Master Sampling Frame for Agriculture and Rural Statistics

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What are the strategic directions of the Global Strategy?

• Broadens Scope of Agricultural Statistics
  – Adds social and environmental dimensions
  – Includes aspects of rural households, forestry, fishery

• Translates policy into statistical language
  – Connects farm holding and rural households to the natural environment (land, other natural resources)

• Provides Conceptual Framework—three pillars
  – Minimum set of core
  – Integration of agriculture into national system
  – Sustainability through governance, capacity building
Integration of Agriculture into National Statistical System

• Coordinate data collections within and across sectors
  – Eliminate duplication of work, conflicting estimates

• To achieve integration:
  – Develop Master Sample Frame for agriculture
    • To provide basis for selection of probability sample of farms and households with capability of linking units across and beyond (environment)
  – Design samples, with overlapping/linked samples
  – Synchronize questionnaire design (thematic linkages e.g. SAE)
How do sample frames become a master sample frame?

• A master sample frame is constructed in such a way that:
  – Becomes survey basis for data collections for agricultural statistics for all providers in the national statistical system
  – Provides ways to connect households, farms, and land
  – Is made available to all institutions in national statistical system for data collection

• A means to coordinate data collections across sectors producing agricultural statistics

• Different options of frames to construct a master sample frame
Steps

1. In-depth assessment
   – Accounting of all agricultural statistics produced
   – Methodologies already in use for each relevant series of each organization involved
   – Review of administrative reporting systems and administrative data
   – Quality of census materials
     • EA maps (digitized?), Pop and Ag
   – Data needs not currently being met
Steps (cont’d)

2. Determine country set of core items
   – Content
   – Scope—level of detail
   – Coverage—entire country or major areas
   – Frequency
   – Data requirements across economic, social, environmental domains
Country set of core items

Top production - Ghana - 2010

Commodity

Production (Int $1000)

Production (MT)
Country set of core items

Top production - United Republic of Tanzania - 2010

Production (Int $1000) vs Production (MT) for various commodities such as Bananas, Indigenous Buffalo Meat, Maize, Beans, dry, Cow milk, whole, fresh, Cassava, Rice, paddy, Vegetables, mangoes, mangoes, etc.
Steps (cont’d)

3. Review country profile for core items
   – Distribution by farm size and type
     • Subsistence farms
     • Small holder (< 5-10 ha)
     • Commercial
   – Distribution across country

4. Review country infrastructure and its potential effects on data collection
   – Roads—telephones—literacy of farmers
Steps (cont’d)

5. Using set of core items and country profiles, develop:

– Guidelines to determine optimum type of frame(s) for different profiles—need for research

– Guidelines to determine sampling methods

  • Use of multi-stage cluster sampling vs single stage
  • Guidelines on linking reporting unit (household or farm) to the sampling unit (cluster, point, etc)
Examples of Sample Frames as Input to Master Frame

• Population Census enumeration areas
• Household registers from population census
• Agricultural census enumeration areas (same as pop census in many countries)
• Registers of farms from agricultural census
• Registers of farms based on administrative records
• Area Sample frames
• Multiple frames (combination of any of the above)
An example: how to begin

• Starting point is satellite imagery classified by land use
  – At country, regional level
• Geo-reference boundaries of Administrative areas—boundaries of cities, towns, villages, counties, townships, etc
• Geo-reference census enumeration areas
• Sample frames for farms, households, land
• Combine into multiple frames, if needed
Master Sample Frame

Digitized census enumeration areas

Satellite imagery classified by Land use

Digitized administrative areas

Farms & households pop census

Farms & households Ag census

Register of commercial farms

Area Frame

Multiple Frame
Land Use stratification - cropland, woodland, urban, etc
Area Frame—Geo-reference administrative areas—enum areas—etc
Area frame - Geo reference boundaries—land use—admin areas
Use Master Frame to connect environmental measures with economic and social dimensions

Landsat imagery
Vegetative Indices to monitor food production
Concluding remarks

• Construction of the master frame is a long-term initiative that has to be built in stages
• Stages will be country specific, but supported by technical assistance, training and research at regional and global level
• Strong country buy-in needed to ensure sustainable process and desired outcomes
Challenges—discussion points

• Capacity building
  – Need for research, technical assistance, and training materials

• Who does what
  – Global
  – Regional
  – National

• Stages of development
  – Simple area frame
  – Census EAs added to area frame
  – Create list of commercial farms, etc
The way forward

• Geo-reference everything—households, farms, enterprises during data collections
• Connect data sources
  – Survey-Administrative-remotely sensed
• Collect data continuously and connect
  – PDA’s, Cell’s, etc
  – Crowd sourcing
  – Vegetative Indexes

... but should all be part of clear strategy, with well-defined responsibilities and an adequate infrastructure for creating and maintaining master frame!