



THE REPUBLIC OF UGANDA

Proceedings of a MAAIF-UBOS Workshop on

Improving Livestock Data: Core Livestock Indicators

Kampala, Africana Hotel, 31 May 2012



Sponsored by the World Bank-FAO-ILRI-AU-IBAR Livestock Data Innovation in Africa Project



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Executive summary

The Uganda Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) and the Uganda Bureau of Statistics (UBOS) co-organized a one-day workshop on ‘Core Livestock Indicators’ on 31 May 2012, in Kampala. The objectives of the workshop were to:

- ✓ discuss and agree upon a set of core livestock indicators recurrently needed by MAAIF and UBOS, the two major livestock data stakeholders in the country, and;
- ✓ Reach a consensus on which livestock indicators the agricultural statistical system should produce regularly.

About 45 participants attended the workshop, joining together representatives from both the public and the private sector, including the Interafrican Bureau for Animal Resources of the African Union (AU-IBAR) and various research institutions. Following a series of presentations and plenary discussions, participants agreed on a core set of livestock-related indicators for Uganda which both MAAIF and UBOS agreed are critical for national planning and investment.

Uganda: agreed upon core livestock indicators

Core livestock indicators	UBOS	MAAIF
Livestock inventory	X	X
No. of animal slaughtered (<i>off-take</i>)	X	X
Production-related indicators (<i>meat, milk, eggs, etc.</i>)	X	X
Trade-related indicators	X	X
Price-related indicators	X	
Animal disease-related indicators		X
Staff and resources available in livestock		X

X=collection of the indicator by institution.

The identified core indicators represent the foundation upon which to start improving the system of livestock data collection, as recommended by the Global Strategy to Improve Agricultural and Rural Statistics. The priority of MAAIF and UBOS, the two major livestock data stakeholders in the country, is firstly to fulfill their mandate to produce selected quality statistics; only then can they invest resources to collect / produce additional livestock data and indicators, as demanded by other stakeholders.

Meeting participants agreed with this priority and also recognized that the Animal Resources Information System (ARIS 2) of AU-IBAR represents an appropriate information data platform for livestock data and indicators. ARIS 2 is a multi-topic livestock information system, which allows the integration of livestock population and production data with animal health and other livestock-related information, a pre-condition for designing/implementing effective sector investments.

The workshop represented the first step in a series of joint MAAIF-UBOS activities outlined in a unique inter-agency Memorandum of Understanding (MoU) which reinforces MAAIF-UBOS collaboration in the identification of core indicators, the review and harmonization of processes for collection, and furthers good data collection, analysis, and dissemination systems. The ultimate objective of the MoU is to provide recommendations on how to improve systems of livestock data collection to ensure the generation of quality and timely core livestock indicators.

1. Objectives and rationale for a workshop on core livestock indicators

The Uganda Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) and the Uganda Bureau of Statistics (UBOS) jointly organized, on 31 May 2012, a workshop on Core Livestock Indicators. The workshop was sponsored by the FAO-WB-ILRI-AU-IBAR Livestock Data Innovation in Africa Project and attended by about 45 participants in representation of the public sector, the private sector and the civil society, thus allowing effective dialogue among stakeholders on priority core indicators.

The objectives of the workshop were to discuss and agree upon a core set of livestock indicators concurrently needed by both MAAIF and UBOS, the two major livestock data stakeholders in the country. Over the course of the workshop, core livestock indicators were defined as those that MAAIF and UBOS need on a regular basis to properly fulfill their mandate, e.g. those indicators which are essential to deliver their core outputs.

The objectives of the workshop are consistent with Pillar 1 of the Global Strategy to Improve Agricultural and Rural Statistics, e.g. *‘Identifying a minimum set of core data’* which should be regularly collected by country governments and *‘provide the beginning point for the improvement of agricultural and rural statistics’*. They are also in line with Pillar 3 of the Global Strategy *‘Sustainability of Agricultural Statistics’*, which stresses that any sustainable agricultural statistical system builds on effective cooperation and collaboration between different stakeholders, *‘especially the national statistical institutes and ministries of agriculture’*.

The workshop on core livestock indicators is the first of a series of activities to be jointly implemented by MAAIF and UBOS, as per a Memorandum of Understanding (MoU) agreed upon in the second quarter of 2012. The MoU, which is supported by the FAO-World Bank-ILRI-AU-IBAR Livestock Data Innovation in Africa Project, includes three components:

1. The identification of and an agreement on Uganda core livestock indicators.
2. Analysis of available data – including the UBOS National Panel Survey and routine data collected by Local Governments and used by MAAIF – to assess which core indicators can be already generated, and of what quality, and to draw recommendations on how to improve systems of livestock data collection for the core indicators to be regularly produced and to improve their quality.
3. A workshop during which the core livestock indicators and recommendations to improve systems of livestock data collection, within the context of the overall agricultural statistics system, are presented to national stakeholders and donors.

2. Structure of the workshop

The MAAIF-UBOS workshop on core livestock indicators consisted of four sessions.

The **opening and introductory session** was chaired by Mr. J. Male-Mukasa, UBOS Executive Director, who officially opened the meeting, welcomed participants and highlighted the importance of ensuring institutional collaboration in the production of high quality agricultural data. It included welcoming and an opening remarks by Dr. N. Kauta, Director, Animal Resources, MAAIF, and by Dr. A. Jallow, FAO Representative, who delegated Mr. C. Owach, Assistant FAO Representative. The session was closed by Dr. I.G. Ahmed, from the Africa Union – Interafrican Bureau for Animal Resources (AU-IBAR), who provided an overview presentation on: ‘Core indicators in context: The Global Strategy to Improve Agricultural and Rural Statistics and the Animal Resources Information System (ARIS 2) of the African Union’ (box 1).

The second session focused on **identifying core livestock indicators**, chaired by Dr. C. S Rutebarika (Assistant Commissioner, Disease Control, MAAIF), who delegated Dr. C. Aisu. It consisted of three presentations. Dr. J. Sserugga (MAAIF) and Mr. P. Okello (UBOS) reviewed their respective institutional approaches and priorities toward the collection of selected core livestock indicators. Dr. U. Pica-Ciamarra (FAO), in a presentation jointly prepared with Dr. S. Nouala (AU-IBAR) and Dr. P. Irungu (University of Nairobi), reviewed core livestock indicators critical for the CAADP Compacts, and for policy making more in general. A discussion followed the presentations.

