December 2013

منظمة الأغذية والزراعة للأمم المتحدة | 联合国粮食及农业组织 | Food and Agriculture Organization of the United Nations | Organisation des Nations Unies pour l'alimentation et l'agriculture | Organización de las Naciones Unidas para la Agricultura y la Alimentación

AFRICAN COMMISSION ON AGRICULTURAL STATISTICS

Twenty-third Session

Rabat, Morocco, 4 – 7 December 2013

RECENT ADVANCEMENTS IN LIVESTOCK STATISTICS

1. Introduction

Over the past 15 years the African continent has recorded unprecedented rates of economic growth. According to the Economic Report on Africa 2013, a joint publication of the African Union and the United Nations Commission for Africa, in 2010, 2011 and 2012 Africa recorded GDP growth rates of 4.6, 2.7 and 5.0 percent respectively, and growth rates are anticipated to remain over 5 percent in the coming years so that by 2030, African GDP will quadruple its 2010 level.

This growth has translated into an increased demand for high-value agricultural products, including meat, milk and other livestock products, which is expected to continue in the coming decades. FAO estimates that the market size for meat and milk in Africa increased by 66 and 61 percent over the past 15 years, respectively, and will reach about 21 and 57 million tons in 2030, an increase of about 98 and 77 percent, respectively, over 2005/07. As a consequence, the livestock sector, which currently accounts for almost 1/3 of the value added of African agriculture, will become one of the main, if not the largest, contributors to agriculture in the coming decades. By way of comparison, in industrialized countries, livestock accounts for between 50 and 60 percent of the agricultural value added.

To ensure sustained growth in the sector which contributes to economic development and poverty reduction, decision makers need accurate statistics, including information on animal population and its growth rate; trends in livestock production and productivity; the role of livestock in households (about 60 percent of rural households in Africa are estimated to keep some farm animal); the interface between livestock and the environment; outbreaks of animal diseases, including zoonoses, which along with animal borne food diseases affect global public health; the contribution of livestock to the rural non-farm economy; and other.

Information and statistics on livestock, however, are often inadequate for reasons that go beyond sampling and non-sampling errors. Data on agriculture usually targets staple crops, and only marginally livestock. This focus on staples arises from the fact that agricultural development and

food security have been long associated with increases in staple productivity, in spite of animals being a widely owned asset among rural households and emerging opportunities for market-driven livestock growth.

The Global Strategy to Improve Agricultural and Rural Statistics represents an unprecedented opportunity to ensure that improvements in the agricultural statistical system adequately take into account the information needs of livestock stakeholders. In fact, the Global Strategy differentiates crops and livestock as two sub-sectors of agriculture.

This paper presents three recommendations to improve the quantity and quality of livestock data and statistics available to decision makers, which target:

- Animal health and disease-related data, which should be considered for inclusion among the core data on agriculture identified by the Global Strategy.

- Livestock technical conversion factors, the estimation of which is critical to generate accurate livestock statistics as identified by the Global Strategy, including production levels and livestock value-added.

- The implementation of specialized livestock surveys as one of the periodic surveys recommended under the integrated survey framework of the Global Strategy.

The recommendations presented here draw on data-related work undertaken by major suppliers and users of livestock statistics in African countries, notably, the national statistical authorities and the ministries responsible for livestock development in Niger, Tanzania and Uganda. Their collaborative activities were facilitated by the Livestock Data Innovation in Africa Project, a joint initiative of FAO, the International Livestock Research Institute (ILRI), the World Bank, and the African Union - Interafrican Bureau for Animal Resources (AU-IBAR). As such, the proposed recommendations target selected issues on livestock data and statistics, among the many which deserve attention, and represent the vision of several country governments and international partners. AFCAS members are requested to comment and deliberate on them.

