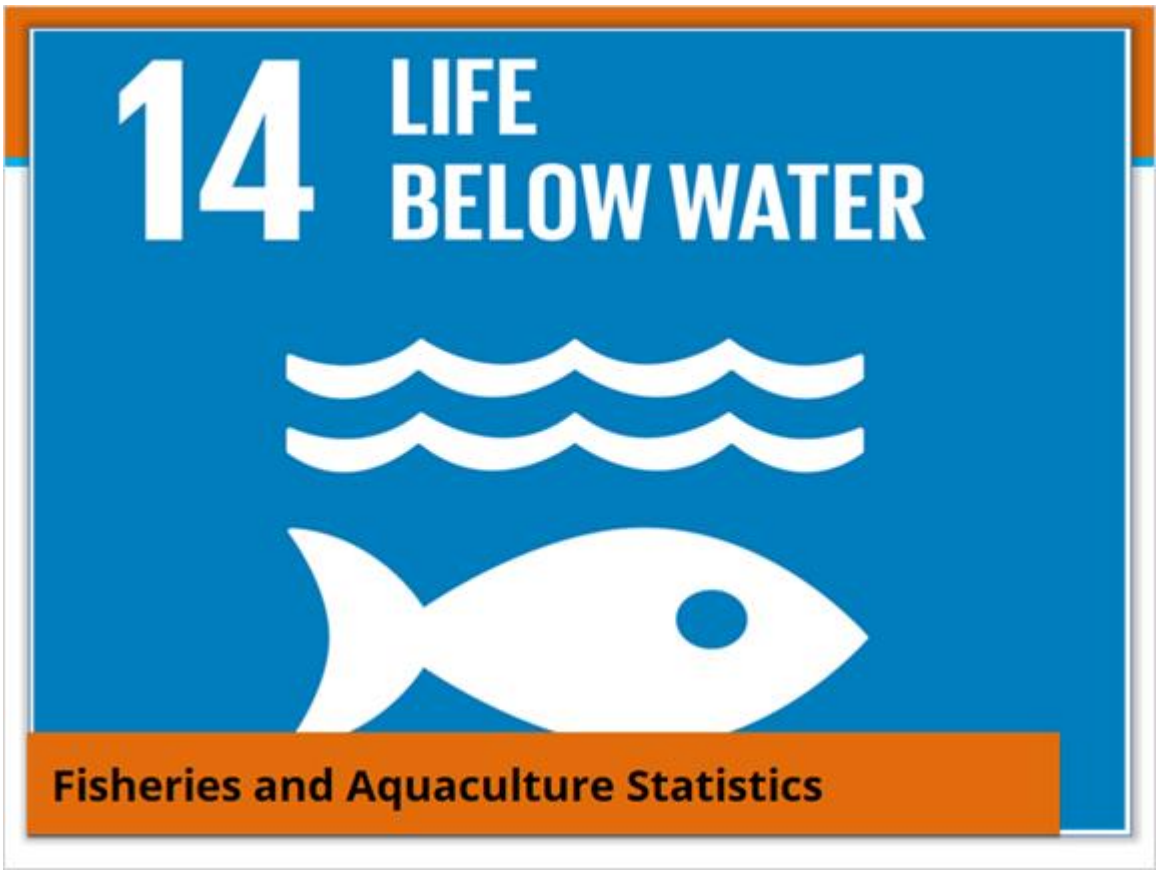
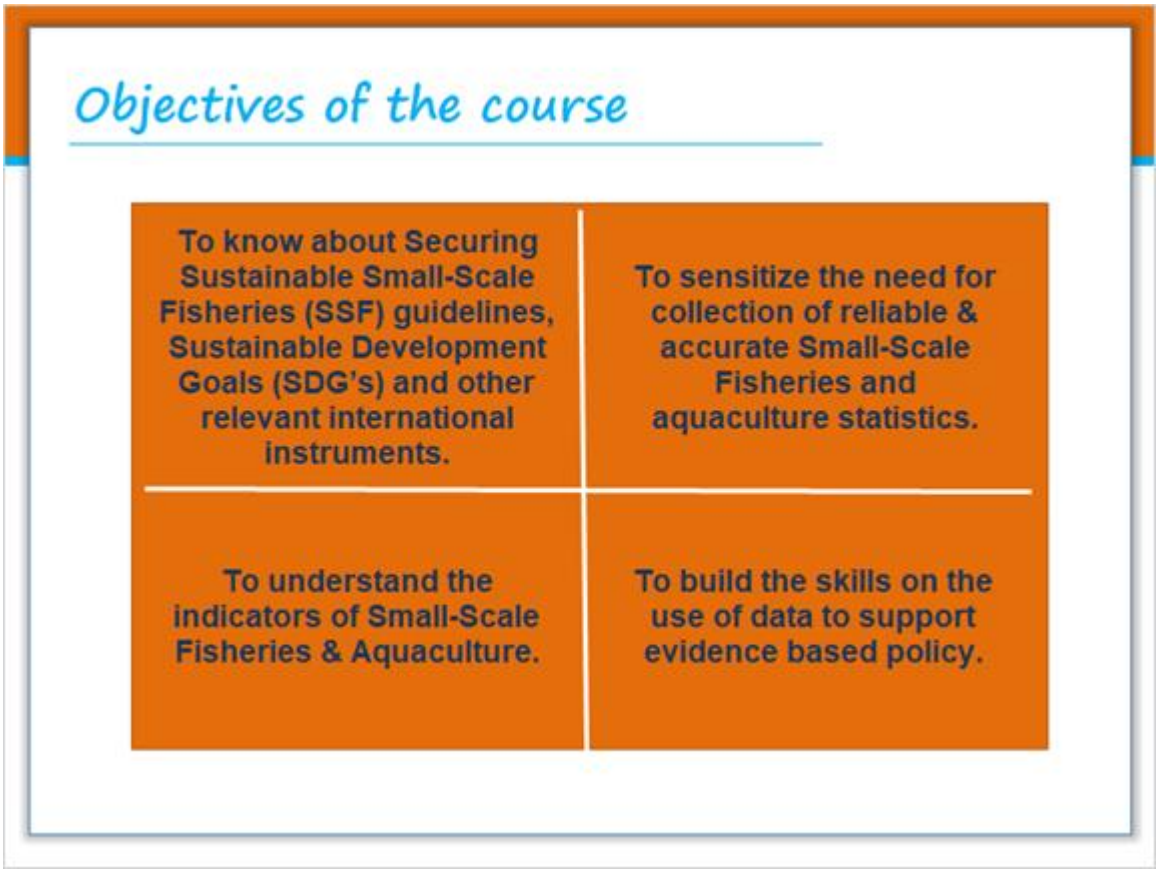
Fisheries and Aquaculture Statistics - Lesson1

1.1 Fisheries and Aquaculture Statistics



Notes:

1.2 Objectives of the course



Notes:

1.3 Course Outline

Notes:

1.4 Lesson1_Concept of Global Strategy

Notes:

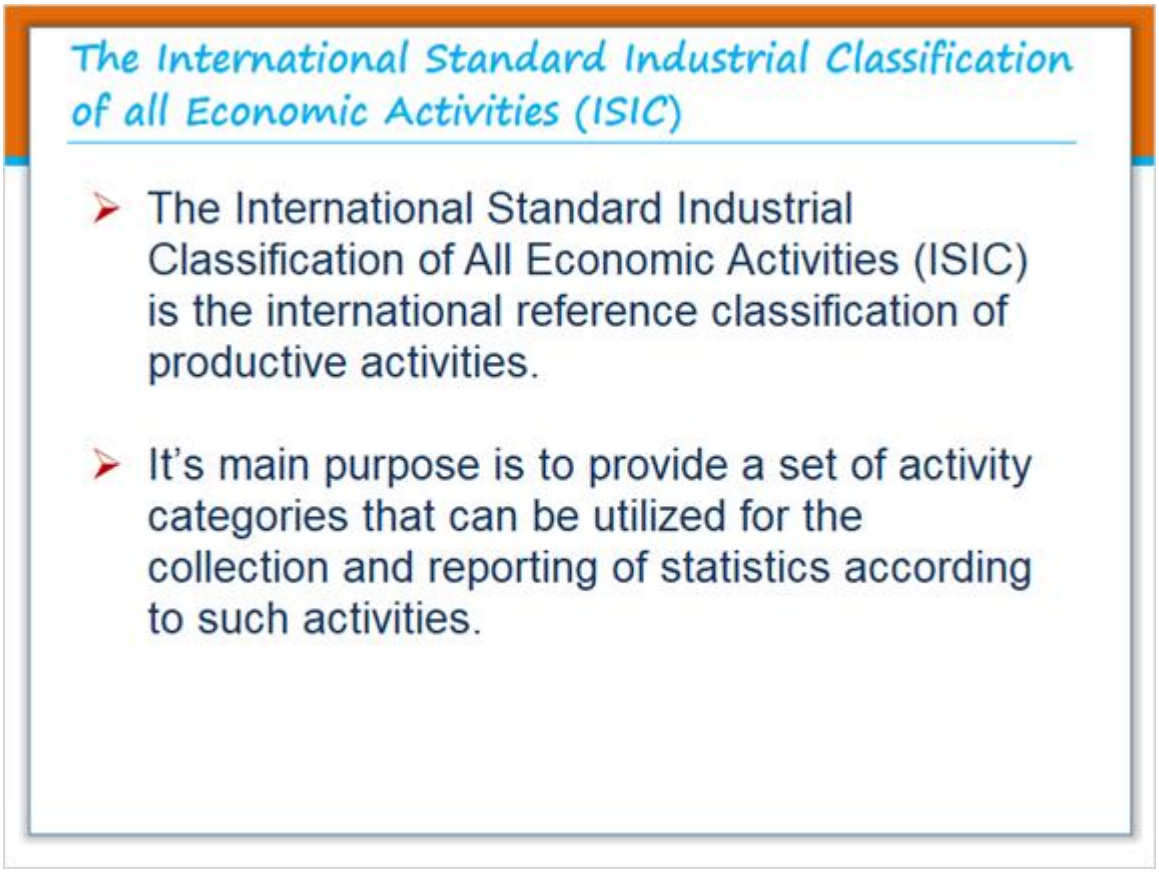
The Global Strategy (World Bank, 2010) is an initiative undertaken at international level under the auspices of the United Nations Statistical Commission (UNSC) to address the declining capacity in agricultural statistics, mainly in developing countries (Keita, 2010). The purpose of the Global Strategy is to provide guidelines for national and international statistical systems.

1.5 Lesson1 Outline

Notes:

- Around the globe, people living in rural areas are suffering from food crises. The weakness in data and information systems related to food & agriculture is considered a major constraint in many countries for designing policies.
- To address the weakness in basic data and information, a global strategy was developed by World Bank and FAO to improve Agricultural & Rural statistics.
- The purpose of the Global Strategy is to enable developing countries to build sustainable statistical systems that will produce accurate and reliable agricultural and rural data to guide policy analysis & decision making.

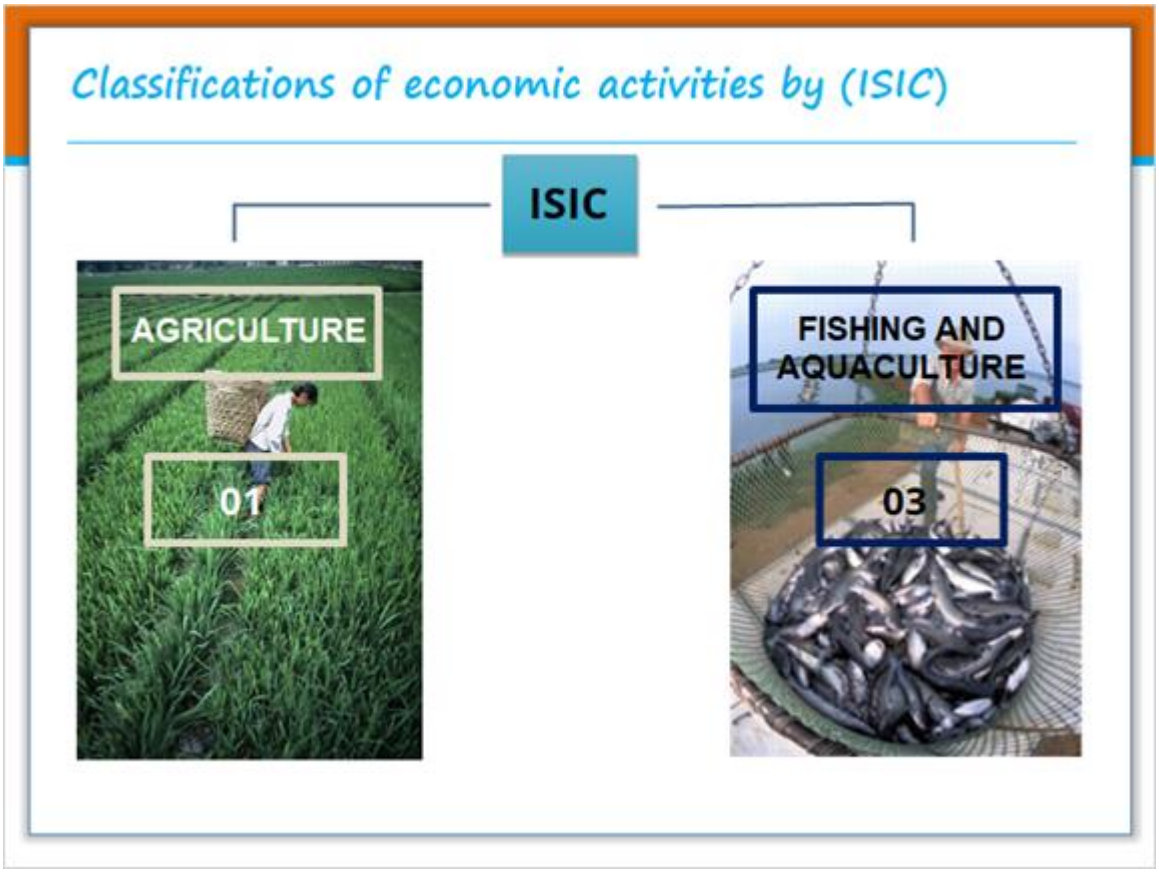
1.6 The International Standard Industrial Classification of all Economic Activities



Notes:

ISIC provides a comprehensive framework within which economic data can be collected and reported in a format designed for purposes of economic analysis, decision-taking and policy-making. The framework consists of a coherent and consistent classification structure of economic activities based on a set of internationally agreed upon concepts, definitions, principles and classification rules.