Mr. S. Mayinza, UBOS Director of Agricultural and Environmental Statistics chaired the third session, which focused on **building consensus around core livestock indicators**. The session featured two presentations. Ms. N. Morgan (FAO-World Bank) provided a summary and identified commonalities between the core indicators needed by MAAIF and UBOS to fulfill their respective mandates. Dr. I.G. Ahmed (AU-IBAR) gave a demo of the Animal Resources Information System (ARIS 2) of AU-IBAR. Following the presentations, a consensus was achieved on the core livestock indicators which, at least initially, should be generated on a regular basis by the national agricultural statistical system.

The final session on **the way forward** was chaired by N. Morgan, FAO liaison to the World Bank. It featured a joint presentation by J. Sserugga (MAAIF) and P. Okello (UBOS) on coming MAAIF-UBOS collaborative activities as outlined in a Memorandum of Understanding (MoU) agreed upon by the two institutions. The workshop was closed by Dr. N. Kauta, who delegated Dr. R. Khaukha, MAAIF Assistant Commissioner M&E, to provide the concluding remarks.

See appendix 1 for the agenda. Presentations are available for download at <http://www.africallivestockdata.org/afrlivestock/content/presentations>

BOX 1 - Core indicators in context: The Global Strategy to Improve Agricultural and Rural Statistics and the Animal Resources Information System (ARIS 2) of the African Union

By Ibrahim Gashash Ahmed, AU-IBAR

There is agreement that Ugandan stakeholders are dissatisfied with the quality and quantity of available livestock data. For example, the major rise in estimates of the cattle inventory following the livestock census – from 7.5 million in 2005/06 to about 11.4 million in 2008 – and the constant 3 percent annual growth rate attributed to the livestock population over the last few years, suggest that some improvements in systems of livestock data collection and data quality are needed.

There are currently two major pan-African initiatives which aim at improving the quantity and quality of livestock data and indicators available to decision makers.

- ✓ The **Global Strategy to Improve Agricultural and Rural Statistics**, endorsed by the United Nations in 2010, aims to assist country governments in establishing sustainable statistical systems, which produce accurate and reliable agricultural and rural data over time and across space. The Global Strategy is structured around three pillars: 1) the establishment of a minimum set of core data that country governments should collect; 2) the integration of agriculture into the national statistical systems; and, 3) governance and statistical capacity building.
- ✓ The second initiative is the **Animal Resources Information System (ARIS 2)** of the African Union – Inter-African Bureau for Animal Resources (AU-IBAR). In 2010, Ministers responsible for Animal Resources in Africa urged IBAR to rollout out this system throughout Africa. ARIS 2 is an information system aimed at enhancing the capacities of the RECs and member States to collate and analyze animal resources data in a timely manner; it is web-based and built on an open source software. With respect to standard animal health information system, it covers not only animal health but also production, marketing, trade, fisheries & wildlife. It is inter-operable and flexible, allowing countries to effectively tailor ARIS 2 to their needs and systems of data collection.

The Global Strategy, its Action Plan for Africa and ARIS 2 provide unprecedented opportunities for African countries to improve the quantity and quality of livestock data and indicators available to decision makers.

3. Core livestock indicators: MAAIF, UBOS and CAADP perspectives

Core livestock indicators in the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)

By Joseph Sserugga, MAAIF

The Ministry of Agriculture, Animal Industry and Fisheries is mandated to ‘*support sustainable animal disease and vector control, market oriented animal production, food quality and safety; for improved food security and household incomes*’. Its structure consists of two Directorates, one for Crop Resources and one for Animal Resources, of two stand alone Departments, i.e. that of Planning and that of Finance and Administration, along with a number of semi-autonomous agencies.

In fulfilling its mandate, the Animal Resources Department of MAAIF collects and makes use of a variety of livestock-related data and indicators. Of those, however, only a few are regularly needed for MAAIF to properly provide its major services and comply with international obligations. These indicators populate the regular outputs produced by MAAIF, including:

1. Immediate notifications to policy makers and the World Organization for Animal Health (OIE);
2. Monthly reports of animal health data to the African Union - Interafrican Bureau for Animal Resources (AU-IBAR) and to the East African Community (EAC);
3. Quarterly reports to policy makers;
4. Semestral and Annual Report to OIE;
5. The MAAIF Annual Statistical Abstract.

The tables included in Annex 3 provide a summary of the major indicators compiled to provide the above outputs, including details on level of disaggregation, frequency of data collection and timing of reporting. Table 1 below presents a summary of MAAIF core livestock indicators.

Table 1. MAAIF core livestock indicators

Indicators	Level of disaggregation	Frequency
Livestock population • no. of live animals by species	district, national	monthly, quarterly, annually
Animal health and disease • number of disease outbreaks; • no. of animals (by species, age group and sex) affected; • no. of animals at risk;	district, national, by farming system	monthly, quarterly, annually, irregularly (within 48 hours of outbreaks)

<ul style="list-style-type: none"> • no of animals dead; • no. of animals destroyed; • no. of animals slaughtered 		
Staff, vehicles and other equipment for livestock <ul style="list-style-type: none"> • no. of vet officers by grade; • no of vehicles and status; • no. of other equipment (e.g bicycles, computers, etc.) and status 	district	monthly, quarterly, annually
Livestock marketing <ul style="list-style-type: none"> • no of animals offered / sold by species in markets; • highest, lowest and average market price 	district	quarterly
Livestock value added <ul style="list-style-type: none"> • value in shillings; • proportional contribution to GDP 	country	annually
Production <ul style="list-style-type: none"> • Quantity of meat; • Quantity of milk; • Quantity of eggs 	country	annually
Exports and imports <ul style="list-style-type: none"> • No of live animals; • Meat (quantity and value); • Milk and dairy products (quantity and value); • Hides & skins (quantity and value) 	country	annually

MAAIF makes regular use of a variety of indicators on livestock population and on animal health and disease. The latter are necessary to monitor and control epidemic and zoonotic diseases, e.g. to identify animals susceptible to selected diseases and intervene as rapidly as possible in case of outbreaks. At the same time, MAAIF needs regular information on available human and physical resources, which is essential to properly plan field-level interventions. Some indicators are also needed to monitor livestock sector trends: these are summarized in the MAAIF Annual Statistical Abstract.

The main sources of data for MAAIF are the reports prepared by Districts on a monthly basis. Monthly district data are aggregated by MAAIF to produce quarterly and annual

statistics at different level of disaggregation. Other data sources are also used by MAAIF, such as the 2008 Livestock Census and data from the Dairy Development Authority.

