Agricultural and Rural Statistics: Issues and Challenges

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Overview

- What is Agriculture?

- Why is it different?

- Emerging Issues

- Challenges

- Consequences of current situation

- Example of derivation of important statistics

- What next?

What is Agriculture?

- A Source of livelihood for a large proportion of people and food security
- An economic activity contributing to economic growth of the country
- Important for eliminating hunger and reducing rural poverty
- To collect agricultural statistics, we need more precise definition of agriculture
- In general parlance, it covers crops and livestock
- There are intrinsic linkages with other rural economic activities such as agro-forestry, fisheries at the household level which are difficult to segregate. Studying or collect data on them together makes sense.

Why is Agriculture different?

- In most developing countries
  - Agriculture is still a large proportion of GDP
  - There are large numbers of households involved in agricultural activities
  - Most farms are small and performance depends on decisions taken by millions of farmers unlike industrial sector
  - Agricultural production is unpredictable because of its heavy reliance on weather, particularly rain
  - Food shortages may lead to political unrest
- Nature of agricultural production is different due to
  - Seasonality, Geographic spread,
  - risks and uncertainty
  - Source of technical change (depend on research by Government agencies)
- Farm households both as producers and consumers

Some Important Statistics/Issues in Agriculture

- Undernourishment
  - In 2011-13 there were 530 million people in Asia suffering from undernourishment
  - Equates to 11.8% of the population (MDG target is 11.6% by 2015)
- Food price stability
  - The food price spike in mid-2008, and its devastating impact on the poor, amplified the need to reinvest in agriculture in developing countries
- Poverty Reduction
  - 2.5 billion people depend directly on agriculture
  - 1.5 billion live in small farm households (of which 85% <2ha)
  - 75% of poor are rural and the majority will be rural to about 2040
- Environmental sustainability
  - Agriculture uses 70-75% of fresh water resources
  - Agriculture uses 40% of land area
  - Agriculture generates 25-30% of greenhouse gas emissions

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Role of Statistical data in Policy Making

- **Without basic production data**, fundamental policy decisions are compromised
  - Food Security - can we feed our citizens?
  - How could food price crises be avoided?
  - Trade policy - what positions should be taken on imports/exports?
  - What policies lead to improved income from sales of crop and livestock?
  - Did farmers and agricultural households benefit from the food price spikes?
  - Are policies to increase agricultural productivity effective?
  - Do policies to protect the environment affect agricultural productivity?

Role of Statistical data….

- **Without connecting economic, social and environmental domains**, emerging policy decisions cannot be effective
  - How does growth in agricultural output affect poverty?
  - What factors contribute most to growth in rural household income—that from agriculture or non agricultural activities?
    - What is the distribution of economic activity by gender?
  - How do policies to increase crop and livestock production affect
    - The environment through deforestation, changes in water use and quality
    - Food security and poverty when products are diverted to Bio Fuels
  - What is the impact of deforestation on rural and agricultural household income?
  - How to absorb rural households into the economy as farms

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Role of Statistical data in policy making

- Important policy objectives may include:
  - Improved growth in agricultural production
  - Reduce Rural Poverty
  - Reducing dependency on imports or achieving self sufficiency
  - Providing employment to increasing population
  - Encouraging efficient use of natural resources
  - Stabilizing prices
  - Eliminating malnutrition
- How to decide on the data needs to support these objectives
  - Do we respond individually or collectively
  - Can we Identify and Classify issues (production, marketing, timescale)
  - Do we have data to analyze or answer these issues?

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Integrated assessment of Agriculture sector is necessary

- Diversity of domains, activities, stakeholders
  - Production, processing, distribution and utilization
  - Complex relationships between physical, biological, climatic, economic and social processes
  - A number of different stakeholders carry out these activities such as Governments, households, production units, markets and other agents
  - Each domain needs agricultural statistics specific to their activity at different level
  - Policy Changes in one domain impacts other domains

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Scope of Agriculture as per FAO Constitution

Article I – item 1

The Organization shall collect, analyse, interpret and disseminate information relating to nutrition, food and agriculture. In this Constitution, the term "agriculture" and its derivatives include fisheries, marine products, forestry and primary forestry products.