1.7 Classifications of economic activities

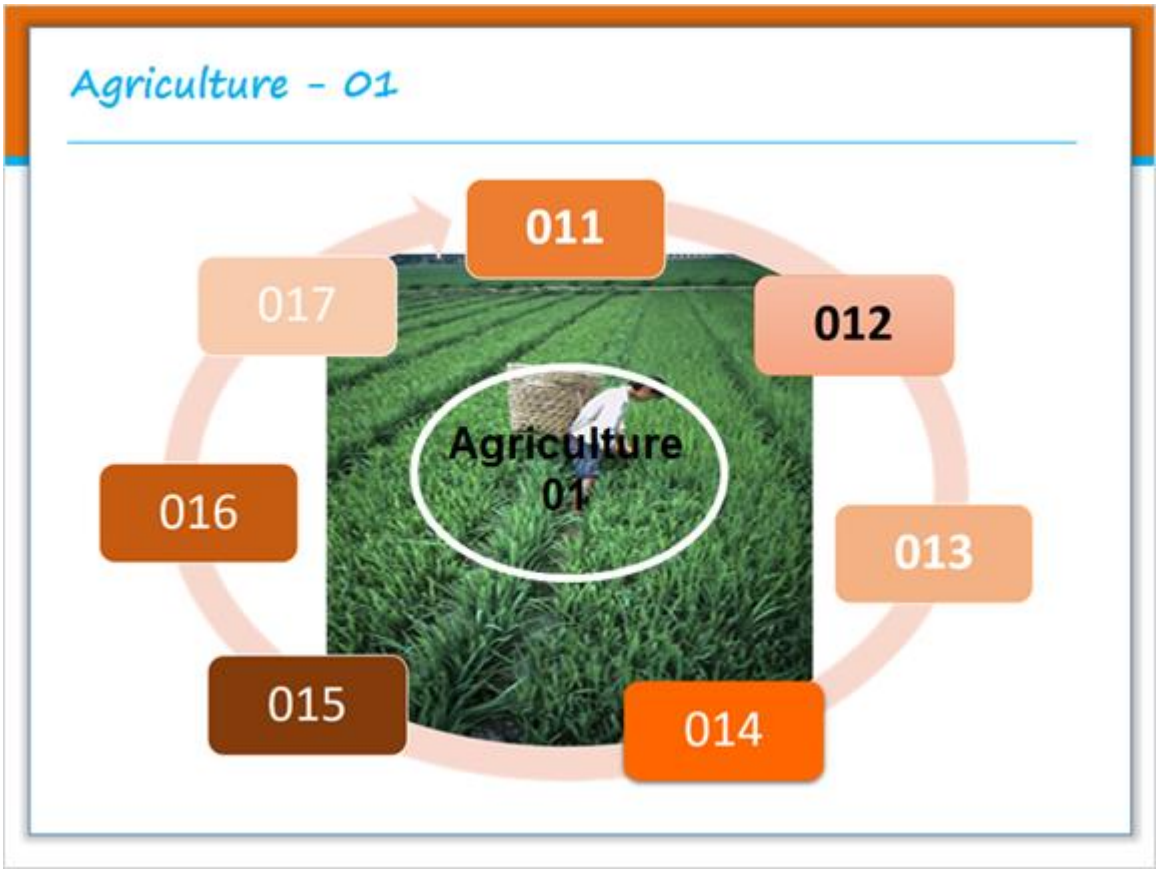


Notes:

The International Standard Industrial Classification of all Economic Activities (ISIC) has listed agricultural production and fisheries into the above groups.

The classification structure represents a standard format to organize detailed information about the state of an economy according to economic principles and perceptions for purposes of economic analysis using the comprehensive framework.

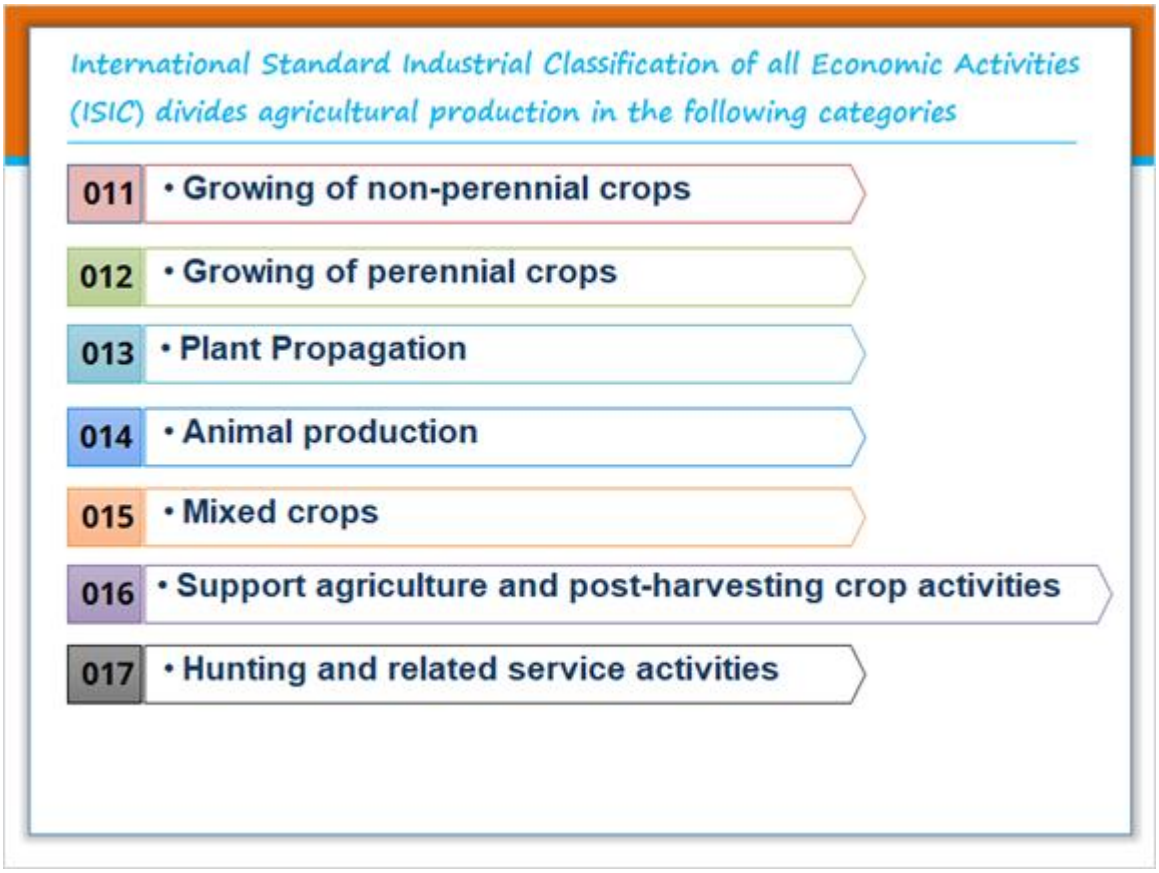
1.8 Agriculture-01



Notes:

Group 01- Crop and animal production, hunting and related service activities which are further explained in the next slide.

1.9 ISIS-Divides agricultural production



Notes:

How are these groups defined?

They are defined as:

Group 011 - This group includes the growing of non-perennial crops, i.e. plants that do not last for more than two growing seasons. Included is the growing of these plants for the purpose of seed production.

Group 012 - This group includes the growing of perennial crops, i.e. plants that lasts for more than two growing seasons, either dying after each season or growing continuously. Included is the growing of these plants for the purpose of seed production.

Group 013 - This class includes the production of all vegetative planting materials, including cuttings, suckers and seedlings for direct plant propagation or to create plant grafting stock into which selected scion is grafted for eventual planting to produce crops.

Group 014 - This group includes raising (farming) and breeding of all animals, except

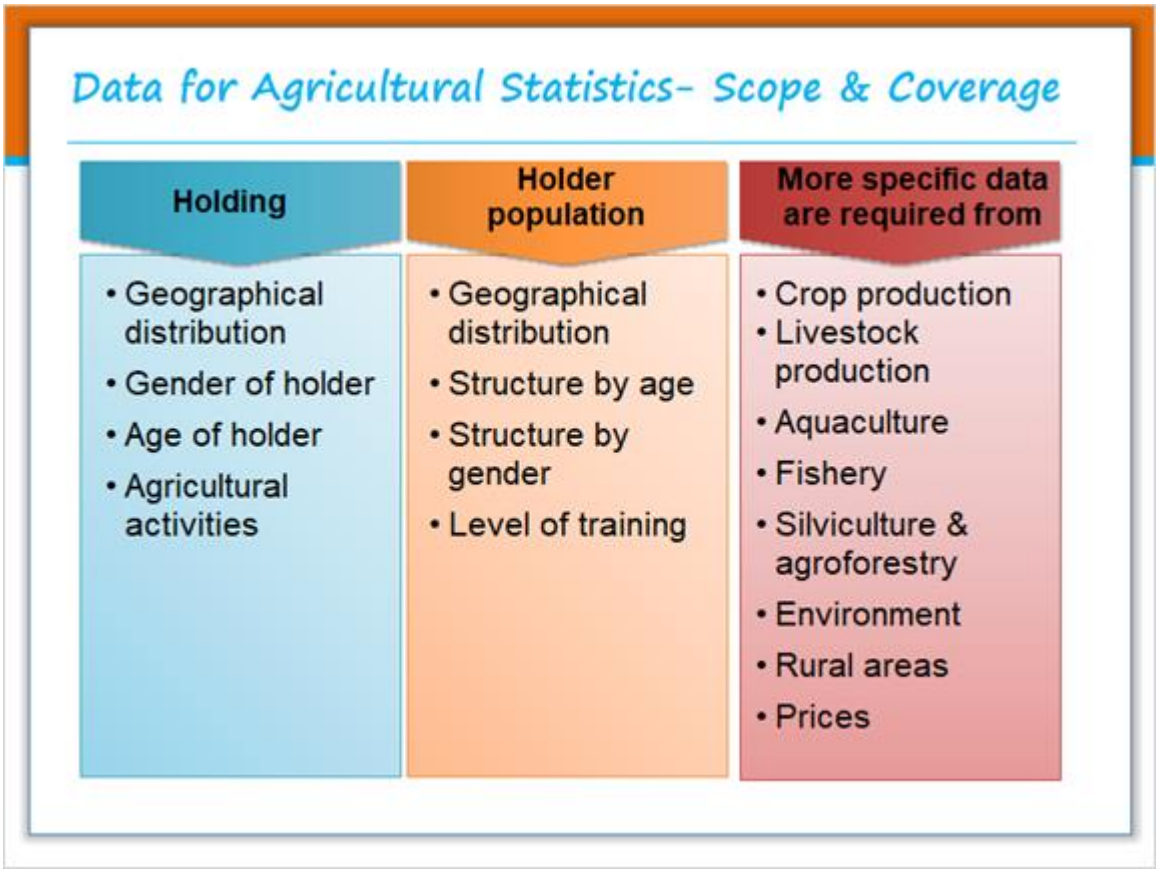
aquatic animals.

Group 015 - This class includes the combined production of crops and animals without a specialized production of crops or animals. The size of the overall farming operation is not a determining factor. If either production of crops or animals in a given unit exceeds 66% or more of standard gross margins, the combined activity should not be included here, but rather allocated to crop or animal farming.

Group 016 - This group supports crop production, animal production, , post-harvest crop activities and seed processing for propagation.

Group 017 - This group includes hunting, trapping and other related service activities.