There are two major gaps in current data, as data on feed and water – two major inputs for livestock production – are de facto not available. There is also concern that the quality of current data may be inadequate, as extension officers at district level are rarely, if ever, trained in data collection, and no standard statistical procedures are used to collect and process the data. In addition, extension officers respond to district authorities and are not accountable before MAAIF, which is considered as an institutional constraint to improve the data collection system at district level.

UBOS Core Livestock Indicators

By Patrick Okello, UBOS

The Uganda Bureau of Statistics (UBOS) is a semi-autonomous body established by an Act of Parliament (1998) to promote the production of reliable official statistics and ensure the development and maintenance of the National Statistical System (NSS). UBOS is the principal data collecting and disseminating agency in Uganda and is responsible for coordinating, monitoring and supervising the National Statistical System, expected to provide high quality statistical information on the social, environmental and economic conditions in the country. In particular, NSS data should:

- Inform the decision making processes;
- Support the national and local government planning processes;
- Support public policy analysis and debates;
- Monitor the impact of government initiatives, policies and programs.

UBOS comprises five Divisions and eight Directorates, included the Directorate of Agricultural and Environmental Statistics (DAES), which was established in 2011. DAES's mandate covers agriculture and fishery statistics, with agriculture including livestock. In particular, DAES:

- Collects and manages national agricultural and environmental statistics;
- Monitors trends in agricultural production, food security and food utilization;
- Establishes and maintains a comprehensive database on the agricultural sector;
- Disseminates agricultural statistical information;
- Develops appropriate methodologies for data collection and coordination with national and international agencies on agricultural and environmental statistics.

As to the livestock sector, DAES primarily needs indicators on livestock population and livestock production, including both quantity and value.

Table 2. UBOS core livestock indicators

Indicators	Level of disaggregation	Frequency
Livestock population • no. of live animals by species	national	annual
Slaughters • no. of animals slaughtered by species	national	quarterly
Price • price of live animals; • price of animal products	national	quarterly
Milk production • quantity; • value	national	quarterly
Egg production • quantity; • value	national	quarterly
Hides and skins production • pieces produced; • value	national	quarterly
Trade • Export and import of live animals – quantity and value; • Exports and imports of livestock products – quantity and value	national	quarterly

DAES basically collects livestock data to support the estimation of quarterly and annual GDP, i.e. nationally representative data are mostly sufficient for DAES to fulfill its mandate. Major sources of data for DAES are sample surveys (namely the Uganda National Household Survey (UNHS) and the Uganda National Panel Survey (UNPS)) and the most recent Livestock Census, which is used as a benchmark and to calibrate some of the survey data. DAES also makes use of some indicators produced by MAAIF, such as on production of hides and skins. It plans to implement regular surveys of abattoirs.

Ultimately, while UBOS is more or less able to fulfill its mandate using available data, it is noteworthy that there is no regular system of livestock data collection in place and no specialized livestock surveys are undertaken. This obliges DAES to make use of sub-optimal or outdated information to produce some of official livestock statistics.

What Livestock Indicators for the CAADP Compact? And for policy design more in general

By Ugo Pica-Ciamarra, UBOS, Simplice Ntouya, AU-IBAR and Patrick Irungu, University of Nairobi

The Comprehensive Africa Agriculture Development Programme (CAADP), established by the Assembly of the African Union in 2003, aimed to eliminate hunger and reduce poverty by promoting investments that increase agricultural productivity by at least 6 percent by 2015. CAADP investments target four major pillars, including

1. Land and water management;
2. Market access;
3. Food supply and hunger;
4. Agricultural research.

The CAADP is implemented by national governments and Regional Economic Communities (RECs) through the so-called Compacts, which are strategic agreements on joint and collaborative action on agriculture between national, regional governments and development partners. Each Compact includes a Stocktaking Exercise, the Compact itself, and a detailed National Agricultural Investment Plan.

In 2011, the African Union Inter-African Bureau for Animal Resources (AU-IBAR), which is mandated to assist RECs and national governments in implementing the livestock component of the CAADP, conducted a review of the signed Compacts in the IGAD region. The review concluded that:

- Livestock are marginally appreciated in the CAADP Compacts.
- When livestock is included in the Compacts, the focus is largely on production of animal food. The many other services provided by farm animals (e.g. production of dung and provision of draught power) remain unappreciated.
- Livestock stakeholders have been rarely consulted in the CAADP implementation process.
- The CAADP Compacts tend to replicate existing livestock policy documents and rarely provide indications on how livestock can contribute to the four pillars of the CAADP.

In view of these findings, the AU-IBAR, in collaboration with the University of Nairobi and the FAO, developed a tool ensure the adequate inclusion of livestock in the CAADP Compacts. The tool, which is still in a draft form, is expected to be used by the CAADP country teams during the CAADP process. It consists of five modules:

1. Livestock in the national economy;
2. Livestock in the household economy;
3. Livestock in the CAADP pillars;
4. The CAADP policy process;
5. Monitoring and feedback.

The effective implementation of the first three modules requires a number of livestock-related data and indicators as follows:

1. Livestock in the national economy: indicators are needed to highlight the potential contribution of livestock to economic growth, poverty reduction and food security. A multiplicity of indicators serve this purpose, such as the current and projected contribution of livestock to agricultural value added; trends in total and per capita consumption of animal sourced foods; number of full time jobs along the livestock supply chain; number and proportion of livestock-keeping rural households; etc. When properly assembled, this set of indicators should ensure that the Compact gives some adequate and proper attention to the livestock sector.
2. Livestock in the household economy: indicators are needed to appreciate the contribution of livestock to household livelihoods and to understand what influences livestock keepers' production and productivity-enhancing decisions. This is a pre-condition to formulate effective investments, which are consistent with household's incentives to keep and use farm animals. A variety of indicators convey this type of information, such as household net livestock income or the proportional contribution of farm animals to household income; consumption (kg) of animal sourced foods by livestock keeping- and non livestock keeping-households; livestock productivity (e.g. milk per cow) by breed of animal and by access to animal health services; etc. When adequately generated, these indicators provide indications on priority areas for investments: Whom to target? Where are the most binding constraints to increased productivity?
3. Livestock in the CAADP pillars: indicators at national and household level should target all four CAADP pillars. For instance, for pillar one on land and water management, a macro indicator is the proportion of agricultural land fertilized with manure; a micro indicator is the correlation between animal ownership and use of manure. For pillar three, a macro indicator is the proportion of households with access to animal health services; a micro indicator is the correlation between access to animal health services and milk productivity. A set of matching macro-micro indicators is essential to ensure that investments are designed to maximize the contribution of the livestock sector to the CAADP pillars.

