with ownership or secure land rights[12] **	3 years	ILP (in the Agricultural Survey Programme) ILS-HH (in the Integrated Ag and Rural Survey Programme)
3.2i	Growth rate of agriculture value added (in constant US dollars) per agricultural worker ***	annually	CORE
3.2ii	Growth rate of agriculture value added (in constant US dollars) per hectare of agricultural arable land ***	Annually	CORE
3.2iii	Growth rate of yields for the five national priority commodities, and possibly for the 11 African Union (AU) agriculture priority commodities[13] ****	Annually	CORE

[10] This indicator aims to measure the number of men and women engaged in agriculture who are 'financially included'. Financial inclusion comprises ownership of at least one financial service, including bank and non-bank financial institutions (bank and savings accounts), mobile money, etc.

[11] This indicator aims to monitor the utilization of cost-effective and quality agricultural inputs to boost agricultural productivity. The quantity of fertilizer consumed in agriculture by a country is expressed in metric tons of plant nutrient.

[12] This indicator measures the number of farm households where at least one member is able to demonstrate property rights through documentation. Like SDG indicators 1.4.2 and 5.a.1, land ownership is defined according to local context, and the definition of ownership varies across countries

[13] The 11 AU priority commodities are rice, maize, legumes, cotton, oil palm, beef, dairy, poultry and fisheries, cassava, sorghum and millet.

4.1i	Growth rate of agriculture value added (in constant US dollars) ***	annually	CORE

Annex III. Additional Data Topics and Indicators

The tables below provide an overview of data topics and indicators, in addition to those noted in Annex I and II, generated through the 50x2030 questionnaires. Table C.1 focuses on the annual data whereby the subsequent tables refer to data and indicators generated on a rotational basis.

TABLE C.1 – ADDITIONAL DATA ITEMS / INDICATORS COVERED IN CORE-AG QUESTIONNAIRE

Data items / indicators	Unit of observation
Land productivity	Holding
Intra-HH decision making	Holding
Damage and losses due to disasters (*under review*)	Holding
Farm typology	Holding
Value of production	Holding
Region, province	Holding
Coordinates (Lat-Long)	Holding
Farm activity	Holding
Legal status	Holding
Distance from dwelling to parcel	Holding
Location of agricultural activities	Holding
Age, education, sex	Holding
Type of holder	Holding
Received training on agriculture	Holding
Agricultural household members and relationship to the head	Holding
Number of parcels	Holding
Land acquisition	Parcel
Land tenure	Parcel
Parcel area	Parcel
Existence of system of irrigation	Parcel
Irrigated area	Parcel
Existence of erosion and erosion control	Parcel
Existence and method of irrigation	Parcel
Average number of crop plots per parcel	Parcel
Identificatoion of crop activity decision makers	Parcel-Plot
Agricultural land use	Parcel-Plot
Plot area	Parcel-Plot
Crop area	Parcel-Plot
Mix-cropping	Parcel-Plot
Crops per plot	Parcel-Plot
Crop type	Parcel-Plot
Area planted	Parcel-Plot
Shelter type	Parcel-Plot
Plantation period	Parcel-Plot
Seed type used	Crop
Quantity of seeds planted	Crop
Land use	Holding