1.10 Data for Agricultural Statistics- Scope & Coverage



Notes:

Agricultural statistics depend on the user's needs and are generally defined in the strategic plans for agriculture & rural statistics. The Global Strategy establishes a minimum set of core data necessary for decision making. Production statistics are

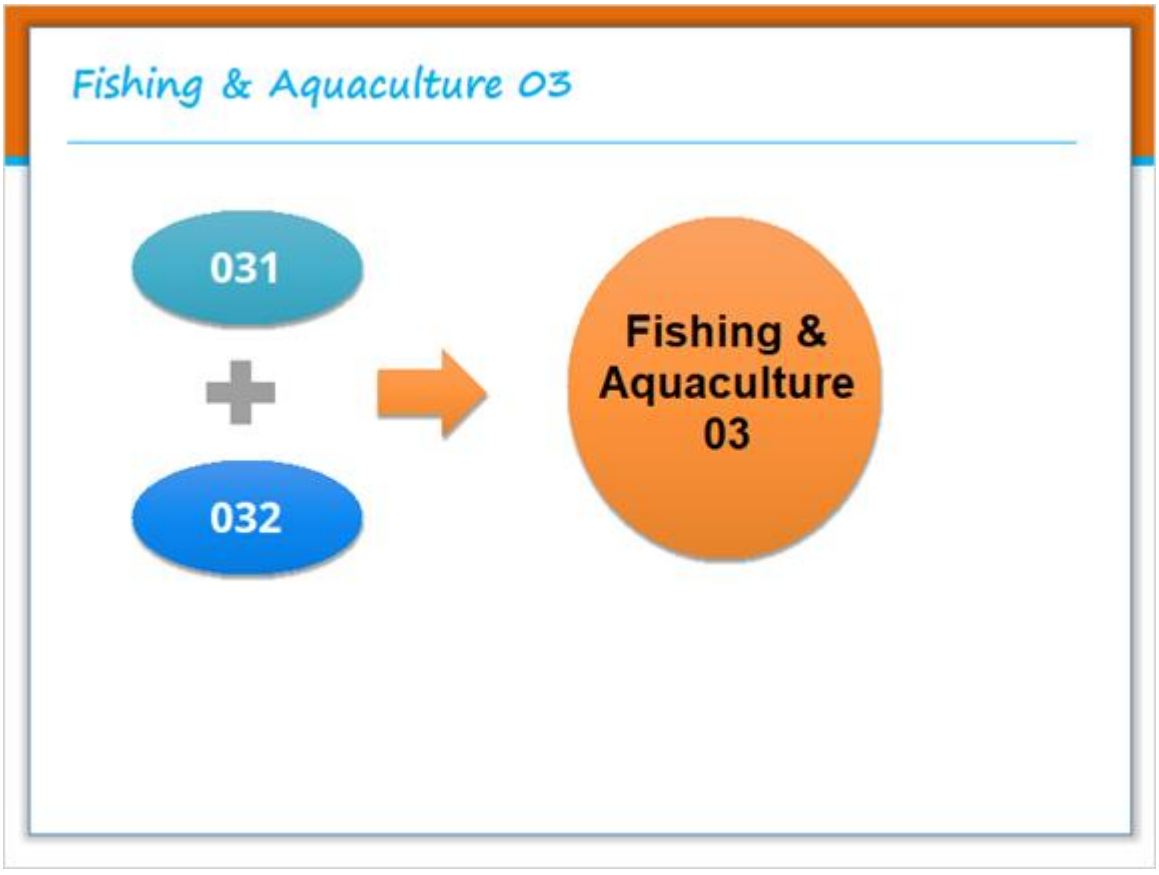
used to access GDP and monitor food security.

The scope of agricultural statistics will be done in collaboration with FAO-AQUASTAT program and include statistics on water use for agricultural purposes, including irrigation and other uses, the source of irrigation waters the land under irrigation, the irrigation method and the resulting production.

For strategic purposes all agricultural units, regardless of size and location, should be included in the scope of agricultural statistics.

Agricultural production is also seasonal and related to the biological life cycle of plants and animals. In order to provide information that generates an accurate picture, statisticians, require data on the seasonal variation and heterogeneity of production patterns.

1.11 Fishing & Aquaculture 03



Notes:

Group 03- This group includes capture by fisheries and aquaculture, and covers the use of fishery resources from marine, brackish or freshwater environments. The

goal is capturing or gathering of fish, crustaceans, molluscs, and other marine organisms and products (aquatic plants, pearls, sponges, etc.).

What exactly, are these groups?

Well…..Let's find out in the next slide!

1.12 ISIC for fisheries

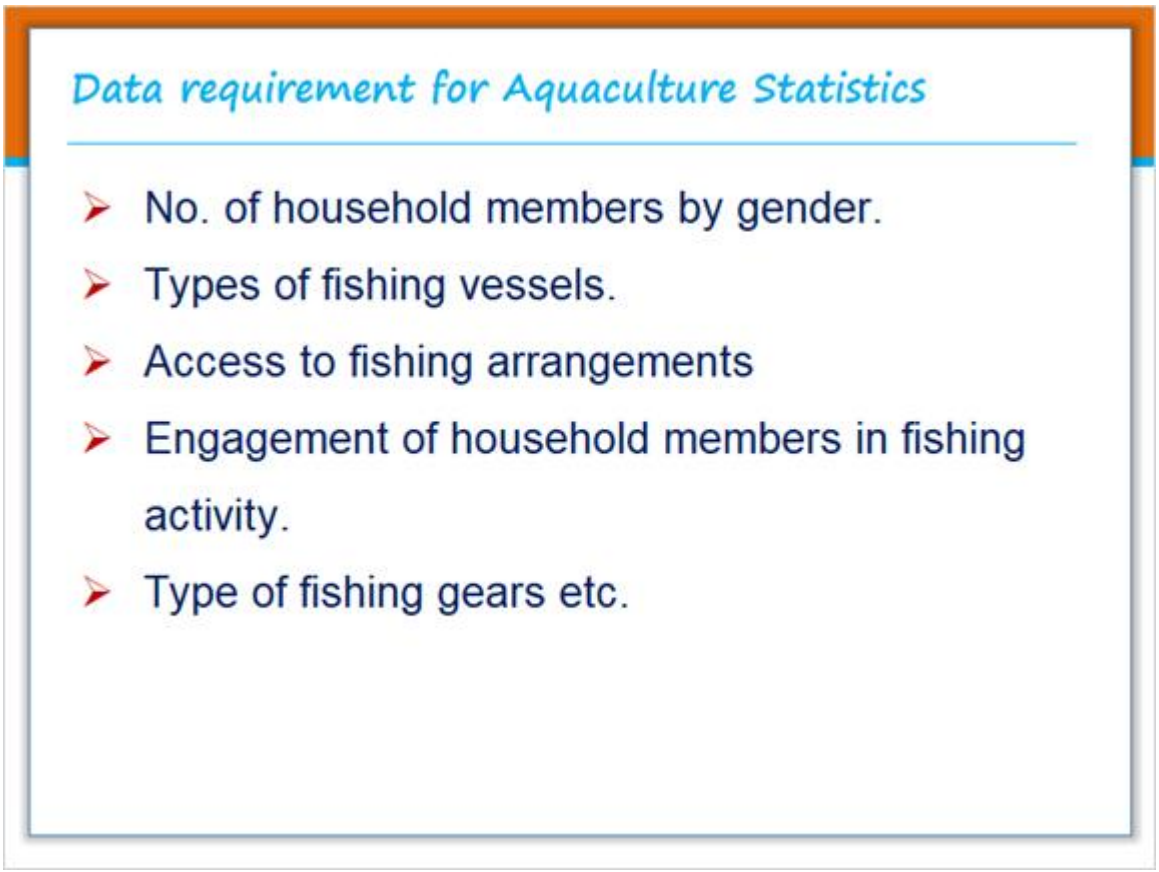
Notes:

ISIC provides a comprehensive framework within which economic data can be collected and reported in a format designed for economic analysis. It consists of a coherent and consistent classification structure of economic activities based on a set of internationally agreed upon concepts, definitions, principles and classification rules.

- Aquaculture is the farming of aquatic resources such as fish, crustaceans, molluscs, plants, crocodiles, alligators and amphibians according to ISIC. In this context, farming refers to an intervention in the rearing process to enhance production, such as regular stocking, feeding and protection from predators.

- Aquaculture activities integrated with agricultural production such as rice-cum fish culture, or aquaculture and agriculture, can use the same production resources as machinery and labor.

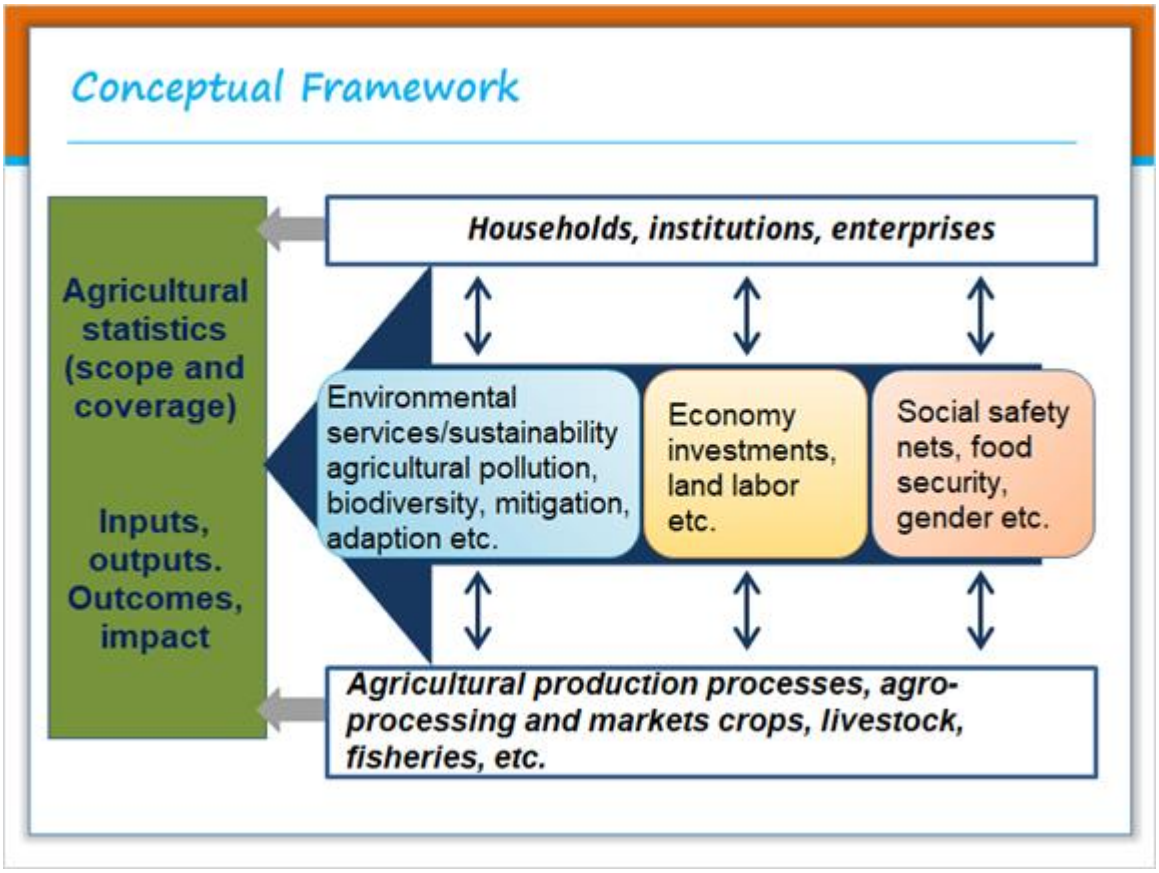
1.13 Data requirement for Aquaculture Statistics



Notes:

Aquaculture data can be collected by a means of specific surveys or in the agricultural census in different ways.

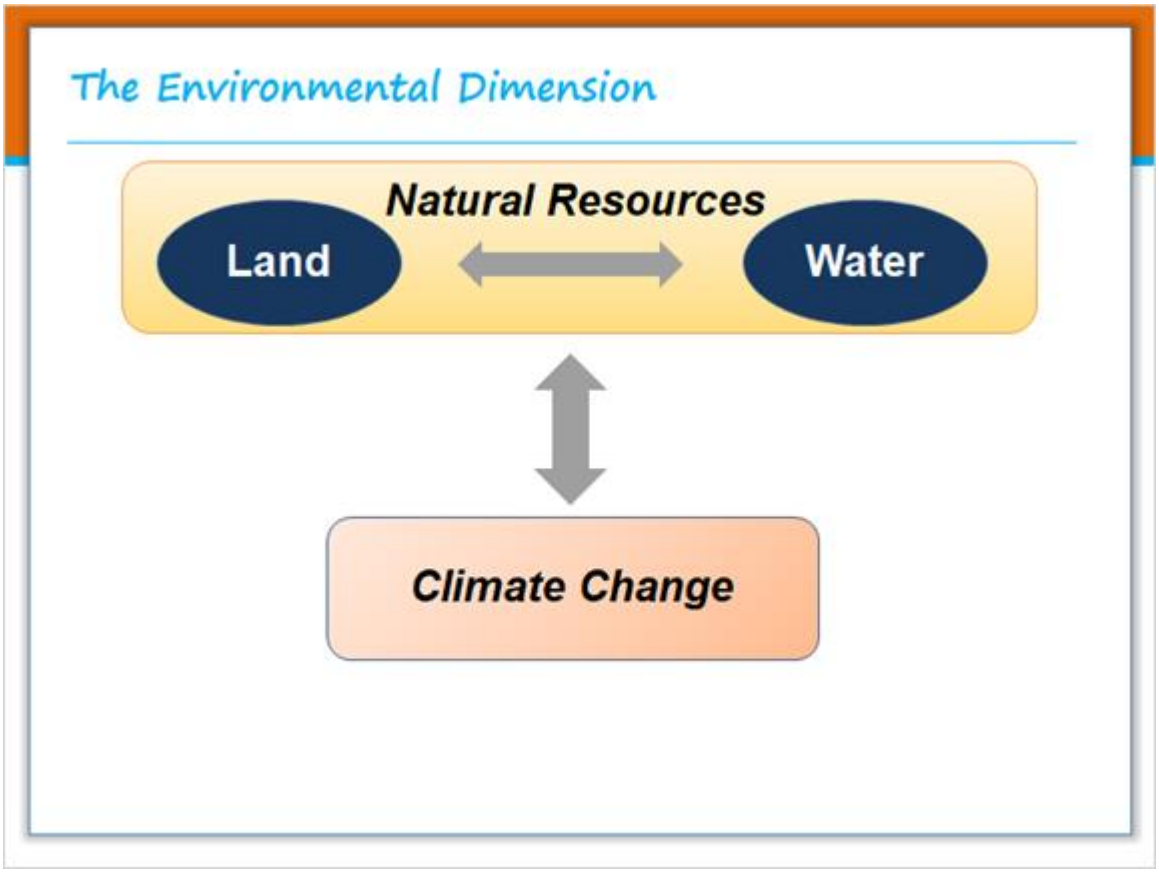
1.14 Conceptual Framework



Notes:

The conceptual framework in the above figure connects-the economic, environmental and social dimensions of agriculture and its cause-and-effect relationships. This agricultural production extends to processing and markets, and income distribution, accumulation and consumption.