2. Animal health- and disease-related data

The first pillar of the Global Strategy is "*the establishment of a core set of data the countries need to collect to meet current and emerging demands*" as "*core data provide inputs into the national accounts and global balances of supply and demand for food and other agricultural products*." The Global Strategy presents a list of core data and recommends:

> "*... each country needs to select which items to include in its national system. It must add other items relevant to its economy and determine how frequently data will be provided and the scope of the national coverage required*".

Regarding livestock, the Global Strategy recommends that countries collect data on five major items, including cattle, sheep, pigs, goats, and poultry, and on:

- Inventory and annual birth;
- Production of products such as meat, milk, eggs and wool, and net trade of imports and exports; *and*
- Producer and consumer prices.

The country governments of Tanzania and Uganda examined the proposed core livestock data vis-à-vis the core indicators regularly needed by the Ministry responsible for livestock and the National Statistical Authority to fulfil their mandates. They concluded that the core livestock data should be expanded to include some animal health- and disease-related data.

- Livestock diseases influence livestock production, and are the cause of major swings in production and trade pattern. Indeed, the agricultural statistical system – including agricultural censuses, sample surveys and administrative records – already collects data on animal health and diseases.

- The Ministry responsible for livestock allocates the largest share of its resources to control and manage animal diseases. Including information on the latter among the core data will provide incentives to the Ministry to fully contribute to the improvement of the national statistical system, thereby supporting its governance (pillar 3 of the Global Strategy).

- The Ministry responsible for livestock does often manages a stand-alone system of livestock data collection (administrative records), targeting mainly information on animal diseases, but also on other livestock-related variables, such as animal population and production levels.

- International obligations require that country governments submit monthly, bi-annual, and annual animal health/disease reports to the World Organization for Animal Health (OIE), – the reference organization to WTO with respect to trans-boundary animal diseases (TADs); – to the Africa Union Interafrican Bureau for Animal Resources (AU-IBAR); and to some Regional Economic Communities (RECs).

- Livestock value-added is one of the statistical indicators that the Global Strategy recommends country governments to regularly produce (table 1, annex A). Estimation of livestock value value-added requires data on outputs and inputs, including not only feed, – as indicated by the Global Strategy (table 1, p.16), – but also on animal health, such as on cost of vaccination and deworming.

Given the above, AFCAS members are invited to consider whether the following data on animal health and diseases should be collected as part of the national statistical system.

- Data on outbreaks of major animal diseases, notably on major notifiable terrestrial animal diseases as identified by the World Organization for Animal Health.

- Data on animal-health related inputs, including, at a minimum, data on vaccination, including cost, against major animal diseases.

The proposed data are essential not only for the Ministry responsible of livestock to design and effectively implement and invest in animal health policies and investments, for which animal vaccination is a key component, but also for accurate estimates of livestock production and livestock value value-added.

3. Livestock technical conversion factors

The Global Strategy identifies livestock production as one of the core data elements a country should regularly collect. Quantifying livestock production is challenging, particularly in traditional

farming systems, which account for the largest share of animal numbers in most developing countries. Livestock are born, transported, sold for a variety of reasons and are slaughtered, either informally or in abattoirs, or die of natural causes. Animals produce multiple outputs, such as meat, manure, hides and skins, some of which are notably difficult to measure, such as manure. Quantifying embedded production, i.e. changes in animal weight over the reference period, using traditional survey methods is challenging, if not impossible. In general, a major challenge in quantifying livestock production in traditional farming systems is that survey respondents are unable to provide accurate answers to questions such as the following:

- How much milk per day did your cows produce in the last month or the last lactating period?
- What was the average carcass weight (meat content) of the cattle you slaughtered in the last six months?
- How many eggs did your hens lay in the last three months?

Statistical authorities are aware of these difficulties and, therefore, make use of so-called Technical Conversion Factors (TCFs) to estimate livestock production. These are coefficients that convert a (easily measured) livestock variable into a different unit of measure, using limited information. For example:

- Milk yield per cow per day TFC allows estimation of milk production using only information on the number of milking cows in the country;
- Carcass weight TCF allows estimation of meat production using only information on the number of animals slaughtered;
- Eggs per laying hen per clutching period TCF allows estimation of egg production using only information on the number of laying hens in the country.