Article IX

all Member Nations and Associate Members shall also communicate regularly to the Director-General statistical, technical and other information published or otherwise issued by, or readily available to, the government.

Scope of Agriculture as per SNA

- Interpretations using ISIC (Rev 4)
  - Groups 011 to 015, comprising the two basic activities of production of crop products and production of animal products
  - Division 01 which also includes service activities incidental to agriculture, as well as hunting, trapping and related activities
  - Section A which also includes forestry and logging as well as fishing and aquaculture
- Relevant ISIC categories
  - A - Agriculture, forestry and fishing
    - 01 - Crop and animal production, hunting and related service activities
    - 02 - Forestry and logging
    - 03 - Fishing and aquaculture

Agriculture as per SNA

- ISIC, which was developed to help measure economic activity accurately, is a good starting point
- But an ISIC code is essentially allocated to economic units, what about subsistence households?
- Should we measure production from subsistence households?
  - From an overall economic point of view they are not always important as they generally only represent a small proportion of total production
  - From a humanitarian point of view these are the types of households which make up most of the 'poor'
- Thus, agriculture should be broadened to include all households engaged in agricultural activities

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Scope and coverage of Agriculture in Global Strategy

- Global Strategy further broadens the scope of agricultural statistics by covering
  - Crops and livestock
  - Forestry
  - Fisheries and aquaculture
  - Land and water use
  - Social, economic and environmental dimensions

  An integrated Agricultural Statistical System is needed to meet the scope and coverage.
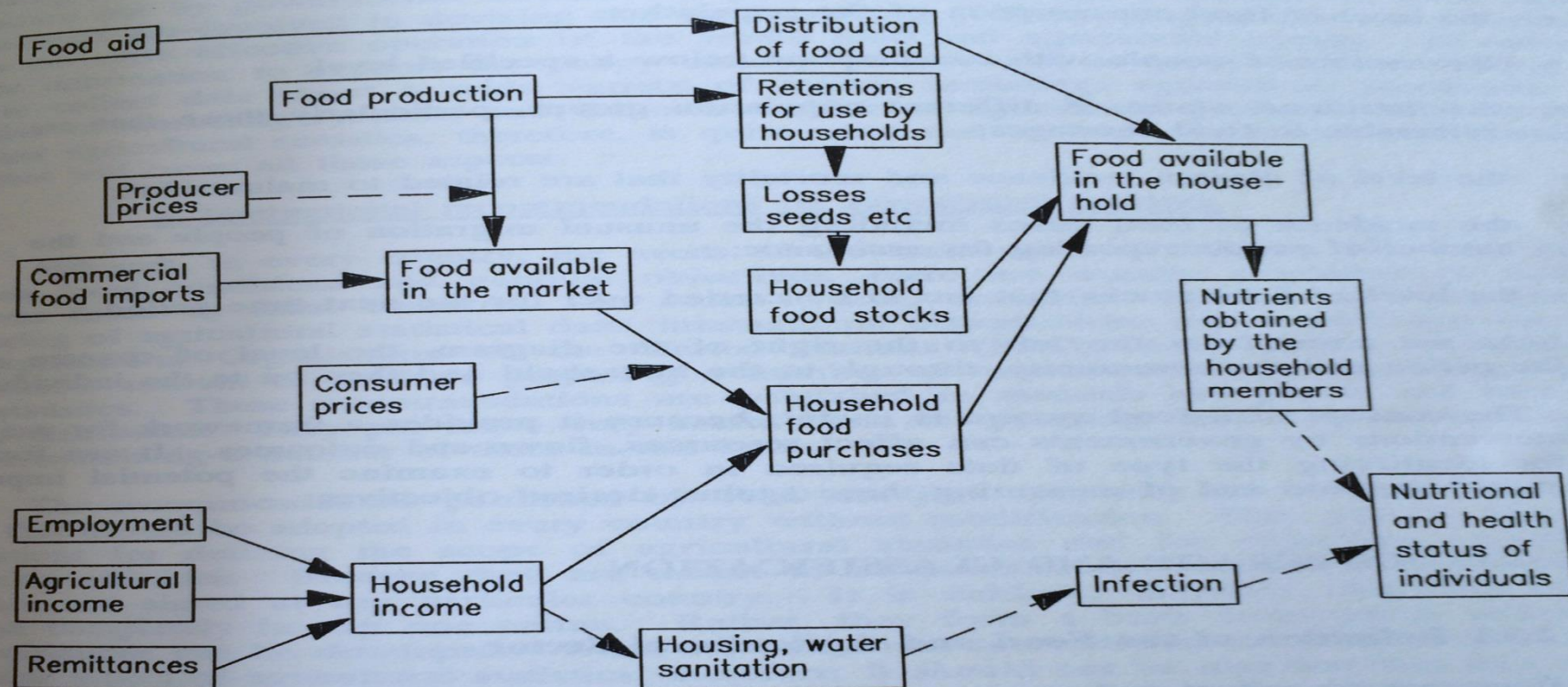
What is a system?