1.15 The Environmental Dimension



Notes:

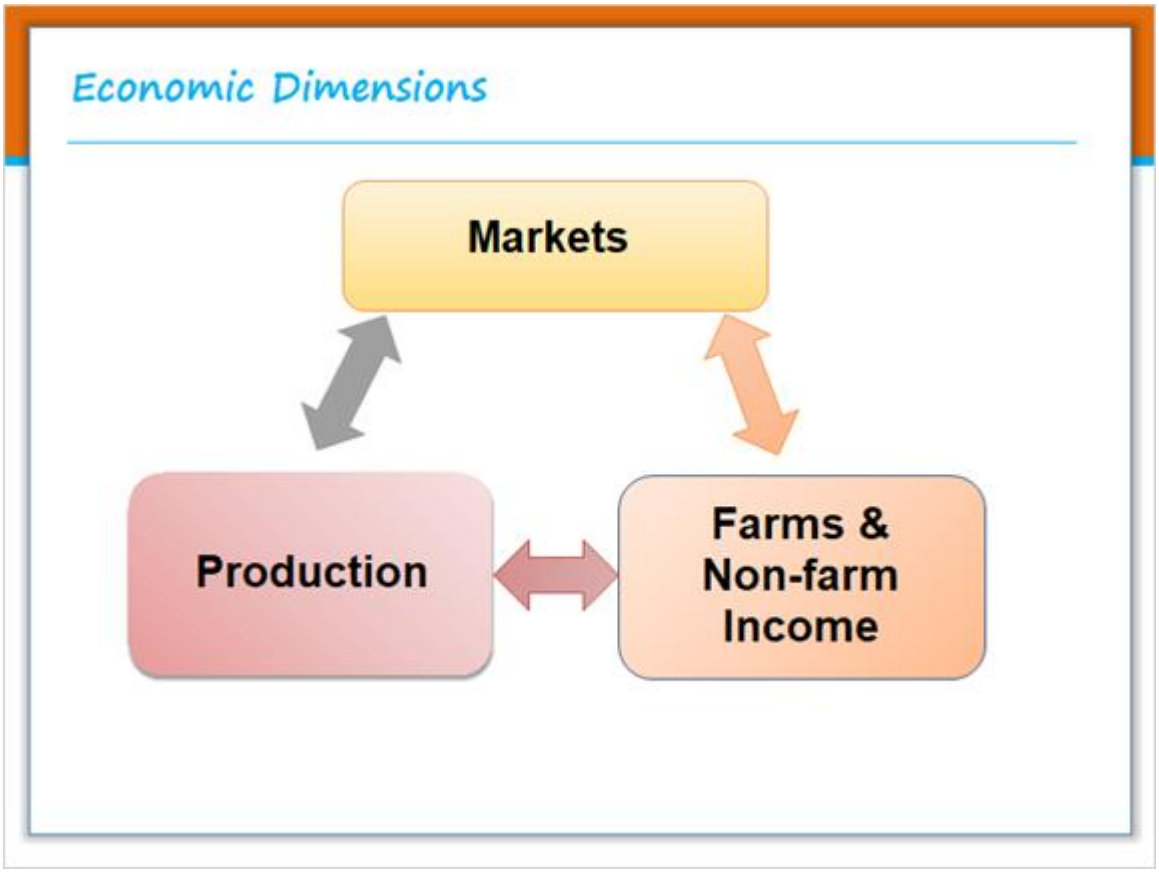
The environmental dimension can be further divided into two parts: i) Natural Resources and ii) Climate Changes.

What are these parts?

i) Natural Resources- They act as the user of natural resources (mainly land and water) and as a provider of environmental services. In addition to the direct use of natural resources in production its impact also relates to waste. The natural resources that affect climate change are mainly land and water.

ii) Climate Changes- The environmental aspect of agriculture related to climate change, which affects agriculture, sustainable development and environmental services.

1.16 Economic Dimensions



Notes:

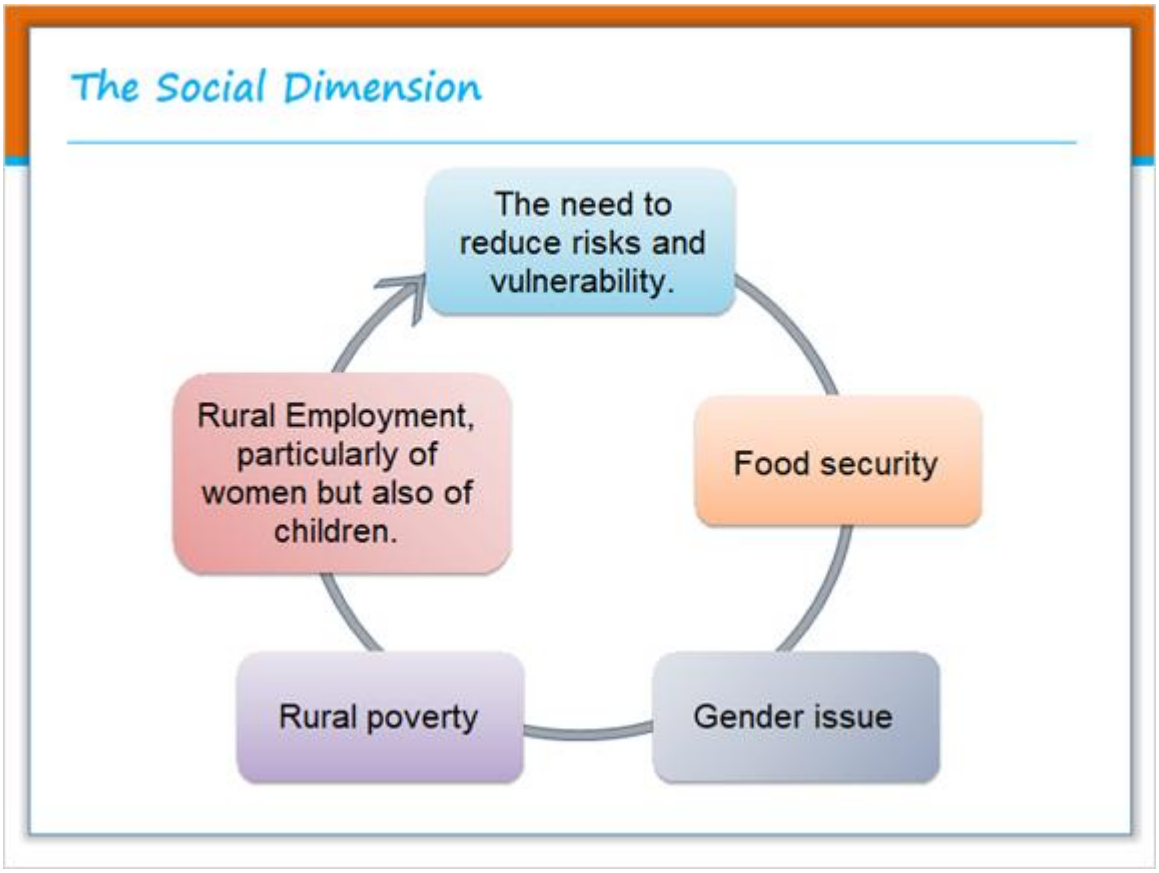
These 3 dimensions can be categorized as follows;

Production- Agricultural products, livestock, fish and other aquatic organisms are major sources of food & household income in developing countries. Countries are responsible for providing statistics on these products.

Markets-Marketing systems depend on the supply & demand of markets and prices. Lack of timely production data is one of the major factors leading to food shortages and hikes in consumer prices.

Farms & Non-farms Income-Net farm income and GDP from agriculture are basic indicators of a country's agricultural performance. One of the ways that national accounts are utilized is by examining how value added is distributed among factors of production, such as land, labor and capital. Many householders engage in non-farm work activities.

1.17 The Social Dimension

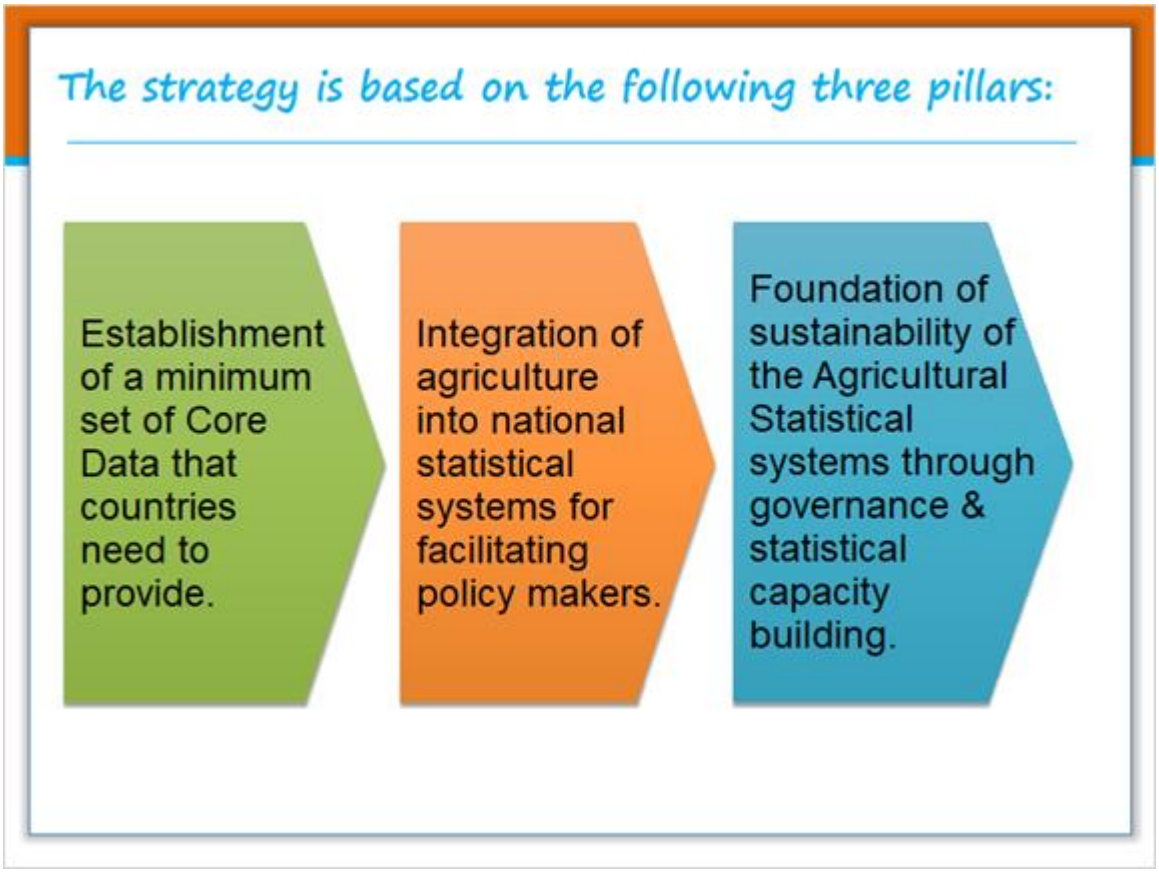


Notes:

Assessing food security requires utilizing information on commodity production and a number of indicators to measure productivity and market efficiency.

In many developing countries, household roles, responsibilities and rights are highly gendered. Women have proven to be highly receptive to raise production yield and improve environmental management.