Indicators at national and household level, and which target all CAADP pillars, can be generated out of a variety of data sources, including agricultural censuses and sample surveys as well as administrative records. What matters is that:

1. Indicators are nationally representative when the Stocktaking Exercise and the Compact are designed, as both aim at identifying country-level facts and priority areas of investments. These indicators, therefore, should not be generated out of small and/or non-representative surveys conducted in few villages/areas of the country.

2. When it comes to the formulation of the National Agricultural Investment Plan, indicators are most likely needed at lower administrative level, such as at district level, as only disaggregated information ensures the design of effective investments. For example, if nationally representative indicators can inform that investments in animal feed are essential to increase livestock productivity, disaggregated data are needed to identify priority districts/areas where to invest.
3. Indicators are not needed on a regular basis, but only when the Stocktaking Exercise, the Compact and the Agricultural Investment Plan are designed. For instance, there's little need to generate monthly, quarterly or annual information on the contribution of livestock to household income. However, some indicators are needed on a regular basis to monitor the implementation of selected investments, such as indicators on the proportion of farm households with access to animal health services, a determinant of livestock productivity.

Discussion

Plenary session

The plenary discussion centred around two major themes, i.e. the quantity/quality of available indicators and the systems of data collection.

As to the indicators collected by MAAIF and UBOS, it was noted that:

- Feed and forage are not among the core data/indicators, even though they are a major element in all livestock production systems. It was also noted that information on water, animal manure and, partly, on hides and skins is not a priority;
- The quality of milk production data is most likely inadequate, as notoriously milk productivity differs depending on the production system;
- The quality of meat production data is also considered sub-optimal, as information on off-take rates is scant at best;
- Price data, which are used by UBOS to value livestock production, are collected at farm-level, which could make it difficult to estimate GDP at market prices;
- The quality of trade data is doubtful, particularly because of informal cross-border trade between Uganda and Kenya, Tanzania, Rwanda, Sudan and DRC. However, cross-border informal trade surveys are regularly undertaken.

In general, there were concerns about the quality of most available indicators. It was highlighted how the same annual growth rate of 3 percent for the livestock population over a series of years – as it is the case for Uganda – suggests that even data on livestock numbers, a key indicator, are not so accurate, despite the undertaking of a livestock census in 2008. However, this is the case for several African countries.

The quantity/quality of livestock data and indicators depends on the robustness of data collection systems, with the following comments made:

- MAAIF uses data collected by extension officers at district level. These officers and rarely, if ever, trained in data collection and processing. In addition, data collection is one of their many activities, and certainly not their top priority. District officers are not directly accountable to MAAIF, which makes it difficult for MAAIF to take more direct action and responsibility in livestock data collection.
- Sometimes MAAIF makes uses of data, such as those produced by the Dairy Development Authority, without a clear understanding of the methodologies underpinning data collection. There is need of more information sharing between the various stakeholders involved in livestock data collection, including not only MAAIF and UBOS but also, for example, the Dairy Development Authority (DDA), the National Genetic Resource Information Centre and Data Bank (NAGRIC&DB) and the Coordinating Office for the Control of Trypanosomiasis in Uganda (COCTU).
- UBOS routinely uses sample surveys, which are not always sufficient to satisfy its demand for livestock data, in particular because the samples (usually population-based) are not necessarily appropriate to produce official livestock statistics. In addition, limited harmonization between different systems of data collection and limited sharing of information on metadata prevent UBOS from using data from secondary sources to produce official statistics.
- MAAIF-UBOS collaboration tends to be ad hoc, linked to the implementation of specific surveys which are not undertaken with regularity, e.g. the 2008 Livestock Census. More regular collaboration on data collection as well as on data analysis is recognized as a step towards improving the overall quantity and quality of livestock data available to all Uganda stakeholders.
- Digital technologies could be a major opportunity to improve systems of data collection, and are particularly relevant for animal diseases for which timely information is critical to control disease spread and avoid epidemics.

4. Building consensus around core livestock indicators

Core Livestock Indicators: A Summary

By Nancy Morgan (FAO-World Bank)

MAAIF, UBOS and other stakeholders need a variety of livestock data / indicators and for multiple purposes. However, any initial investment aimed at improving the quantity and quality of livestock data and indicators needs to strategically identify and target the core indicators needed by MAAIF and UBOS, the two major livestock data stakeholders in Uganda. This is particular critical since these core livestock indicators are those that MAAIF and UBOS need on a regular basis to properly fulfill their mandates and form the basis for effectively engaging in sector planning.

A review of the core data and indicators of strategic importance to MAAIF and UBOS reveals several commonalities and overlaps, despite differences in the source of data, level of

disaggregation, timeliness of the indicators, and occasionally definitional issues related to the indicators. Table 3 below compares and confronts the core livestock indicators for MAAIF and UBOS.

Table 3. UBOS and MAAIF core livestock indicators: a comparison

Core Indicators	UBOS	MAAIF
Livestock inventory	X	X
No. of animal slaughtered (<i>off-take</i>)	X	X
Production-related indicators (<i>meat, milk, eggs</i>)	X	X
Trade related indicators	X	X
Price-related indicators	X	
Disease related indicators		X
Staff and resources available in livestock		X

X=collection of the indicator by institution.

MAAIF and UBOS largely make use of the same core indicators, which serve the purpose of calculating livestock production, a key indicator for designing and assessing MAAIF's interventions as well as responding to UBOS's need to estimate livestock value added (GDP). Exceptions are limited to: price data, disease and resource-related indicators. Price data are needed by UBOS, less so by MAAIF which, by nature of its mandate, places more priority on the quantity rather than the value of production. Disease related indicators are critical to MAAIF, including information on staff and resources available to monitor and control disease outbreaks and spread, but not by UBOS. It is noteworthy that some of the core indicators, and in particular the calculation of production, are derived from a combination of several data/indicators, such as yields, animal numbers, slaughter, etc. In the case of the livestock value added, this requires information also on quantity and prices of all inputs which would be subtracted, if a net calculation.

The time dimension and level of disaggregation of MAAIF and UBOS indicators often differ, with MAAIF prioritizing some specific monthly and district level indicators, while UBOS requires quarterly and national level indicators. Appropriate methodologies for space and time aggregation of data are however available.