- Defining System
  - A collection of objects/processes/components which interact to perform a particular function
  - Three main components
    - Resources, flows and outcomes
  - Resources are used to generate flows
  - Flows taking place between different agents lead to different outcomes
  - System can be altered by modifying allocation of resources or influencing flows

A General Food System

Food aid → Distribution of food aid

Food production → Retentions for use by households

Producer prices

Commercial food imports → Food available in the market

Losses seeds etc

Household food stocks

Food available in the house-hold

Nutrients obtained by the household members

Consumer prices

Household food purchases

Employment

Agricultural income

Remittances → Household income

Housing, water sanitation

Infection

Nutritional and health status of individuals

Resource Indicators
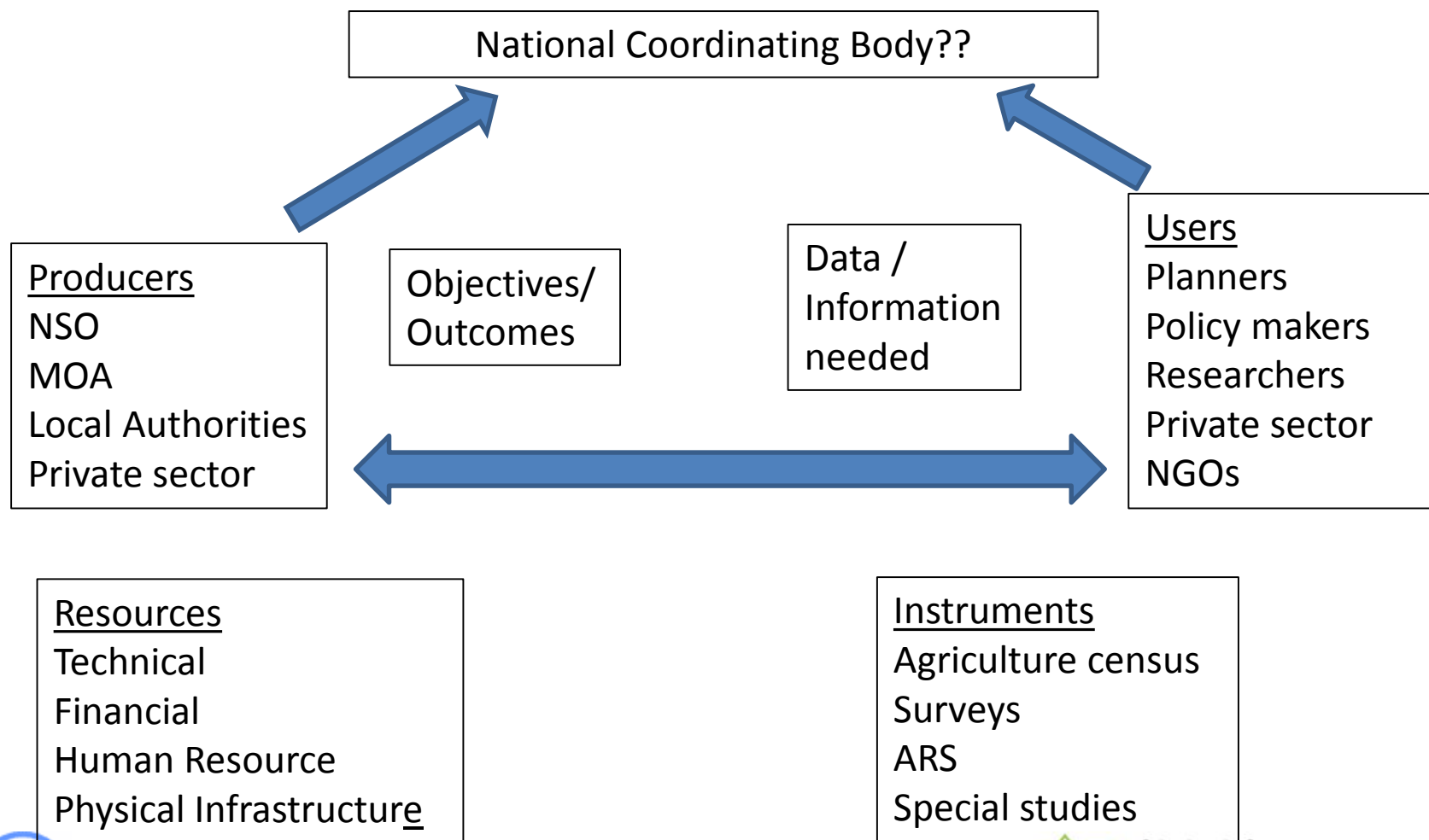Cultivable land
Area planted to crops
Rainfall
Labour availability
Access to markets and services
Population