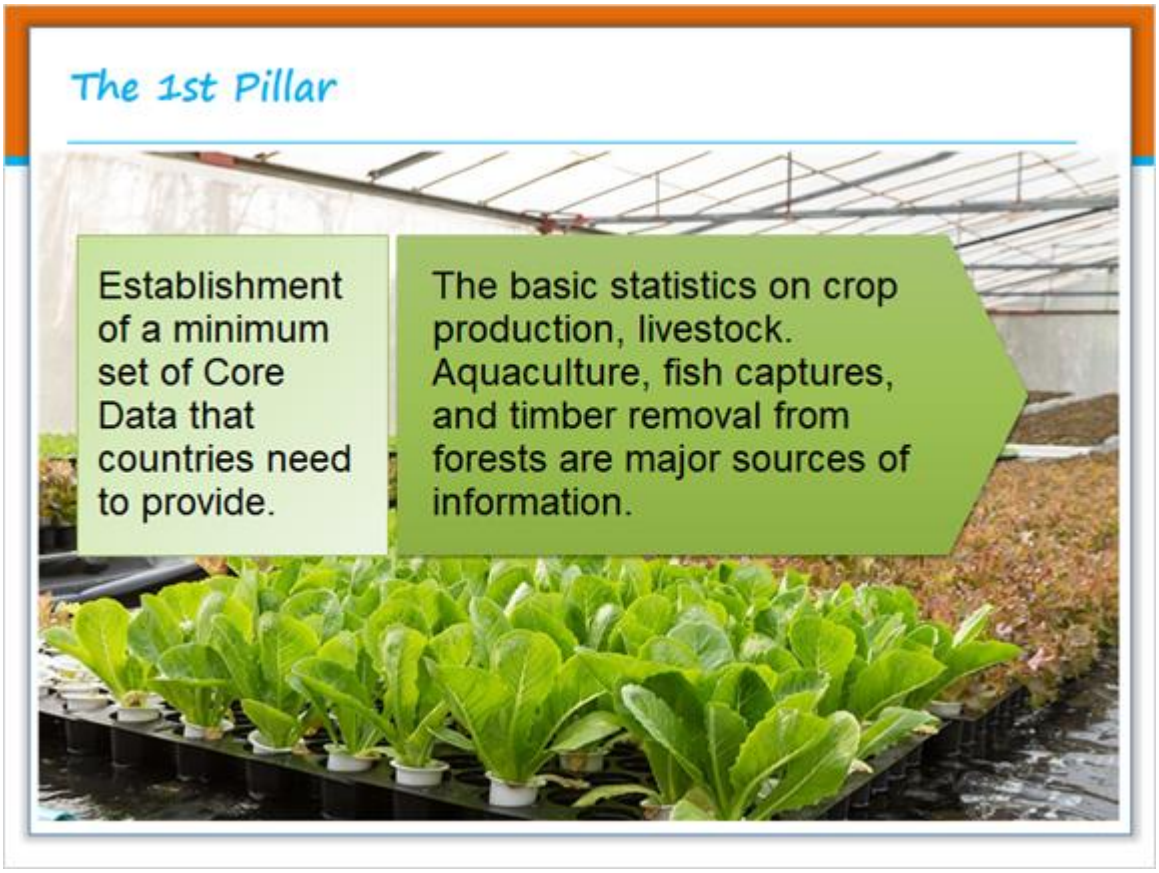
1.18 The strategy is based on the following three pillars



Notes:

The Global Strategy provides a blue print for a coordinated and long-term initiative to address the decline in agricultural statistical systems. This strategy was developed & adopted in February; 2010 by the United Nations Social Commission (UNSC) to address the challenges involved in meeting the needs in developing countries. The strategy aims to provide a framework and methodology to improve national and international statistics.

1.19 The 1st Pillar



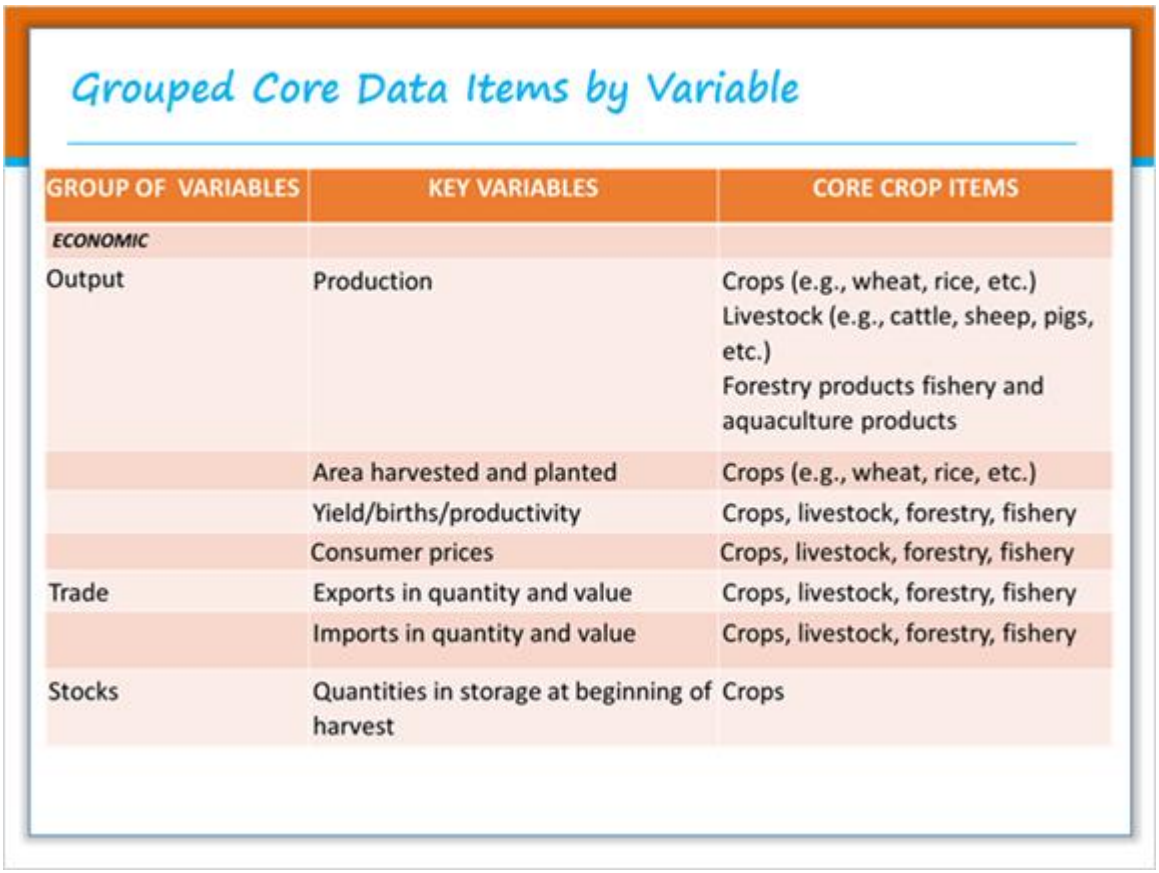
Notes:

The world program for the census of agriculture (FAO 2005 b) consists 149 crops, 28 livestock species and about 1400 fishery and aquaculture species. Not all crops and species are produced in every country and the importance of the crops/species may be country specific.

Core data are selected on the basis of their importance to global agricultural production. For example, only 10 crops and 4 livestock species account for 95% of the world's production of cereals, meat and fiber. A core item is one whose data entered as multiple of indicators to monitor and evaluate development policies, food securities and progress towards meeting Millennium Development Goal's (MDG's). Core data should give inputs to the national accounts and global balances of supply and demand for food and other agricultural products. Core crop data items should account for a major proportion of land use, contribute significantly to farm and rural house-hold well-being, and affect the environment and climate.

The table on the following slides show the core data items grouped by key variables in the economic, social and environmental dimensions.

1.20 Grouped Core Data Items by Variable



Grouped Core Data Items by Variable

GROUP OF VARIABLES	KEY VARIABLES	CORE CROP ITEMS
ECONOMIC		
Output	Production	Crops (e.g., wheat, rice, etc.) Livestock (e.g., cattle, sheep, pigs, etc.) Forestry products fishery and aquaculture products
	Area harvested and planted	Crops (e.g., wheat, rice, etc.)
	Yield/births/productivity	Crops, livestock, forestry, fishery
	Consumer prices	Crops, livestock, forestry, fishery
Trade	Exports in quantity and value	Crops, livestock, forestry, fishery
	Imports in quantity and value	Crops, livestock, forestry, fishery
Stocks	Quantities in storage at beginning of harvest	Crops

Notes:

Crop items: - The main crop item are wheat, maize, barley, sorghum, rice, sugar, soybeans and cotton. Other crop items are also added if important in the country.

Data required for these crops:

1.Area planted and harvested, yield & production.

2.Amounts in storage at the beginning of the harvest.

3.Area of crop land irrigated.

4.Producer and consumer prices.

5.Amounts utilized for own consumption, food, feed, seed, fiber, oil for food, bioenergy, and net trade or imports or exports.

6.Early warning indicators such as precipitation, wind shield surveys of crop conditions, and vegetable, indices provided by satellite observations.

Core livestock items:

These include cattle, sheep, pigs, goals and poultry. These are major sources of the food supply and agricultural income. Increased demands of livestock products directly lead to increased usage of feed gains.

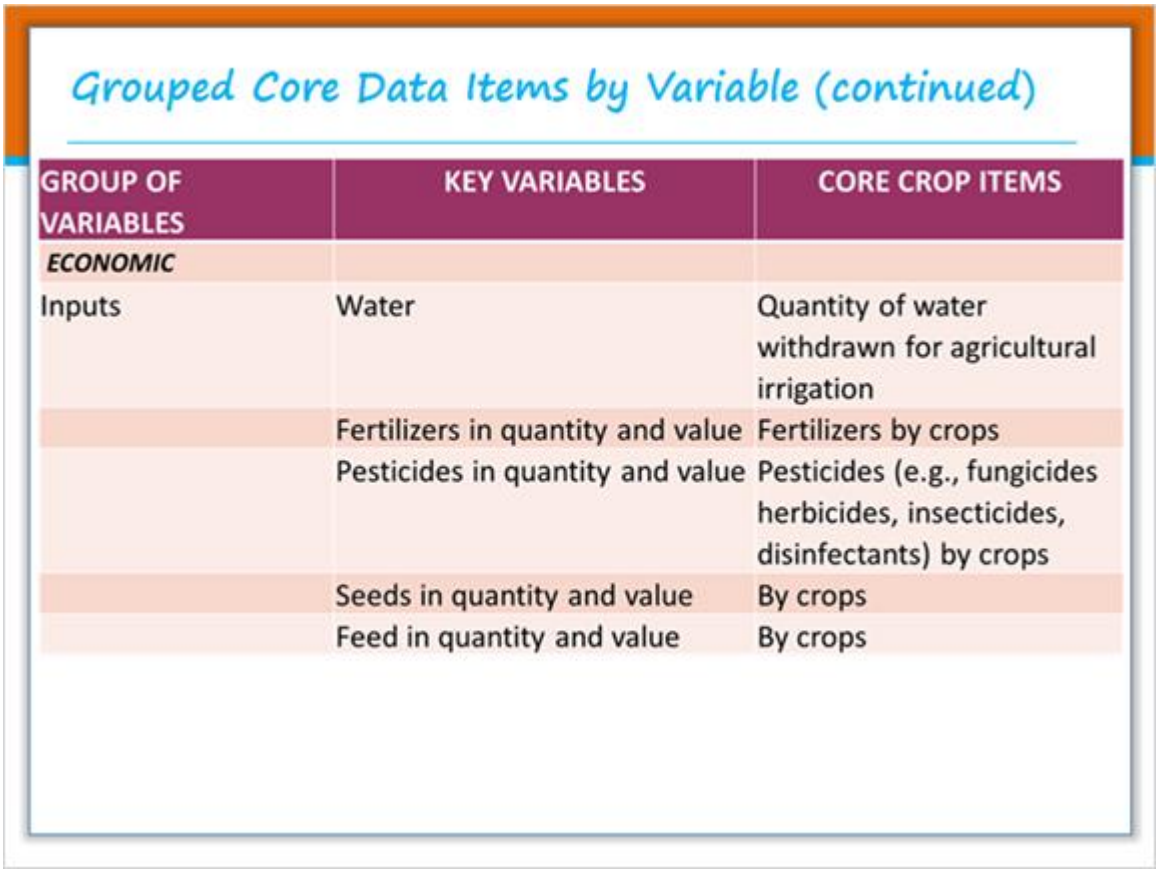
Following are livestock terms:

1.Inventory and annual births.

2.Production of products such as meat, milk, eggs and works and net trade.

3. Producer & consumer prices core aquaculture & fishery product. These contributes significantly to food supplies. Aquaculture production requires the use of land.

1.21 Grouped Core Data Items by Variable (continued)



Notes:

Core Aquaculture & Fishery Product - These contributes significantly to food supplies. Aquaculture Production requires the use of land and water resources.

The following are aquaculture and fishery product terms:

1. Area cultured, production, prices and net trade or imports and exports for aquaculture.
2. Quantity landed and discarded, number of days fished, amounts processed for food and non-food uses, process imports and exports.

Core forestry production: -

Forestry is a major land use, provides income and has a significant role in climate change. Items are: -

1. Area of woodlands & forests quantities removed and land prices associated with agriculture holdings.
2. Area in woodlands forests, quantities removed and their prices for products from non-agricultural holdings.

1.22 Grouped Core Data Items by Variable (continued)

Grouped Core Data Items by Variable (continued)

GROUP OF VARIABLES	KEY VARIABLES	CORE CROP ITEMS
ECONOMIC		
Agro processing	Volume of core crops/livestock/fishery used in processing food	By industry
	Value of output of processed food	By industry
	Other uses (e.g., biofuels)	
Prices	Producer prices	Crops, livestock, forestry, fishery
	Consumer prices	Crops, livestock, forestry, fishery

Notes:

Core Agricultural inputs: - Core inputs of agricultural production are labor, chemicals, water, energy, capital stocks,

Data required include the following:

1.Qualities of fertilizer and pesticides utilized.

2.Water and energy consumed.