The TCFs used by national statistical authorities, however, are rarely estimated based on a nationally representative sample. Instead, they are often based on expert opinion, grey literature, or from TCFs of neighbouring countries. Furthermore, they are infrequently, if ever, updated. The consequence is that most trends in livestock production accounted for in official statistics are explained by changes in the underlying livestock population (e.g. more milking cows) and not by changes in livestock productivity (e.g. more milk per cow). In practice, this means that the full impact of sector policies and investments undertaken by the Ministry responsible for livestock is not reflected in official statistics, including the national accounts.

Estimating TCFs is not complex. It requires the identification of a representative sample of enumeration units and the physical quantification of production levels at each unit for a certain time period. The latter involves the use of some measurement tool, such as a transparent plastic container with measurement ticks for quantifying daily milk production, or a scale/ carcass weigher to measure meat production for any slaughtered cattle. Recent experience from Tanzania indicates the following: a) a stratified sampling approach supports appropriate targeting and reduces data collection costs; b) seasonality in livestock production calls for collecting data across different seasons; c) data should be collected on a daily basis for two or more weeks in a row in order to arrive at proper production estimates; *and* d) basic measuring equipment suffices to accurately quantify production level of meat, milk and eggs.

Given the above, AFCAS members are invited to consider:

- Allocating resources to regularly update key livestock TCFs so that increases in livestock productivity are properly captured in official statistics. These should comprise, at a minimum, milk yield per animal, meat per carcass (carcass weight), and eggs per laying bird, but other TCFs could also be considered, such as manure per animal and fat/offals per carcass.

- Investigating whether the data collected through regular surveys and administrative records can be used to accurately estimate livestock technical conversion factors. If not, countries should explore ways to improve existing survey questionnaires to also collect good quality data on production, including through physically measuring livestock production in a sub-sample of farm households (such as in crop-cutting surveys for yield estimation).

- Supporting harmonization of methods for calculating TCFs.

4. Periodic Livestock Surveys

The Global Strategy suggests that country governments implement an integrated survey framework whose central element is the development of a common master sample frame. The implementation of such a framework involves annual collection of core agricultural data and administration of periodic surveys at regular year intervals (rotating panels) to obtain detailed information on selected agricultural sub-sectors. Basic information on the livestock sector will be thus collected in the annual survey, while detailed information could be obtained through implementing a specialized livestock survey at regular year intervals.

Since 2010, the country governments of Niger, Tanzania and Uganda have collaborated with the FAO, the World Bank, the International Livestock Research Institute (ILRI) and the Africa Union (Interafrican Bureau for Animal Resources, or AU-IBAR) to draft a comprehensive household-level questionnaire aimed at collecting information on traditional livestock farming systems. The questionnaire can be implemented on its own, or included in agricultural surveys, multi-topic household surveys and other relevant surveys.

In particular, three livestock questionnaires were developed including a short, a standard and an expanded version, which provide guidance for the adequate collection of data on livestock at household level. The three versions vary by size, but all target information on three domains, including animal ownership, livestock inputs (i.e. husbandry practices), and livestock outputs (Table 1). They have four common overarching goals:

- Generate basic statistics on livestock production practices.
- Measure the cash and in-kind production from livestock.
- Measure the value of household's livestock, which are an important economic asset.
- Model household's livestock-related decisions.

The governments of Niger, Tanzania and Uganda adopted and adapted the standard version of the livestock questionnaire to improve the survey questionnaires of integrated household surveys implemented in 2011 in Niger, in 2011/12 in Uganda, and in 2012/13 in Tanzania. The data collected are anticipated to provide an unprecedented picture of the smallholder livestock sector in the countries. For example, nationally representative indicators could be generated for the first time on the number and share of households keeping exotic breeds of livestock or using their animals for

transport. In addition, data analysis could generate a better understanding of the role of livestock in the household economy which is an essential piece of information to design appropriate sector policies and investments.