→ Direct flows

--- ▶ Indirect flows

Outcome Indicators
Nutritional status of vulnerable groups
Morbidity and mortality
Incidence of food emergencies

Agricultural Statistical System

National Coordinating Body??

Producers
NSO
MOA
Local Authorities
Private sector

Objectives/
Outcomes

Data /
Information
needed

Users
Planners
Policy makers
Researchers
Private sector
NGOs

Resources
Technical
Financial
Human Resource
Physical Infrastructure

Instruments
Agriculture census
Surveys
ARS
Special studies

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Challenges of Agricultural Statistical System

- To maintain Quality and Availability of agriculture data
  - Results are not timely
    - Lack of timeliness of production data was a contributor to food price crisis
  - Data for key commodities like maize and cattle have high levels of imputation
    - Weakens food security, food balance sheets and other measures that rely on production data
  - Data sets are production oriented
    - No data on numbers of farms, agricultural households, rural households, and their characteristics
    - No capability to link the welfare of rural and agricultural households with agricultural production, and land use
- Integration of data
  - Help reduce duplication and waste of resources
  - Lead to more coherent data
- Meeting ever increasing data demands

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Example - Undernourishment

- One of the MDGs is to reduce the prevalence of undernourishment by half by 2015.

- Statistics are needed to monitor this measure
  - But measuring the number of undernourished people is a very complicated process, involving a large amount of statistical data
  - the following slides illustrate this complexity

Food Balance Sheets

- Food balance sheets (FBS) allow the calculation of food available for human consumption as well as selected nutrient equivalents on a per capita basis – this provides key data for estimating undernourishment

- FBS employ a supply use analysis framework, so **for each country and each food item** (commodity or processed item):

- Food available for human consumption = (production + imports + opening stocks) minus (exports + re-exports + usage as inputs for processed food + seed + feed + non-food usage + wastage + closing stocks)

- This then needs to be converted to nutrition availability through nutrient levels of food

- Already you can see that this involves a huge amount of data

Nutrient consumption

- The FBS give for each country a mean per capita nutrition intake

- The next step is to use a Household Consumption survey to estimate the distribution of consumption across the population.
  - Using this distribution, the proportion of the population below a certain level (minimum dietary energy requirement) can be calculated
  - This is the measure of the proportion of the population which is undernourished.

- You can see that this requires a vast amount of data and missing data or poor quality data in any of the components can have an impact on the final figure

Reference List for further reading

- SIAP "Statistics for Food and Agricultural Policy Analysis" a Manual for Statistical Trainers, Graham Eele, 1990

- FAO " Food and Agricultural Statistics in the Context of a National Information System" FAO Statistical Development series No 1 1986

- FAO Statistical Yearbook 2014

Thank You