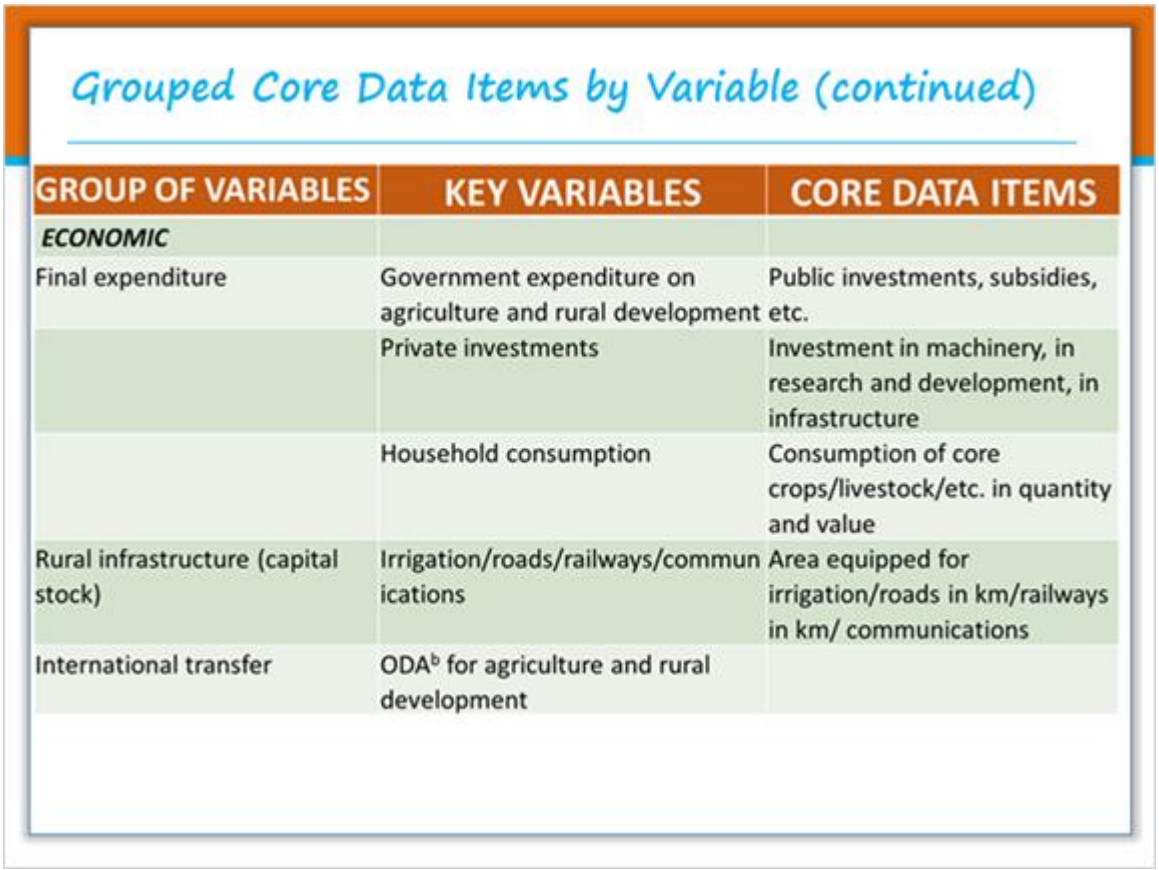
3.Capital stock such as machinery by purpose.

4.Number of people of working age by sex.

5.Number of workers hired.

6.Employment of household numbers on the agricultural holding.

1.23 Grouped Core Data Items by Variable (continued)



Grouped Core Data Items by Variable (continued)

GROUP OF VARIABLES	KEY VARIABLES	CORE DATA ITEMS
ECONOMIC		
Final expenditure	Government expenditure on agriculture and rural development	Public investments, subsidies, etc.
	Private investments	Investment in machinery, in research and development, in infrastructure
	Household consumption	Consumption of core crops/livestock/etc. in quantity and value
Rural infrastructure (capital stock)	Irrigation/roads/railways/communications	Area equipped for irrigation/roads in km/railways in km/ communications
International transfer	ODA[b] for agriculture and rural development	

Notes:

Core Economic Data: -

Following are the main economic data: -

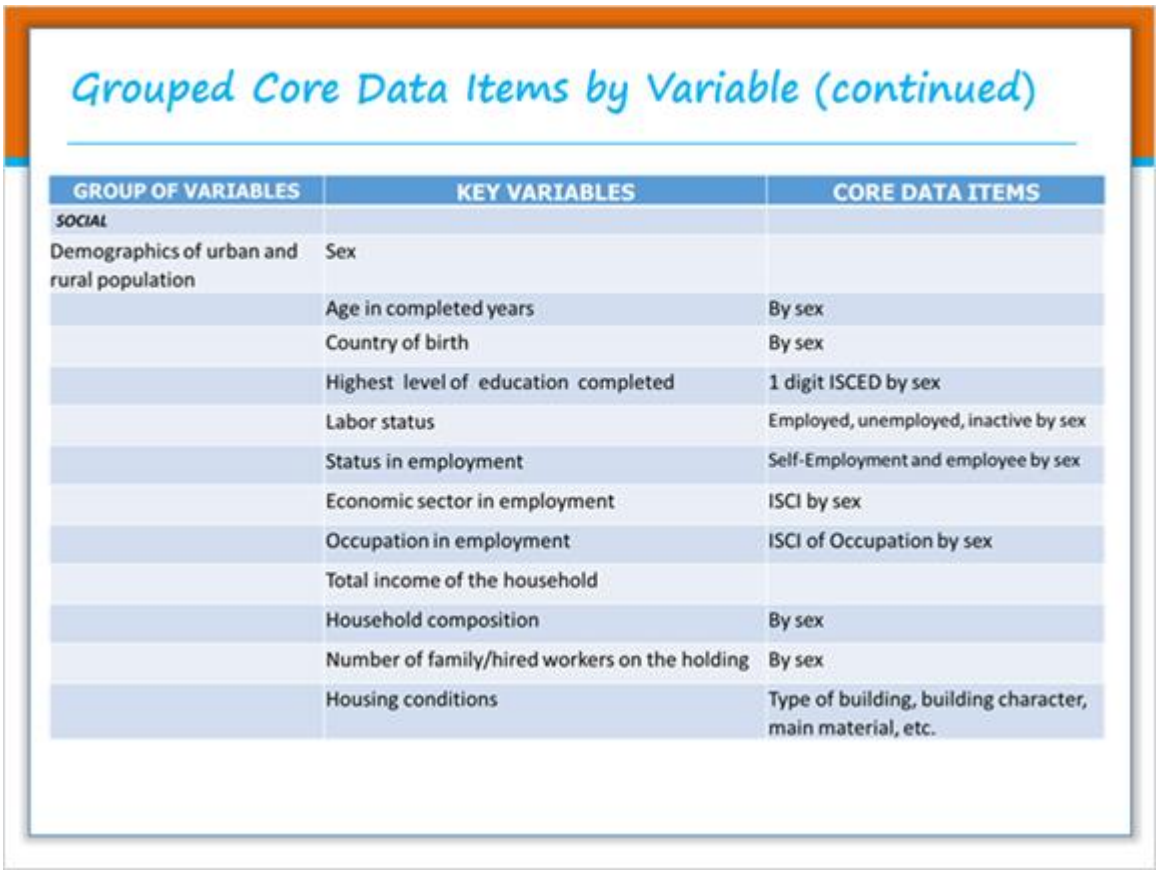
1.Producer and consumer prices.

2.Public expenditure on subsidies.

3.Public expenditure on agriculture and rural development.

4.Rural infrastructure.

1.24 Grouped Core Data Items by Variable (continued)



Grouped Core Data Items by Variable (continued)

GROUP OF VARIABLES	KEY VARIABLES	CORE DATA ITEMS
SOCIAL		
Demographics of urban and rural population	Sex	
	Age in completed years	By sex
	Country of birth	By sex
	Highest level of education completed	1 digit ISCED by sex
	Labor status	Employed, unemployed, inactive by sex
	Status in employment	Self-Employment and employee by sex
	Economic sector in employment	ISCI by sex
	Occupation in employment	ISCI of Occupation by sex
	Total income of the household	
	Household composition	By sex
	Number of family/hired workers on the holding	By sex
	Housing conditions	Type of building, building character, main material, etc.

Notes:

Core Socio-Economic Data: -

This is required to assist the measurement of economic well-being of rural households to guide policy decisions about development efforts to reduce poverty.

Following are the data:

1.Household income by source.

2.Number of household and household consumption.

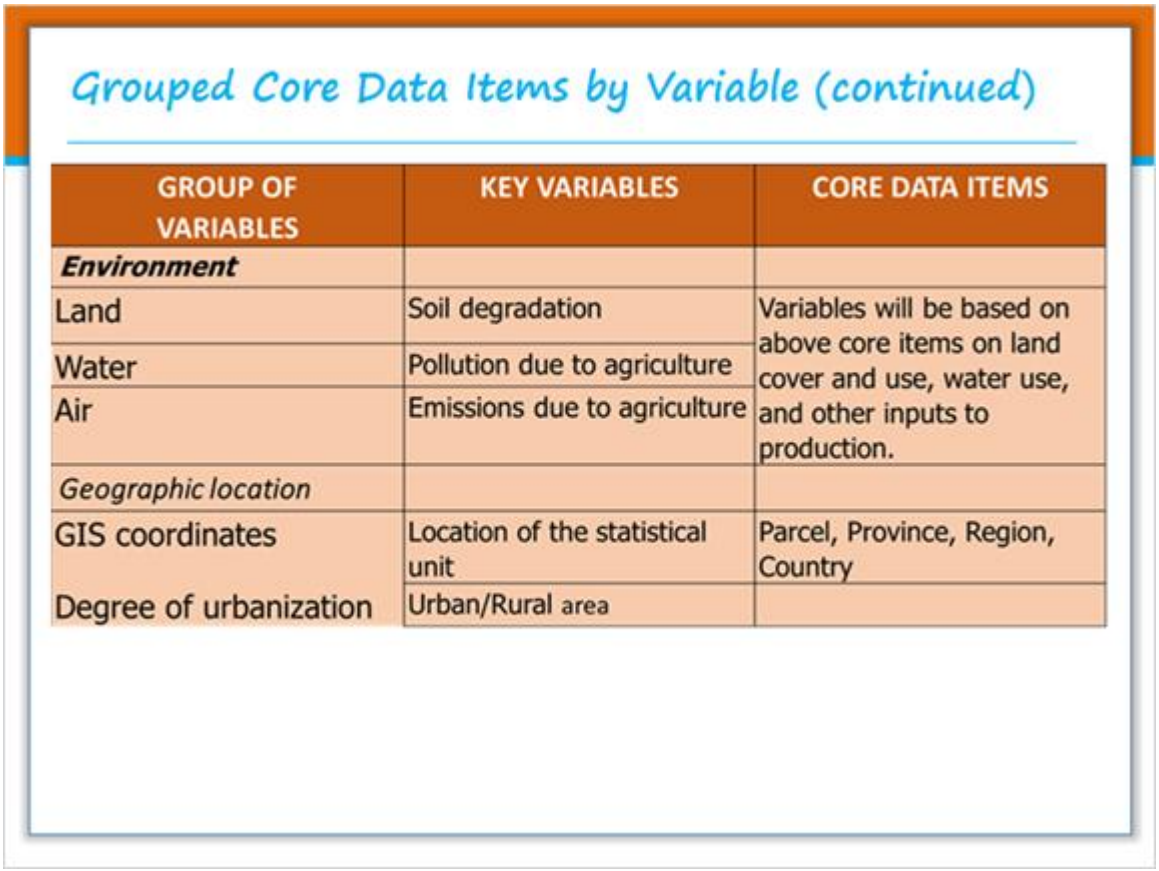
3.Population by age & sex.

4.Labor force & employment status.

5.Education levels.

6.Housing conditions.

1.25 Grouped Core Data Items by Variable (continued)



Grouped Core Data Items by Variable (continued)

GROUP OF VARIABLES	KEY VARIABLES	CORE DATA ITEMS
Environment		
Land	Soil degradation	Variables will be based on above core items on land cover and use, water use, and other inputs to production.
Water	Pollution due to agriculture	
Air	Emissions due to agriculture	
Geographic location		
GIS coordinates	Location of the statistical unit	Parcel, Province, Region, Country
Degree of urbanization	Urban/Rural area	

Notes:

Core environmental data if available, measures of the impact of agriculture e.g. soil degradation, water pollution and emissions due to agriculture.

The following data are likely to be used : -

1.Land cover & use.

2.Water use.