Overall, there is evidence that the core livestock indicators of MAAIF and UBOS largely overlap, which suggests that close collaboration between the two institutions could support definite improvements in the quantity and quality of available livestock data and indicators.

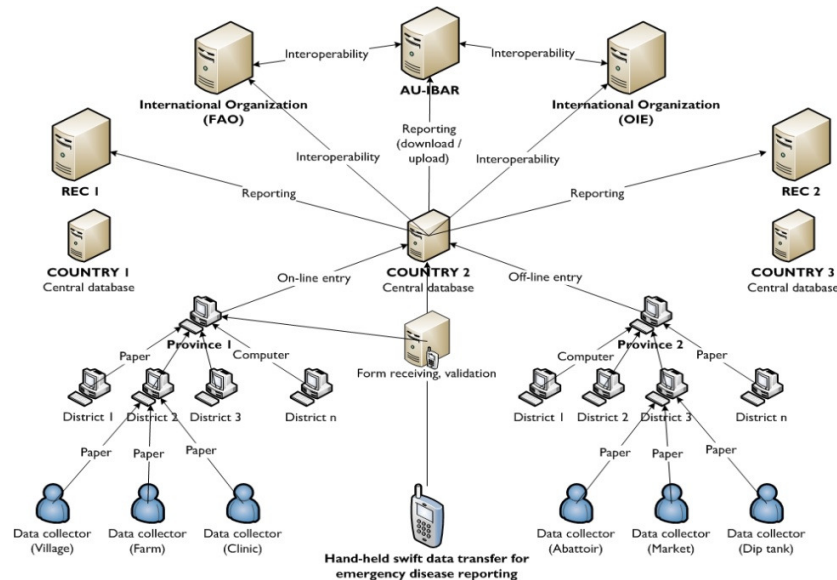
The Animal Resources Information System (ARIS 2) of the African Union

By Ibrahim Gashash Ahmed (AU-IBAR)

The Eighth Conference of Ministers responsible for Animal Resources in Africa was held in Entebbe, Uganda, in May 2010. The Ministries urged ‘Member states to improve the quality and timeliness of disease reporting to AU-IBAR including emergency reporting and for AU-IBAR and FAO to ensure inter-operability between their respective information systems’ as well as connecting them to other global information system, such as the World Animal Health Information System of the World Organization for Animal Health.

The Animal Resources Information System (ARIS 2) developed by the African Union African Union – Interafrican Bureau for Animal Resources has low operation and maintenance cost: it is web-based and built on an open source software, which can be also operated in off-line mode. ARIS 2 can be adopted at different level, from the village to the continental level (fig.1).

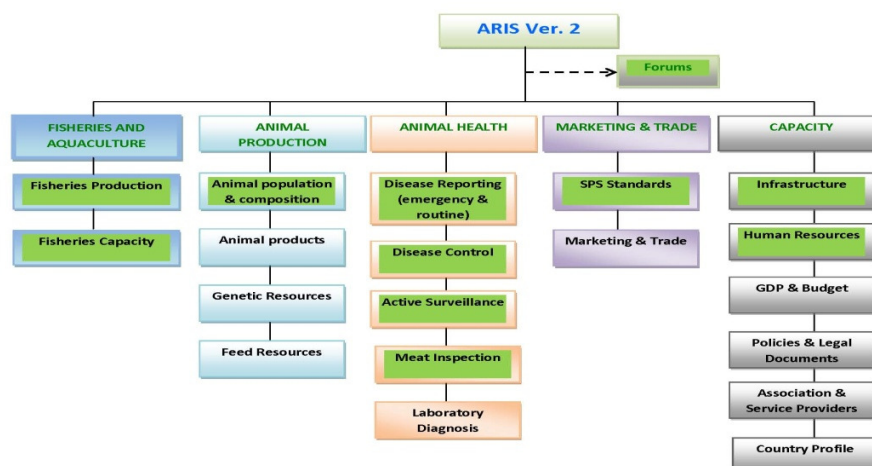
Fig.1. ARIS 2: a multi-level information system



The system is inter-operable and flexible with countries able to tailor it to their respective needs and systems of data collection. Depending on their current system of data collection and livestock sector priorities, country governments can develop specific data modules that support their priority requirements for livestock information.

While ARIS 2 is open and flexible, it is also comprehensive, ensuring that countries have the ability to collect data not only on animal health but also on production, marketing, trade, and on fisheries & wildlife. This supports the need for more comprehensive information about all major aspects of livestock which can ensure that appropriate investments are designed and implemented. AU-IBAR has been developing prototype modules for countries to collate and store data on a variety of livestock domains (fig. 2).

Fig.2. ARIS 2: a multi-topic livestock information system



The African Union – Interafrican Bureau for Animal Resources is currently rolling out ARIS 2 throughout all African countries. The adoption of ARIS 2 by RECs and AU Member States is anticipated to enhance their capacity to collect, collate and analyze animal resources data in a timely manner, and hence to design and harmonize policies and implement animal resources interventions based on timely available, reliable and up-to-date information.

A consensus around core livestock indicators and ARIS 2

Plenary discussion

There was consensus among participants in the workshop that MAAIF and UBOS collect and use similar livestock related data / indicators, but there was also a recognition that the identified core indicators on their own are not necessarily sufficient to formulate effective investments in the sector. Others indicators may be needed by different stakeholders for a multitude of purposes. It was noted that the formulation of effective investments could build on periodically collected data and indicators, such as information about breeds, water, feed, etc. However, the identified core indicators, prioritized by meeting participants, were recognized as those needed on a regular basis for MAAIF and UBOS to fulfill their mandate and serve as a solid foundation for sector management and planning.

It was agreed that these identified core indicators represent the building block upon which to start improving the system of data collection. Priority attention on the generation and increased accessibility of key core livestock data/indicators needed for sector planning by MAAIF and UBOS are the core pillar of a better livestock data system, with resources also needed, at a later date, for supportive surveys to produce additional data and indicators which feed into investment decisions.

Participants also concurred that the Animal Resources Information System (ARIS 2) of AU-IBAR represents an appropriate information system for livestock data and indicators. ARIS 2 is a multi-topic livestock information system, which allows integrating livestock population and production data with animal health and other information, a pre-condition for designing and implementing effective livestock sector investments.