Fertilizer and pesticide use	Parcel-Plot-Crop
Input use	Parcel-Plot-Crop
Harvest period	Parcel-Plot-Crop
Post-harvest losses (reasons)	Parcel-Plot-Crop
Crop production	Parcel-Plot-Crop
Harvested area	Parcel-Plot-Crop
Crop yield	Parcel-Plot-Crop
Crop destination (condition and quantity)	Crop
Identificatoion of sales earning decision makers	Crop
Storage crops (quantity, condition and destination)	Crop
Total value of sales	Crop
Cultivation method	Parcel-Plot-Crop
Number of trees/plants used	Parcel-Plot-Crop
Plantation period	Parcel-Plot-Crop
Harvest period	Parcel-Plot-Crop
Post-harvest losses (reasons)	Parcel-Plot-Crop
Crop production	Parcel-Plot-Crop
Crop yield	Parcel-Plot-Crop
Identificatoion of product use decision makers	Parcel-Plot-Crop
Crop destination (condition and quantity)	Crop
Sales earnings decision making	Crop
Storage crops (quantity, condition and destination)	Crop
Total value of sales	Crop
Input use	Input type
Quantity of input used	Input type
Livestock numbers	Livestock Type
Herd size and livestock concentration	Livestock Type
Livestock managers	Livestock Type
Identificatoion of sales earnings decision makers	Livestock Type
Control over and responsibility for raising livestock	Individual
Change in stock for ruminants in the last 12 months	Livestock Type
Total value of purchased animals	Livestock Type
Total revenues from live animal sales	Livestock Type
Total revenues from slaughtered animal sales	Livestock Type
Change in stock for poultry in the last 3 months	Livestock Type
Total value of purchased animals	Livestock Type
Total revenues from live animal sales	Livestock Type
Total revenues from slaughtered animal sales	Livestock Type
Milk production (quantity)	Livestock Type
Total revenues from sales	Livestock Type
Egg production (quantity)	Livestock Type
Total revenues from sales	Livestock Type
Quantity produced in the last 12 months	Product Type
Total revenues from sales	Product Type
Quantity produced in the last 12 months	Product Type
Total revenues from sales	Product Type
Quantity produced in the last 12 months	Product Type
Total revenues from sales	Product Type
Quantity produced in the last 12 months	Product
Total revenues from sales	Product

Agricultural family labor input	Individual
Hired agricultural labor input	Gender and age of workers
Free/exchange agricultural labor input	Gender and age of workers

TABLE C.2 – ADDITIONAL DATA ITEMS / INDICATORS COVERED IN ILP-AG QUESTIONNAIRE (ALL TOPICS FROM CORE-AG PLUS THE FOLLOWING)

Data items / indicators	Unit of observation
Agricultural income	Holding
Soil type	Parcel
Existence of erosion and erosion control	Parcel
Existence and method of irrigation	Parcel
Land preparation	Parcel-Plot
Plot fallowing	Parcel-Plot
Quantity of seeds acquired	Crop
Cost of seeds acquired	Crop
Agricultural family labor input	Individual
Hired agricultural labor input	Gender and age of workers
Free/exchange agricultural labor input	Gender and age of workers
Quantity of seed acquired	Input type
Cost of seed acquired	Input type
Quantity of plants/seeds acquired	Crop
Cost of plants/seeds acquired	Crop
Quantity of processed goods produced	Processed product
Value of sales of processed goods	Processed product
Control over income from processed goods sales	Processed product
Control over and responsibility for raising livestock	Individual
Costs related to raising livestock	Livestock Category
Labor input for livestock production	Livestock category, worker type, gender
Labor cost for livestock production	Livestock Category, worker type
Livestock vaccination	Livestock Category
Livestock parasite treatment	Livestock Category
Livestock curative treatment	Livestock Category
Costs related to livestock health	Livestock Category
Labor input for aquaculture	Worker Category
Labor cost for aquaculture	Worker Category
Labor input for fishery	Worker Category
Labor cost for fishery	Worker Category
Labor input for forestry	Worker Category
Labor cost for forestry	Worker Category
Costs for other items related to agricultural production	Cost Type

TABLE C.3 – ADDITIONAL DATA ITEMS / INDICATORS COVERED IN ILS-HH QUESTIONNAIRE

Data items / indicators	Unit of observation
Household non-agricultural income	Household
Household size	Household
Population demographics: gender, age, marital status	Individual[1]
Training in agriculture	Individual[1]
Literacy (rate)	Individual[1]
Net enrolment rate, gross enrolment rate	Household; gender, age
Highest level of education achieved	Individual[1]