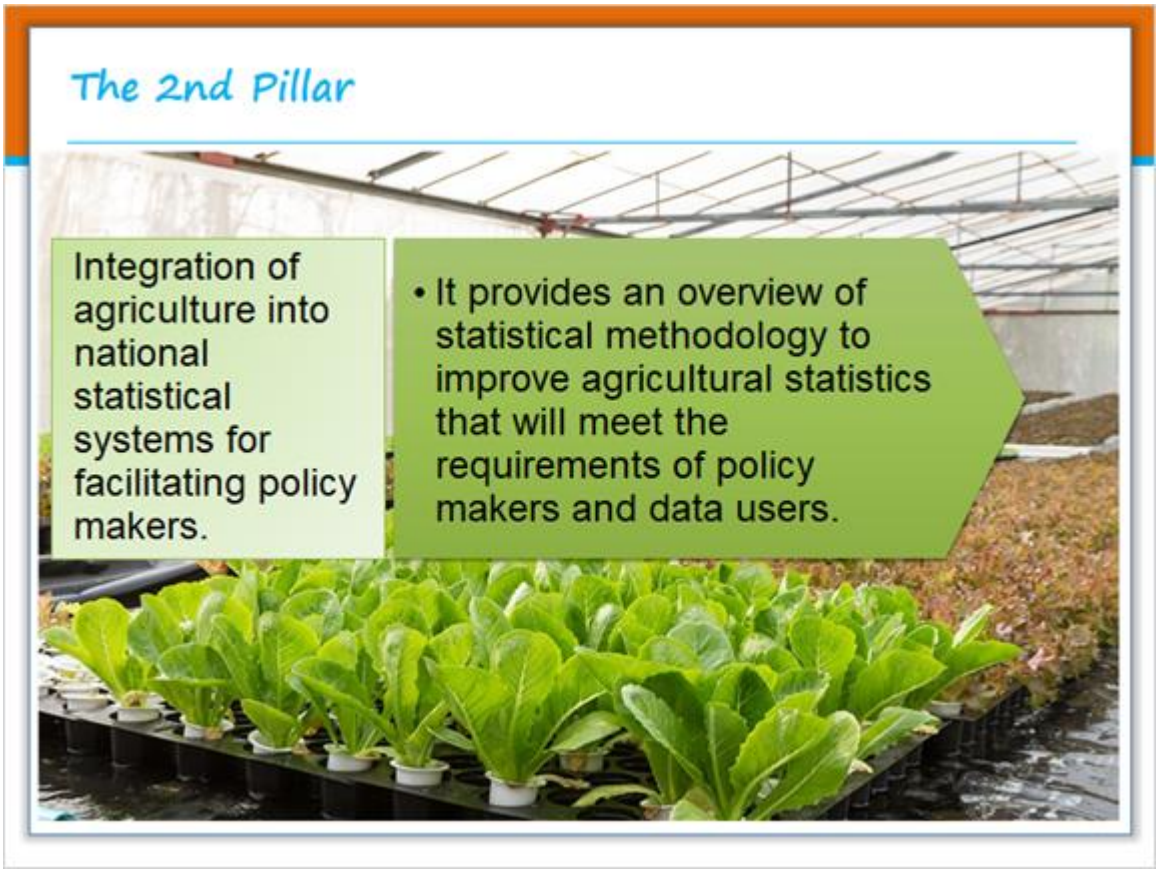
3.Fertilizer & Pesticide use.

Some geographical location data are available and include:

1.Location of the statistical unit.

2.Degree of urbanization.

1.26 The 2nd Pillar



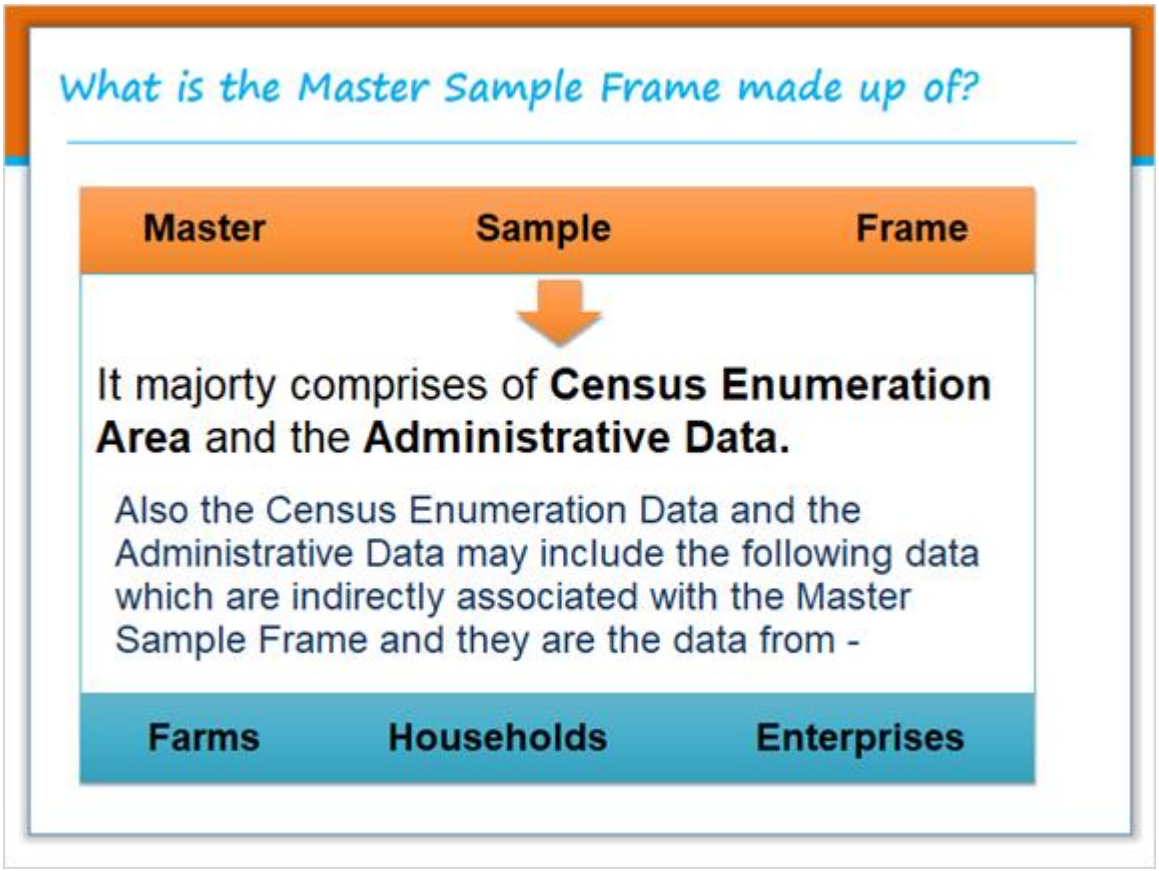
Notes:

The process of improving agricultural statistical begins with the integration of agriculture into national statistical system. This integration will be developed by a master sample frame for agriculture to ensure relevance and completeness. More than one government organization is involved in the uncoordinated collection and analysis of agricultural, fishery and forestry data. While national statistical office may produce a agricultural census, the annual production data comes from the ministry of agriculture. The contribution of fishery and aquaculture data may come from another authority and may not be accounted for correctly, which makes it difficult to aggregate data. Integrated statistical systems resolves many of these problems by avoiding duplication of effort, preventing release of conflicting statistics, ensuring the best use of resources and reducing the burden of response.

Integration means: -

- Agriculture is part of overall statistical collection process.
- Use of master sample frame for agriculture.
- Integration of population census and agriculture census.
- Integration of survey process i.e. sample design questionnaires, methods of collection, analysis & estimation.
- Integration at dissemination phase.

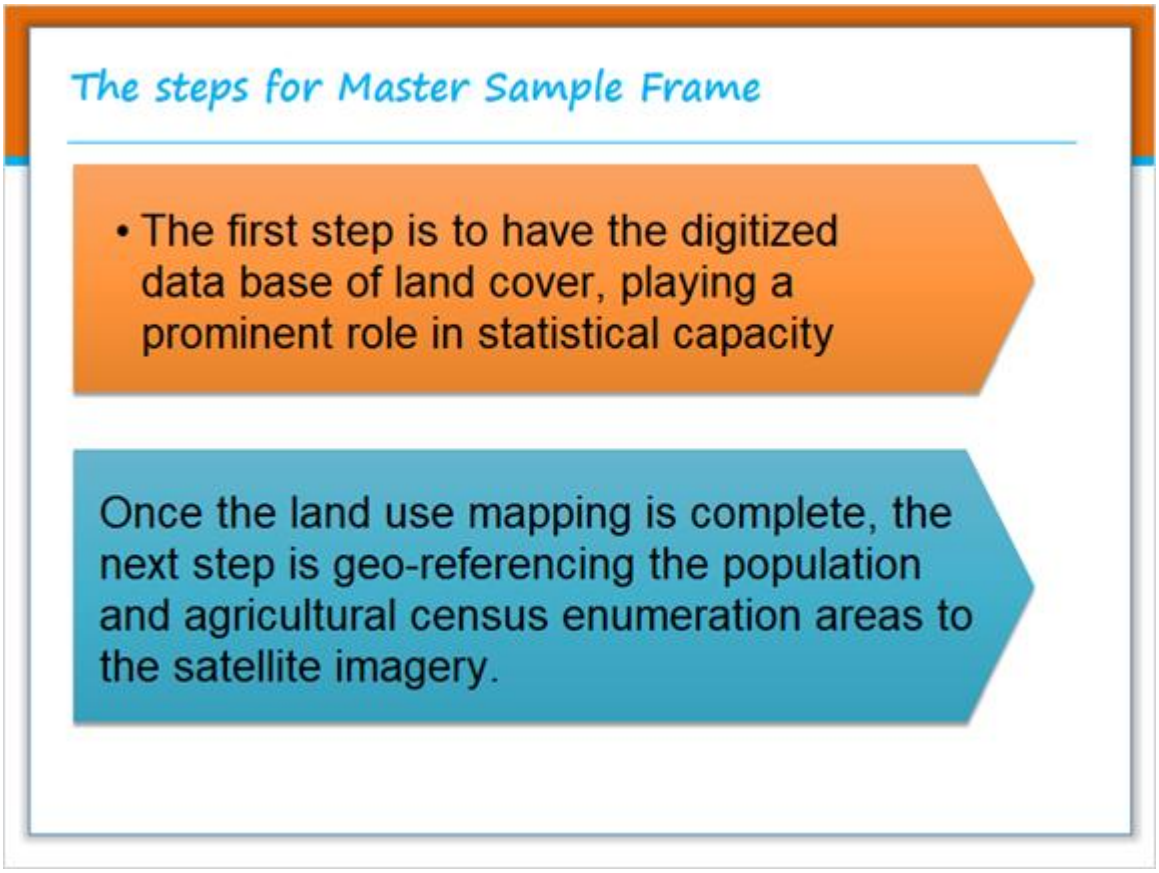
1.27 What is the Master Sample Frame made up of?



Notes:

The development of the master sample frame for agriculture begins with the need to link economic and social dimensions of agriculture with those relating to land cover and other environmental issues. The master sample frame should be linked to land use, obtaining satellite images. The land cover as recorded by satellite images should be classified into major categories.

1.28 The steps for Master Sample Frame

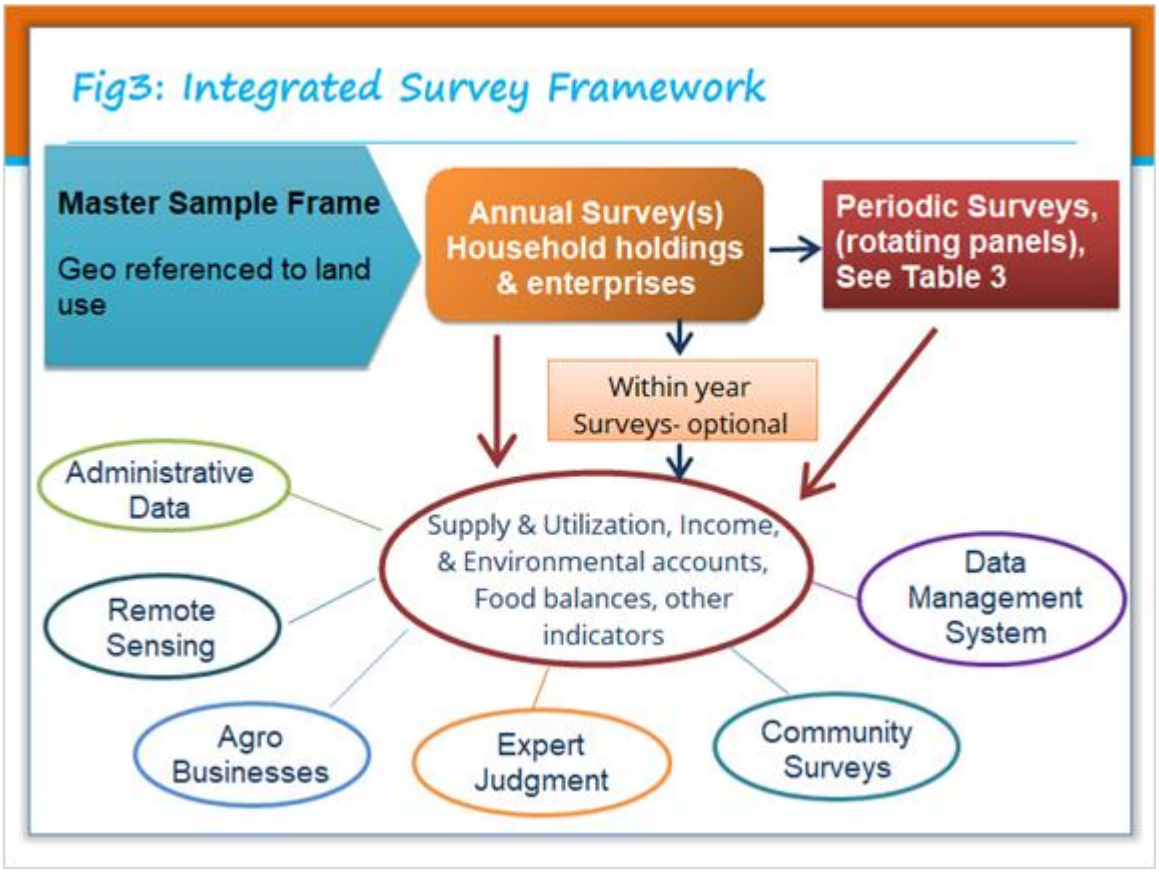


Notes:

The master sample frame for agriculture can be established in several ways. The common element is the geo-referencing of census enumeration areas and administrative units to digitize satellite imagery classified by major land cover. The area frame sampling units can be directly associated with the land cover classification. The land associated with farms, households, and enterprises in the census or administrative registries is indirectly associated with land cover via the mapping to the census enumeration area or an administrative unit.