Table 1. Content of the livestock survey questionnaire

Livestock Domain	Sections	Remarks
Livestock ownership	Number of animals Change in stock in past 12 months	Questions are asked for individual animals, often differentiated by age, gender and breeds (local/ indigenous and improved/ exotic), which helps to appreciate herd structure and inter-species composition.
Inputs and husbandry practices	Breeding Feeding Watering Animal health Housing	Questions are asked for major groups of animals (e.g. large ruminants, small ruminants, pigs, poultry birds, equines, other), as management practices usually do not differ between animals of the same species
Monetary and non monetary outputs	Meat production Egg production Milk production Animal power Dung	Questions are asked for major groups of animals including both the monetary and non-monetary value of production

AFCAS members are invited to consider:

- Making use of available livestock questionnaire(s) – and in particular the short version – when drafting the livestock content of agricultural-related surveys, such as the agricultural census questionnaire or the questionnaire of the annual agricultural survey recommended by the Global Strategy. This will ensure that basic and consistent information on livestock are adequately captured in national surveys.

- Making use of the standard or expanded version of the livestock questionnaire to design and implement a specialized livestock survey, as one of the periodic surveys suggested by the Global Strategy as part of the integrated survey framework. The implementation of a specialized livestock survey will provide country governments with key yet often missing information on the livestock sector.

- Given the vulnerability of livestock to the impact of disasters, such as drought or disease and the critical importance of one time shocks to the longer term evolution of herds, shortened versions of the livestock questionnaire could be adapted and implemented in the aftermath of a disaster, thus allowing governments to better support emergency responses and support sector planning and investment.

5. Conclusion and points for discussion

Livestock is one of the main sub-sectors of agriculture and, in the coming decades, expected to become one of the largest, if not the largest, contributor to agricultural value-added in sub-Saharan African countries. Accurate statistics on livestock are essential to design and implement proper sector policies and investments, and to monitor sector trends. The sector, however, has been so far given little priority in the national agricultural statistical system and there is a consensus among

both livestock officials and national statistical authorities that methods for collecting livestock data need to be improved and harmonized across countries.

This paper presents three recommendations on ways to improve the quantity and quality of livestock data and statistics available to decision makers. These recommendations, based on experiences in Niger, Tanzania and Uganda, target three domains, including: animal health- and disease-related indicators; livestock technical conversion factors; periodic livestock surveys.

AFCAS members are asked to express their views on:

1. Including animal health- and disease-related data among the core data of the national statistical system. The inclusion of such data will support the sustainability of the agricultural statistical system, given the major role that animal health/disease indicators play for the Ministry responsible for livestock. It will also contribute to better estimates of livestock production and livestock value added.

2. Regularly updating livestock technical conversion factors, including through ad hoc data collection and/or agricultural and specialized livestock surveys. This is essential to ensure that official statistics fully capture sector dynamics, and to properly quantify the impact on the ground of livestock sector policies and investments.

3. Implementing a specialized livestock survey at household level as one of the periodic/rotational surveys to be administered in the context of the implementation of the integrated survey framework of the Global Strategy. Questionnaires are available, on which countries can rely upon to draft their specialized livestock survey, the implementation of which is critical to collect key yet often missing information on the livestock sector.

The above recommendations are, on their own, insufficient to definitely improve the quantity and quality of livestock data available to decision makers and several others need investigation, such as estimating animal population in settled, semi-nomadic and nomadic systems and modelling population growth; enhancing the quality of survey questionnaires to better capture information on feed availability and use, as well as on labour allocated to raising animals; developing methods to estimate a wider set of technical conversion factors, such as manure production, and other. In any case, in view of the complexity of livestock and mobility aspects of animal systems, the crucial importance of pan-African and regional cooperation in improving livestock statistics cannot be overstated, including efforts to improve and harmonize methods of collecting, processing, analysing and disseminating livestock data and indicators.