Labor force participation, Employment, Unemployment[2]	Individual[1]
Barriers to employment, steps taken to obtain employment	Individual[1]
Reasons for inactivity	Individual[1]
Industry of main job	Individual[1]
Type of occupation	Individual[1]
Time spent on first and second job	Individual[1]
Total income from and wage rate in first and second job	Individual[1]
Time used for non-employment activities: household goods, water collection, fuel and firewood collection, childcare, cooking and meal preparation.	Individual[1]
Existence of personal savings	Individual[1]
Access to mobile money	Individual[1]
Turned down from obtaining credit	Individual[1]
Dwelling/property tenure	Individual[1]
Tenure rights, security of tenure	Household
Characteristics of the dwelling: walls, roof, floor materials; number of rooms	Household
Sources of energy / electricity	Household
Main drinking water source (improved/unimproved; quality)[3]	Household
Time to collect drinking water[3]	Household
Sanitation facility (improved/unimproved)[3]	Household
Access to internet	Household
Access to mobile phone	Household
Non-agricultural enterprises by sector of enterprise	Household
Enterprise ownership	Individual[1]
Record keeping of enterprise	Enterprise
Age of enterprise	Enterprise
Seasonality of enterprise activity, revenue	Enterprise
Household and non-household workers employed in enterprise	Enterprise, Individual[1]
Sales and revenue	Enterprise
Size of enterprise (by revenue, number of workers)	Enterprise
Enterprise expenditures	Enterprise
Enterprise profits / household income from enterprise	Enterprise
Control and use of enterprise profits	Individual[1]
Household income from remittances and other transfers	Income source
Household income from pension and investments	Income source
Household rental income	Income source
Household revenue from sales of assets	Income source
Control over and use of income	Individual[1]
Household assets	Asset type
Individual ownership of assets	Asset type, individual
Household experience of shocks	Type of shock
Effect of shocks on income, assets, food production, stocks, and purchases	Type of shock
Responses to shocks / coping strategies	Type of shock
Food groups consumed by the household in the past 7 days.	Food group
WFP Food Consumption Score	Household
Food Insecurity Experience Scale (FIES)	Household
Land tenure questions corresponding to SDG indicators 5.a.1 and 1.4.2	Parcel
Farmer-reported parcel area	Parcel
Main uses of parcel	Parcel
Parcel rental payments	Parcel

[1] Individual-level data also allows for gender and age disaggregation.

[2] In line with ILO definitions.

[3] In line with UNICEF *Core questions on water, sanitation and hygiene for household surveys.*

TABLE C.4 – ADDITIONAL DATA ITEMS / INDICATORS COVERED IN PME-AG QUESTIONNAIRE (ALL TOPICS FROM CORE-AG PLUS THE FOLLOWING)

Data items / indicators	Unit of observation
Profitability	Holding
Land tenure	Parcel
Tillage	Parcel-Plot
Intercropping cover	Parcel-Plot
Irrigation type and area	Parcel-Plot
Pure stand or mixed cropping	Parcel-Plot
Crop residues treatment	Parcel-Plot-Crop
Seed type and source	Crop
Area with use of plant protection, irrigation	Crop
Number of trees and density	Parcel-Plot-Crop
Use of fertilizer	Parcel-Plot-Crop
Use of plant protection and area of use	Parcel-Plot-Crop
Quantity, value of sales	Products
Responsible for decisions	Products
Quantity and price	Product
Toxicity level of pesticides	Input type
Reproduction technique	Holding
Veterinarian services	Holding
Use of hormones, antimicrobials, antibiotics and traditional medicine	Holding
Animal housing system and characteristics	Holding
Animal transportation methods, frequency and finality	Holding
Animal feeding and watering	Holding
Daily worker rate	
Energy sources	Holding
Soil management: natural vegetation, land coverage, crop rotation, practices, soil analysis, soils changes, soil analysis	Holding
Irrigation: equipment, system and methods, irrigated area, water sources and payment	Holding
Animal breeding and reproduction services	Holding
Animal housing	Holding
Equipment and transportation of animals	Holding
Feed and use of pastures	Holding
Watering of animals	Holding
Manure production, sales, use and quantity	Holding
Conversion and certification (crops and livestock)	Holding
Type and area	Holding
Information type, sources, and media	Holding
Extension services	Holding
Access and use of communal grazing land, forest and wooded land, water for aquaculture, and irrigation	Holding
Protect areas	Holding
Sustainable forest management	Holding
Contaminated sites	Holding
Involvement in environmental protection programs and organizations	Holding
Environmental concerns	Holding
Fines for environmental pollution payment	Holding

Natural extreme events and disasters	Holding
Human, economic, physical	Holding
Practices to adapt to climate change	Holding
Wastewater production and management	Holding
Other waste production and management	Holding
Occurrence and severity	Shock type
Mechanisms for protection against external shocks	Holding
Food Insecurity Experience Scale	Household