5. The way forward: the MAAIF-UBOS Memorandum of Understanding

The identification of and agreement on core Uganda livestock indicators represents a first activity in the context of the MAAIF-UBOS Memorandum of Understanding *‘for joint implementation of data activities’*. The purpose of the MoU is to support the improvement of the quantity and quality of livestock-related data available to decision makers, consistently with:

- The National Development Plan 2010/11 – 2014/15 (NDP);
- The MAAIF Development Strategy and Investment Plan 2010/11 – 2015/16 (DSIP);
- The Sector Plan for Statistics 2007-2012;
- The 2010 UN Global Strategy to Improve Agricultural and Rural Statistics;
- The Comprehensive Africa Agriculture Development Programme.

In particular the MAAIF-UBOS MoU aims to:

- Identify core livestock data/indicators that support MAAIF and UBOS in fulfilling their mandate, as well as those needed to design effective and equitable livestock sector programmes and policies, such as the NDP, the DSIP and the CAADP Compact. This is consistent with pillar one of the Global Strategy to Improve Agricultural and Rural Statistics, endorsed by the United Nations in 2010.
- Analyze available livestock data and review how they can be used to generate the recommended indicators.
- Review and make recommendations on how to improve current systems of livestock data collection, analysis and dissemination, so that the identified core indicators can be produced on a regular basis to meet the demand for data by both MAAIF and UBOS.
- Present and disseminate findings to a target audience. A concept note for improving quantity/quality of livestock data will be drafted which MAAIF-UBOS may consider jointly submitting to interested donors.

6. Closing remarks

Closing remarks were provided by R. Pertev (World Bank, Uganda) who highlighted the crucial need of Uganda to foster its resources to advance economic growth. He recognized the unique nature of the MoU as fostering institutional collaboration between MAAIF and

UBOS and reflected on the timeliness of the meeting in terms of on-going work to develop a framework for operationalising the Ugandan Agricultural Development Strategy and Investment Plan (DSIP).

The meeting was then closed by Mr. R Khaukha, on behalf of Dr. N Kauta (MAAIF), who thanked the participants as well as the Livestock Data Innovation in Africa project which supported the organization of the meeting. He stressed the uniqueness of this opportunity to contribute to investments in the livestock sector, and emphasized the commitment of MAAIF to work on enhancing livestock statistics.

Annex 1. Agenda

08:30 *Registration*

09:15 **OPENING AND INTRODUCTION**

Chair: Mr. J.B. Male-Mukasa, Executive Director, UBOS

- Welcoming remarks Dr. N. Kauta
Director Animal Resources , MAAIF
- Opening remarks Dr. A. M. Jallow
FAO Representative in Uganda
- Core indicators in context: The Global Strategy to Improve Agricultural and Rural Statistics and the Animal Resources Information System (ARIS 2) of the African Union I. G. Ahmed (*AU-IBAR*)

10:30 *Tea / coffee*

11:00 **IDENTIFYING CORE LIVESTOCK INDICATORS**

Chair: Dr. C.S. Rutebarika, Assistant Commissioner, Disease Control, MAAIF

- Core livestock indicators in MAAIF J. Sserugga (*MAAIF*)
- Core livestock indicators at UBOS P. Okello (*UBOS*)
- Livestock indicators in the CAADP U. Pica-Ciamarra (*FAO*), S. Nouala (*AU-IBAR*) & P. Irungu (*Uni. Nairobi*)
- Discussion

13:00 *Lunch*

14:00 **BUILDING CONSENSUS AROUND CORE LIVESTOCK INDICATORS**

Chair: Mr. S. Mayinza, Director of Agricultural and Environmental Statistics, UBOS

- Core livestock indicators: a summary N. Morgan (*FAO-World Bank*)
- Putting indicators together: a demo of ARIS 2 I.G. Ahmed (*AU-IBAR*)
- Discussion

15:30 *Tea / coffee*

16:00 **THE WAY FORWARD**

Chair: Ms N. Morgan, FAO liaison to the World Bank

- MAAIF-UBOS partnership for improved livestock indicators P. Okello (*UBOS*) & J. Sserugga (*MAAIF*)
- Concluding remarks W. Odwongo or R. Pertev (*World Bank, Uganda*)
- Closing Dr. N. Kauta
Director Animal Resources , MAAIF

Annex 2. Participants

	Name	Organization
1	Aisu, Charles	MAAIF
2	Ahmed, Ibrahim Gashash	AU-IBAR
3	Atyang, Susan	East Africa Dairy Development Project / Heifer
4	Bashaasha, Bernard	Faculty of Agriculture, Makerere University
5	Butungi, Sheila	NAGRC-DB
6	Emwanu, Thomas	UBOS
7	Gerner, Henny	Netehralnds Embassy, Kampala
8	Godfrey, Sunday	MAAIF
9	Imagara, Elisabeth	Ministry of Local Government
10	Jagwe, John	Farmgain Africa
11	Kabirizi, Jolly Mary	National Livestock Resources Research Institute
12	Kagugube, Johnson	UBOS
13	Kanameda, Yoshiharu	Japan International Cooperation Agency
14	Kasirye, Florence	Independent consultant
15	Katushabe, Elisabeth	Pastoral & environmental Network in the Horn of Africa
16	Khaukha, Robert	MAAIF
17	Kauta, Nicholas	MAAIF
18	Kurata, Madoka	Japan International Cooperation Agency
19	Maholo, Denis	MAAIF
20	Male-Mukasa, John	UBOS
21	Mayinza, Seith	UBOS
22	Mbabazi, Mary	MAAIF
23	Menyha, Emmanuel	UBOS
24	Morgan, Nancy	FAO / /World Bank
25	Mwebe, Emmanuel	Uganda Leather and Allied Industries Association
26	Muwanga-Zake, E.S.K.	UBOS
27	Mwebe, R.	MAAIF
28	Nalule, Sarah	Faculty of Veterinary Medicine, Makerere University
29	Nassimbrown, Hanidah	Makerere University
30	Niiri, Caroline	Makerere University

	Name	Organization
31	Nsiima, Longin	Tanzania Ministry of Livestock and Fisheries Development
32	Nsiko, Israel	UBOS
33	Okello, Patrick	UBOS
34	Ouma, Flavia	UBOS
35	Owach, Charles	FAO, Uganda
36	Oyok, Deogratiuous	NGO
37	Pertev, Rasit	World Bank, Uganda
38	Pica-Ciamarra, Ugo	FAO, Rome
39	Sombwe, Ronald	UBOS
40	Ssekiboobo, Agnes	School of Statistics and Applied Economics, Makerere Uni.
41	Ssenono, Vincent	UBOS
42	Sserugga, Joseph	MAAIF
43	Van Campenhout, Bjorn	IFPRI, Kampala
44	Waiswa Joshua	Uganda Meat Producers Cooperative Union Ltd.

Annex 3. MAAIF tables on core indicators collected.

Table A1. Indicators for immediate notifications to policy makers and the World Organization for Animal Health (OIE)

Indicators	Level of disaggregation	Frequency of data collection	Frequency of reporting
Animal health and disease <ul style="list-style-type: none"> • number of disease outbreaks; • no. of animals (by species, age group and sex) affected; • no. of animals at risk; • n.o of animals dead; • no. of animals destroyed; • no. of animals slaughtered 	districts affected	irregular, but within 48 hours of outbreaks	irregular, but within 48 hours of outbreaks
Livestock population <ul style="list-style-type: none"> • number by species, age, sex 	districts affected	monthly	irregular, but within 48 hours of outbreaks
Outbreaks by livestock farming system <ul style="list-style-type: none"> • no. by livestock farming system 	districts affected sub-counties households	monthly	irregular, but within 48 hours of outbreaks

Table A2. Indicators in the Monthly Reports to AU-IBAR and EAC

Indicators	Level of disaggregation	Frequency of data collection	Frequency of reporting
Animal health and disease <ul style="list-style-type: none"> • number of disease outbreaks; • no. of animals (by species, age group and sex) affected; • no of animals at risk; • no of animals dead; • no. of animals destroyed; • no. of animals slaughtered; 	districts	monthly	monthly

<ul style="list-style-type: none"> • other disease related indicators 			
Livestock population	districts	monthly	monthly
<ul style="list-style-type: none"> • no. by species, age, sex 			

Table A3. Indicators in the Quarterly Reports to Policy Makers

Indicators	Level of disaggregation	Frequency of data collection	Frequency of reporting
Animal health and disease	districts	monthly	quarterly
<ul style="list-style-type: none"> • number of disease outbreaks; • no. of animals (by species, age group and sex) affected; • no of animals at risk; • no of animals dead; • no. of animals destroyed; • no. of animals slaughtered; • other disease related indicators 			
Livestock population	districts	monthly	quarterly
<ul style="list-style-type: none"> • no. by species, age, sex; • no. by farming system 			
Livestock marketing	districts	monthly	quarterly
<ul style="list-style-type: none"> • no of animals offered / sold by species in markets; • highest, lowest and average market price 			
Staff, vehicles and other equipment for livestock	districts	monthly	quarterly
<ul style="list-style-type: none"> • no. of vet officers by grade; • no. of vehicles and status; • no. of other equipment (e.g bicycles, computers, 			

etc.) and status

Table A4. Indicators in Semestral and Annual Report to OiE

Indicators	Level of disaggregation	Frequency of data collection	Frequency of reporting
Animal health and disease <ul style="list-style-type: none"> • number of disease outbreaks; • no. of animals (by species, age group and sex) affected; • no of animals at risk; • no of animals dead; • no. of animals destroyed; • no. of animals slaughtered; • other disease related indicators 	districts	monthly	every six months and annually
Livestock population <ul style="list-style-type: none"> • no. by species, age, sex 	districts	monthly	annually
Staff, vehicles and other equipment for livestock <ul style="list-style-type: none"> • no. of vet officers by grade; • no of vehicles and status; • no. of other equipment (e.g bicycles, computers, etc.) and status 	districts	monthly	annually

Table A5. Indicators in MAAIF Statistical Abstract

Indicators	Level of disaggregation	Frequency of data collection	Frequency of reporting
Livestock value added <ul style="list-style-type: none"> • value in shillings; • proportional contribution to GDP 	country	secondary sources (<i>e.g. UBOS</i>)	annually
Livestock population	country	monthly	annually

• no. by species			
Production	country	monthly and secondary sources (e.g <i>Dairy Development Authority</i>)	annually
• Quantity of meat;			
• Quantity of milk;			
• Quantity of eggs			
Exports and imports	country	secondary sources	annually
• No of live animals;			
• Meat (quantity and value);			
• Milk and dairy products (quantity and value);			
• Hides & skins (quantity and value)			

Annex 4. Introductory, welcoming, opening and closing remarks

Introductory remarks by John Male Mukasa, Executive Director, Uganda Bureau of Statistics

Good morning Ladies and Gentlemen. On behalf of Uganda Bureau of Statistics (UBOS), it is my pleasure and honour to welcome you to this workshop on Core Livestock Indicators.

Colleagues,

We all know that:

- Livestock are vital to subsistence and economic development in sub-Saharan Africa.
- They provide a flow of essential food products throughout the year, sustain the employment and income of millions of people in rural areas, contribute draught energy and manure for crop production and are the only food and cash security available to many Africans.
- The sale of livestock and their products often constitutes a main source cash income in rural areas, and hence the only way in which subsistence farmers can buy consumer goods and procure the improved seeds, fertilizers and pesticides needed to increase crop yields.
- It is also true that where livestock development has been successfully pursued, a steady increase in the productivity of food grain production and in the growth of service and consumer industries is clearly observable.
- This important sector therefore, needs to be monitored and measured accurately if we have to sustain its growth.

We are gathered here today, to engage in a process of identification of core livestock indicators that are regularly used by Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) and UBOS in monitoring the performance of the sector.

We need to know that prior to this, MAAIF and UBOS, recognizing that quality statistics are critical for the implementation of the National Development Plan (NDP), have been collaborated with the FAO-World Bank-International Livestock Research Institute (ILRI) Livestock Data Innovation in Africa Project and the African Union Inter African Bureau for Animal Resources (AU-IBAR) towards improving the quantity and quality of livestock data and indicators available to decision makers.

In particular, MAAIF and UBOS through a Memorandum of Understanding (MoU) have agreed to first and far most undertake the identification of the core livestock indicators that are to be produced on a regular basis to ensure that equitable and efficient investments can be initiated and implemented, as recommended by the UN Global Strategy to Improve Agriculture and Rural Statistics.

Secondly, they have also agreed to review systems of data collection, analysis and dissemination and make recommendations for improvement so that the identified core livestock indicators can be effectively produced.

Colleagues, let me also bring to your attention that this is not the first initiative that MAAIF and UBOS are jointly undertaking. The two (2) sister institutions have in the recent past closely collaborated in the design and implementation of the Livestock Census 2008 and the Uganda Census of Agriculture 2008/09.