The master sample frame enables the use of a rich assortment of sample designs including single and multiple stage sampling. If enumeration or administrative areas are the first stage or sample, these can be selected with a probability proportional to size reported in the population or agricultural census.

1.29 Fig3: Integrated Survey Framework



Notes:

The integrated survey framework figure above provides an overview of how the annual and periodic surveys are connected in the data system. The integrated survey framework will provide annual data for a core set of items on agricultural production and other variables determined by national statistical systems.

- The complete survey framework includes sample design, questionnaires, data collection methods, analysis and estimation. It also takes into consideration the data sources in addition to sample surveys that provide input into the survey framework.
- The integrated survey framework should be based on the minimum set of core and national data, and on the determination of how frequently the surveys are required.

1.30 Table3: Example of a replicated survey design

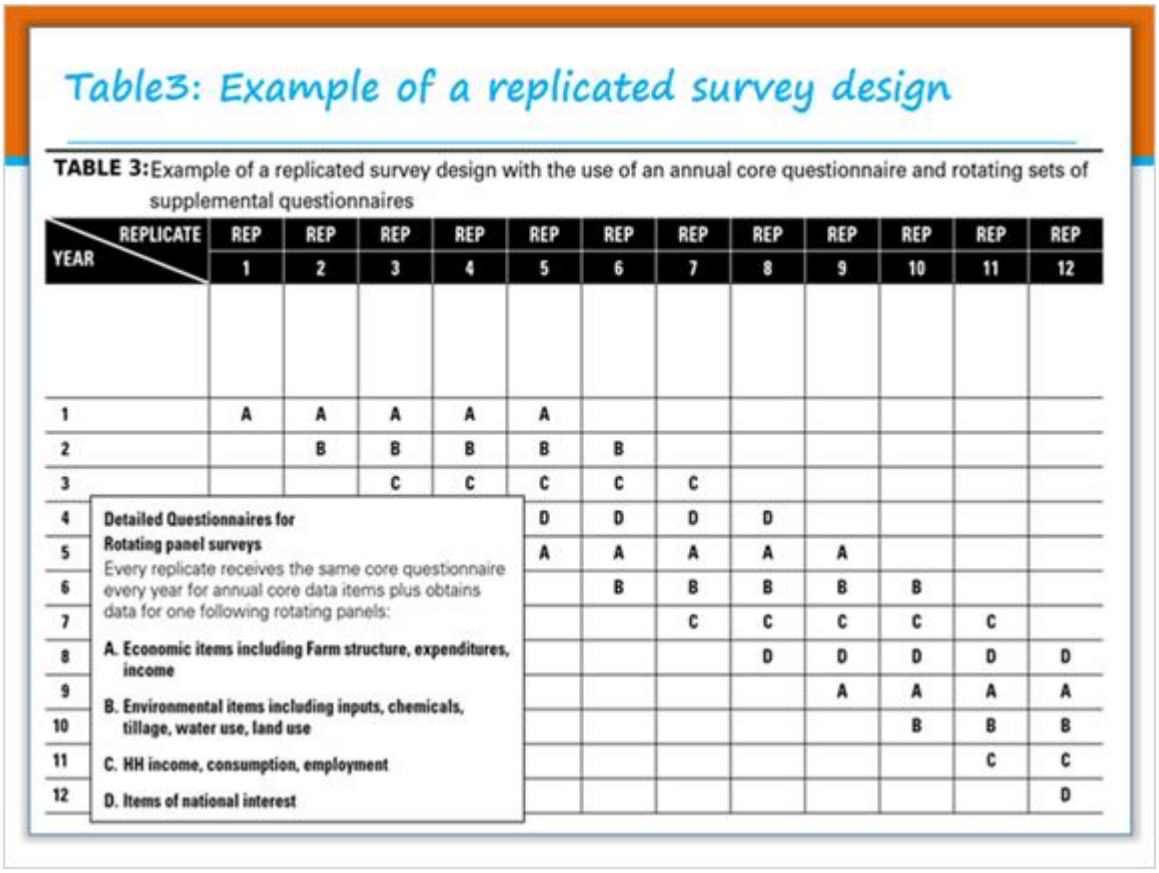


TABLE 3: Example of a replicated survey design with the use of an annual core questionnaire and rotating sets of supplemental questionnaires

YEAR \ REPLICATE	REP 1	REP 2	REP 3	REP 4	REP 5	REP 6	REP 7	REP 8	REP 9	REP 10	REP 11	REP 12
1	A	A	A	A	A							
2		B	B	B	B	B						
3			C	C	C	C	C					
4					D	D	D	D				
5					A	A	A	A	A			
6						B	B	B	B	B		
7							C	C	C	C	C	
8								D	D	D	D	D
9									A	A	A	A
10										B	B	B
11											C	C
12												D

Detailed Questionnaires for Rotating panel surveys

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

A. Ecooomic items including Farm structure, expenditures, income

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

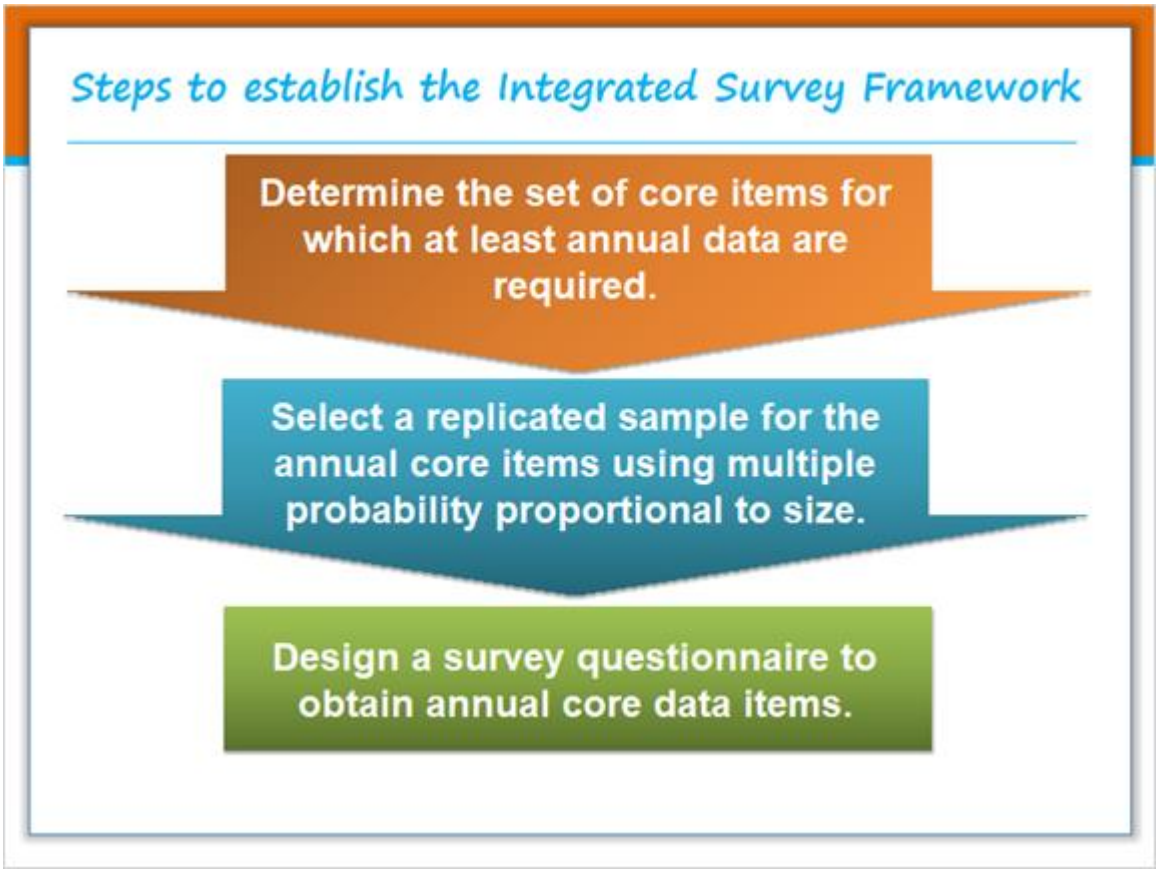
C. HH income, consumption, employment

D. Items of national interest

Notes:

(This table above shows an overview of a survey framework based on replicated samples that are surveyed each year for the annual core items.)

1.31 Steps to establish the Integrated Survey Framework



Notes:

This is the outline of the methodology to establish Integrated Survey Framework.

1.32 The 3rd Pillar

Notes:

Multiple government organizations are involved in data collection on agriculture, forestry and fisheries. Almost all nations require a statistical coordinating authority. The government organizes a national statistical system including sector ministries and other agencies provide the data. A coordination mechanism is required to ensure that different data producers adhere to a common set of standards. It ensures statistical integrity by making the data available and accessible. The organizations with overlapping data need to accept the master sample frame, integrated survey framework and database principles.

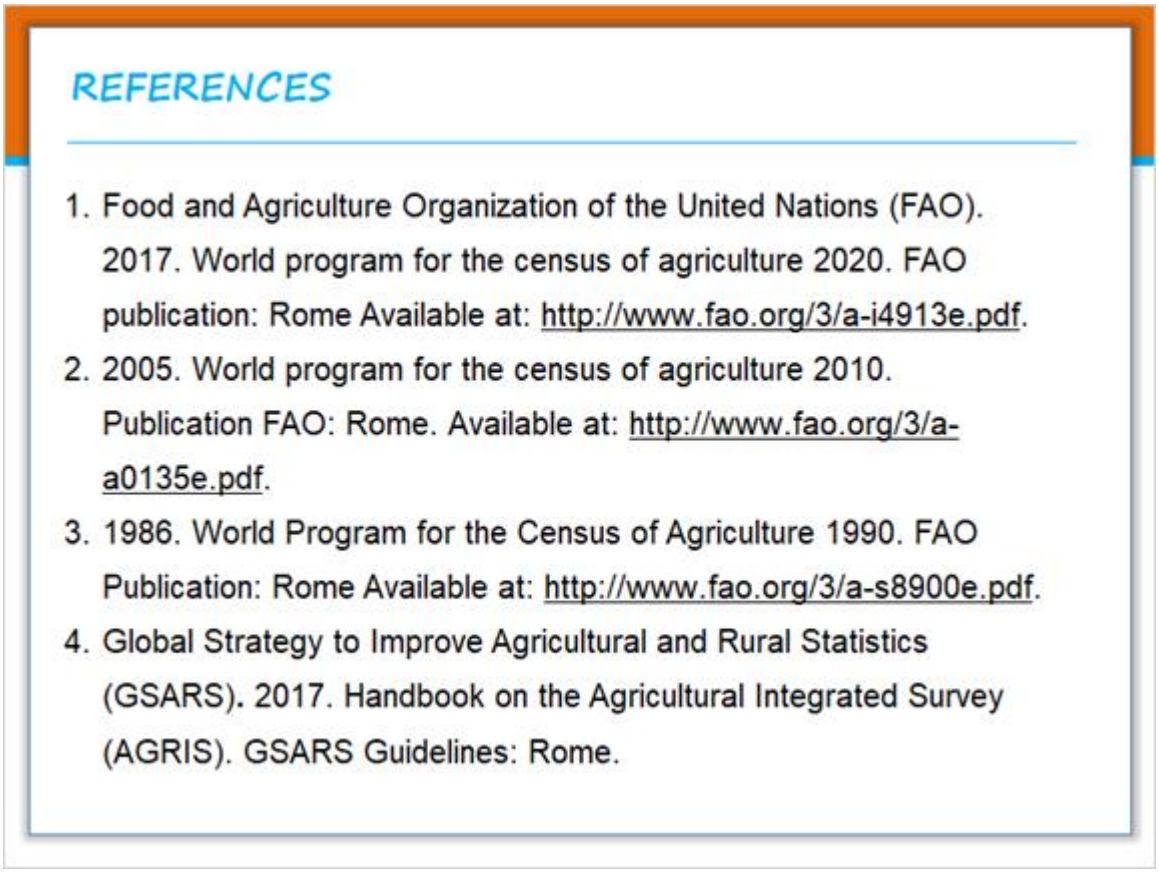
For international organizations, the integration of agriculture into the national statistical system has several implementations. The consolidation of data requirements between multiple international organizations would reduce the amount of overlap and minimize data reporting requirements. The country's national statistical system should prepare a national strategy for the development of statistics, identifying the respective roles of each organization.

They are also to work with FAO and other international organizations to prepare a detailed assessment of the current national capacity and prepare a framework for

statistical capacity building.

The statistical capacity building component of the implementation plan of the global strategy should take into account the quality of agriculture statistics as a function of their accuracy, relevance, timeliness, comparability, availability and accessibility.

1.33 REFERENCES



Notes:

FAO has published guidelines for development of a sample base fisheries survey to produce total catch of captured fisheries through landing & effort survey. The Global Strategy also develops guidelines for collecting socio - economic data of fishing households and communities by questionnaires. These questionnaires are enhanced with the population and agricultural census framework to capture detailed household & community small-scale fishery & aquaculture information.

1.34 End of Lesson

Notes: