Technical Assistance in Agricultural Statistics, the Experience of Uganda

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BACKGROUND:

Geographic and Demographic Overview of Uganda

Uganda is a land-locked country in East Africa with a total surface area of 241,550.7 square kilometres (sq. km) of which 41,743.2 sq km are open water and swamps, and 199,807.4 sq km is land. The altitude above sea level ranges from 620 metres (Albert Nile) to 5,111 metres (Mountain Rwenzori peak). Temperatures range from 15 to 31 degrees celsius and rainfall is between 735 to 1863 millimetres per year.

The total population of the country is 31.8 million (2010 mid-year projection). The next Population and Housing Census is slated for 2012.

Importance of the agricultural sector in the Ugandan economy:

The agricultural sector is one of the most important sectors in the Ugandan economy. It contributes about 21 percent of the total Gross Domestic Product (GDP) in 2009 at current prices, and over 90 percent to total export earnings. It also provides 80 percent of employment and most industries and services in the country are based on it. Further, about 85 percent of the population live in the rural areas where they derive their livelihood from the agricultural sector.

Much of the agricultural production in Uganda takes place at household level mainly using household labour. Currently, there are about 4.2 million holders who carry out rain-fed agriculture and who on the average cultivate less than two (2) hectares mainly using hand-hoes, pangas and ploughs. It has been estimated that 80 percent and 60 percent of women and men respectively are employed in agriculture as their main activity.
The current situation of Agricultural Statistics in Uganda

The Agricultural Statistics System in Uganda is decentralized with a number of agencies involved in collecting various aspects of Food and Agricultural Statistics (FAS).

The main players include:-

- Uganda Bureau of Statistics
- Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)
  - Planning Department.
  - Directorates responsible for Crop and Animal Resources, and the Department of Fisheries Resources.
- A number of Semi-autonomous agencies under MAAIF that collect data mainly for their operations, which include:
  - Uganda Coffee Development Authority (UCDA).
  - Cotton Development Organization (CDO).
  - National Agricultural Research Organization (NARO).
  - National Agricultural Advisory Services (NAADS).
- Statistics Department (Bank of Uganda)
- Ministry of Tourism, Trade and Industry under the Marketing and Co-operation and Planning Departments.
- Department of Meteorology.
- Ministry of Health.
- Ministry of Local Government.
- Famine Early Warning Systems Network (FEWS NET).
- Ministry of Local Government.
- Uganda Export Promotion Board.
- Uganda Tea Growers Association.
- Sugar Plantation Association.
- Uganda Vanilla Association.

The statistics collected are on;

- Production of main cash crops.
- Area planted and production of major food crops.
- Rainfall statistics for selected centers.
- Land cover statistics by district.
- Area under land and under water by district.
- Population mid-year projections.
- Quantity and value of exports.
Some data is available only at National level, while some is at district and regional level. In the 2008 Livestock Census and Uganda Census of Agriculture 2008/09, most of the information is expected to be at district level.

3. Technical Assistance

3.1 The Need for Technical Assistance

Uganda like many developing countries has many needs in different fields like education, health, water and sanitation, mineral exploration and agriculture among others. Planners and policy makers need to make informed decisions and therefore require reliable and timely statistics. For agriculture, in spite of the fact that it is one of the most important sectors in many of the developing countries, the statistics on the sector is not reliable. This is because of a number of reasons:

- Absence of a culture of farm records keeping;
- Comparatively low literacy rates among the farming communities;
- A big proportion of subsistence production as opposed to producing for the market;
- Irregular shapes of crop plots;
- A multiplicity of Units of Quantities farmers use to measure their produce;
- Mixed cropping/intercropping;
- Continuous harvesting of some crops;
- Different conditions/states at harvesting even for individual crops;
- Inadequate and irregular funding for agricultural statistics programmes in a number of countries;

These reasons among others make agricultural statistics in many developing countries difficult to obtain. It is therefore imperative for these developing countries to seek Technical Assistance (TA).

3.2 Areas in which Uganda has had Technical Assistance (TA) in Agricultural Statistics:

Uganda has had a number of areas in agricultural statistics in which TA was delivered. A number of these areas are outlined below:

3.2.1 Use of the Global Positioning System (GPS) device: One of the most important and yet difficult variables on which to collect data in agricultural statistics, is agricultural land area. This could be under crops for livestock rearing, fish farming, pasture, forests, fallow etc. Data on area has been difficult to collect from farmers using Interview Method (considered subjective in this case). On the contrary, the Objective Method (OM) had
to be resorted to. It is worth-noting that this OM has evolved over the years as follows:

i) *Pacing* (rudimentary i.e. before refinement with the computation of Pacing Coefficients);

ii) Trumeter Wheel;

iii) Crop cutting; and, most recently,

iv) GPS device

Under the Support to Strengthen Agricultural Statistics Project (SSASP) funded by a grant form the Royal Kingdom of Norway, Uganda sought TA to re-engineer agricultural statistics under the *Framework for the Development of Agricultural Statistics in Uganda*. Under this funding, Statistics Norway sent a Long Term Advisor (LTA), who closely worked with staff of the Agricultural Statistics Section (ASS). By the end of the contract for the LTA, capacity had been built among the ASS staff. Because of this, Uganda has been at the forefront in the use of this modern technology that had enabled agricultural area to be measured with relative ease.

In the spirit of south-south co-operation, given the fact that Uganda had over the years developed the use of the Geographical Positioning System (GPS) device, a five-person delegation from Botswana, visited the country in November 2008. Members of the delegation came to Uganda to be exposed to the use of the Geographical Positioning System (GPS) device as they intended to adopt it in future for crop area measurement.

### 3.2.2. Scanning Technology (ST):

It is noted that almost all developed countries have experienced a major shift from conventional data capture method to ST. The major reasons for this shift are:

i) ST is extremely first;

ii) ST has no data entry errors although verification can be significant

Under the Support to Strengthen Agricultural Statistics Project (SSASP), Statistics Norway sent another consultant to Uganda who was able to carry out training on the job for the use of ST. It was used in data entry for the Permanent Agricultural Statistics System (PASS) in the period 2004 to 2007. Because of some challenges associated with the method however, it was not sustained at the time. Nevertheless, it planned to be used in the Population and Housing Census slated for 2012.
3.2.3 Trial Integrated Land Use Survey

The Trial Integrated Land Use Survey (TILUS) which was financed by Belgian Government through the Belgo-Uganda Study Fund, with administration by the Belgian Technical Cooperation (BTC). TILUS comprised a trial aerial census of agriculture and livestock in four districts of Uganda, that is Arua, Bundibugyo, Kabarole, and Sembabule.

Phase I was data gathering and training of airphoto interpreters. Data was gathered in October - November 2005 and was followed by a ground verification exercise in November – December 2005 in all the four districts. The purpose of the ground verification was to visit selected photosites, and interpret the crop and crop combinations on the site seen on the airphotos.

And Phase II involved the analysis of the data gathered in phase I, and the integration of the data with other environmental data into a landuse information system for the four districts. This was to Determine the complementarity and cost-effectiveness of systematic reconnaissance flights (SRF) techniques with existing conventional methods of agricultural statistics data collection and recommend ways in which aerial-based methods can complement ground surveys in implementing subsequent agricultural surveys and censuses.

3.2.4 GDDS Phase II

Under the General Data Dissemination System (GDDS) Project Phase II – Agricultural Module, which was undertaken over the period March 2007 to July 2009, Uganda received Technical Assistance in three areas:

3.2.4.1 Development of the Sample Design for the Agricultural Census.

The Mission was undertaken in March-April 2008. In this mission, a plan for drawing a sample for the Census of Agriculture was produced. The proposed sample design consisted of a dual frame design with a List Frame for the Private Large Scale and Institutional Farms and an Area Frame for the small and medium scale household-based holdings. The List Frame was enumerated on a 100 percent basis and a sample of households were be selected from the Area Frame using a two-stage sample design with sampling of Enumeration Areas (EAs) at the 1st stage and sampling of households from the selected EAs at the 2nd stage.

A backstopping mission on sample design was also provided by FAO in July 2008. This TA was timely and fitted well in the plans the Uganda Bureau of

3.2.4.2. Training on Food Balance Sheets

This was undertaken in December 2008. Three Seminars on the creation of food balance sheets were held with staff from Uganda Bureau of Statistics (UBOS) and Ministry of Agriculture, Animal Industry and Fisheries (MAAIF). Balance for seven commodities were prepared and notes on the preparation of the balances were produced. Issues affecting the quality of food balances and possible improvements were identified. This

3.4.2.3. Development of Producer Price Index (PPI) for Agriculture

This training was undertaken in January 2009 and drew participants from Uganda Bureau of Statistics (UBOS), Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) and Bank of Uganda (the Central Bank). In the training, methodology for producing a PPI was developed and used as the basis for training staff. It was recommended that the data to be used in developing the weights for the PPI was to be obtained from the Uganda Census of Agriculture 2008/09, whose results are expected towards the end of 2010.

Furthermore, in 2008, UBOS received other Technical Assistance on Agricultural Statistics from a number of sources. This was in preparation for the Uganda Census of Agriculture 2008/09. Missions were received from the Department for International Development (DFID) and Food and Agricultural Organization (FAO) on:

- Methodological Studies for Agricultural Data (Area and Production) (DFID), and
- The development of a proposal for the conduct of an agricultural census (FAO)

4. VIEWS ON HOW BEST TA CAN BE DELIVERED TO AFRICAN COUNTRIES IN THE FIELD OF AGRICULTURAL STATISTICS:

Many African countries require TA in agricultural statistics and will continue to do so in the short to medium term. There are many ways through which TA can be delivered to African countries and the impact can be quite substantial; such areas include but not limited to:
4.1 Identification of Critical Areas of need in Agricultural Statistics

Areas of great need such as GPS, sampling, methodological development, planning sample surveys and experimentation in Conversion Factors need to be greatly articulated so as to enable a given Consultant to concentrate on a specific area. Issues like the time frame, deliverables must be well spelt out in the project document.

4.2. Sending a Consultant to a recipient country

Usually a person with long experience in the field of agricultural statistics, in particular in the African setting will be required. If a person of the required African experience is not available in the donor countries, then such a skill can be obtained from a developing country if he/she exists. In this case the funding would be the only requirement from a donor country for the Consultant to come on board.

4.3 Calling the trainee(s) to a donor country

It is recognized that most if not all TA will come from the developed countries. Young statisticians in agricultural statistics, who are exposed to TA in their home countries, need to travel to the developed countries to appreciate the comparative advantages of the advanced/new technologies being practiced so as to internalize them, appreciate them more and eventually wholeheartedly embrace and adopt them.

4.4. Existing Censuses and Surveys

TA can be delivered to developing countries especially during conducting censuses and surveys. For example Food and Agriculture Organization of the United Nations (FAO) recommend that all member countries conduct a Census of Agriculture (CA) during the World Census of Agriculture (WCA) Programme. Preparation for a CA commences with planning and conducting a Population and Housing Census in order to include variables on agriculture that will enable construction of appropriate sampling frames. This is a unique opportunity for delivering TA because it will be put use immediately.

4.5 Sharing of findings of research/experimentation results:

It is important to note that research and experimentation on methodologies should be a continuous process since there is no static situation. Not many developing countries will likely (at least in the near future) have the expertise as well as the funding to carry out research and experimentation in critical areas in agricultural statistics. For the time being (unless there is joint
undertaking), technology development in agricultural statistics will be undertaken by the developed countries. Secondly, once results from such research and experimentation are obtained then there is need to disseminate them and share them with developing countries. The sharing can be done in a number of ways such as:

- Presentations during important fora like African Commission on Agricultural Statistics (AFCAS), International Statistical Institute (ISI) Conferences and International Conference on Agricultural Statistics (ICAS), among others.
- Holding of Regional Workshops/meetings;
- Preparation and dissemination of technical papers in agricultural statistics; and,
- Use of websites.