Ladies and Gentlemen,

- We have a rich program with welcoming remarks from Dr. Nicholas Kauta, Director Animal Resources and Opening Remarks from the Assistant FAO Representative in Uganda, Mr. Charles Owach.
- Dr. Ibrahim Gashash (AU-IBAR) will give a talk on the Global strategy to improve agricultural and rural statistics and the Animal Resources information System (ARIS 2) of the African Union.
- During the session on identification of core livestock indicators there will be presentations from MAAIF, UBOS and by FAO on the CAADP.
- This afternoon there will be a session for building consensus around core livestock indicators: a summary, and a demonstration of ARIS 2.
- The meeting will then close with way forward by UBOS and MAAIF and concluding remarks by MAAIF Director of Animal Resources

I therefore, take this opportunity to Invite Dr. Nicholas Khauta, Director of Animal Resources, to make his welcoming remarks and subsequently invite the FAO representative in Uganda to make his Opening Remarks.

Welcoming remarks by Dr. Nicholas Kauta, Director Animal Resources, MAAIF

The FAO Representative in Uganda,
The Executive Director UBOS,
Representatives from the AU-IBAR,
Representatives from the EAC,
Distinguished participants,
Ladies and Gentlemen,

Let me take this opportunity on behalf of the Uganda Government, the Ministry of Agriculture Animal Industry and Fisheries and on my own behalf to welcome all the participants from within and outside Uganda.

I hope your stay will be both fruitful and enjoyable.

I wish on behalf of the Government, to acknowledge the confidence that the Livestock Data Innovation in Africa Project has placed in Uganda and chosen the country to host this workshop.

The Ministry of Agriculture Animal Industry and Fisheries (MAAIF) has for long recognized that quality statistics are critical for the implementation of the various development plans and strategies within the Ministry. As a result MAAIF has explored all available efforts and

avenues that would lead to the improvement of the quantity and quality of livestock data and indicators available to decision makers.

I believe that this important and critical workshop bringing together the various livestock stakeholders will endeavor to agree on the key core set of livestock indicators to be produced on a regular basis within MAAIF. This will ensure a well planned, equitable and efficient growth of the livestock sub-sector that is consistent with the National Development Plan (NDP) and the MAAIF Development Strategy and Investment Plan (DSIP).

I particularly commend this joint collaboration between UBOS and MAAIF that will enhance joint livestock data activities between the two institutions. This will greatly improve information flow within the livestock sub-sector which will re-ignite the development of the animal industry in the country.

The collaboration should not only stop at identification of the core livestock indicators but should further be sustained to review and analyse the collected data on livestock. In addition, efforts should be made to improve on existing systems of livestock data collection and dissemination within the two institutions.

Finally let me take this opportunity to thank the various agencies that are supporting this noble initiative. In particular, the Government commends the FAO, the World Bank, the International Livestock Research Institute and AU-IBAR for their support and inputs toward the organization of this workshop.

FOR GOD AND MY COUNTRY

Dr. Nicholas Kauta

Director Animal Resources

Opening remarks by Dr. Alhaji Jallow, FAO Representative in Uganda

(delivered by Charles Owach: Assistant FAO Representative / Programme

Mr. Chairman

Distinguished participants

Ladies and Gentlemen

On behalf of FAO, I wish to express great pleasure for being present at this important workshop, which provides an excellent opportunity to all stakeholders involved in the livestock industry to share their experiences and discuss and agree on a very critical issue – core livestock indicators. Many thanks to MAAIF and UBOS for jointly organizing this workshop on livestock data and indicators and in particular:

- Dr. Nicholas Kauta, Director of Animal Resources, MAAIF;
- Dr. Chris Rutebarika, Assistant Commission, Animal Disease, MAAIF;
- Mr. John Male-Mukasa, Executive Director, UBOS;
- Mr. Seith Mayinza, Director of Agricultural and Environmental Statistics, UBOS.

I recognize the presence of our colleagues from the academia, special recognition to Prof. Bernard Bashaasha – Dean of Faculty of Agriculture, Makerere University.

Also thank you to Dr. Ibrahim Gashash Ahmed, Data System Manager of the African Union – Interafrican Bureau for Animal Resources (AU-IBAR), which is a technical agency of the African Union Commission, mandated to support and coordinate the utilization of animals, including livestock, in the African continent, so that livestock sector growth can contribute to economic growth and poverty reduction.

I wish to note that there are three major reasons why the FAO welcomes this MAAIF-UBOS workshop on core livestock indicators:

First is that the livestock sector has been too often neglected in the development agenda throughout Africa, and Uganda may not be an exception. In the last decade, however, there is increasing recognition that investments in livestock can provide major opportunities for both growth and poverty reduction. On the demand side, population growth, increasing urbanization and gains in income are contributing to increased demand for animal products – which has been dubbed the LIVESTOCK REVOLUTION. To quote a few figures: according the forthcoming FAO-OECD Agricultural Outlook, consumption of beef in Uganda will increase by 107% between 2005 and 2030 and consumption of milk by 131%. And similar increases are expected for all other animal sourced foods. On the supply side, more than one quarter of households keep some cattle, according to the Livestock Census of 2008; 53% keep goats; almost 20% keep pigs and more than 50% keep some poultry birds. Basically, we are recording a major increase in the demand for animal food in this country and, at the same time, a large share of households keep some livestock: this provides unprecedented opportunities for a sustainable market-driven development of the livestock sector, based on existing demand and potential supply of livestock products. This could contribute to implementing the NDP, and more in general to economic growth, the reduction of poverty and food security.

However, unless good livestock data and indicators are available – which should be statistically sound, timely and appropriately disseminated – there is little the government and the private sector can do to ensure an efficient growth of the livestock sector. And this takes to the second reason why FAO welcomes this MAAIF-UBOS workshop. We have all experienced, in many circumstances, that when we look for data on livestock, and on agriculture in general, those data are often unavailable. Some times we struggle hard even to get some basic information on various agricultural sub-sectors. Even today, just four years after the livestock census, it is uncertain what is the livestock population in this country, which highlights how – beyond one-off surveys – it is essential to have in place regular systems of agricultural data collection, which satisfy the need of data users, including MAAIF, UBOS and other players, such as the Ministry of Trade and Industry. However, we all know that – given available resources – it is impossible to collect on a regular basis all the data and produce all the indicators / statistics that users would like. We need to prioritize. And this is the ultimate objective of this workshop: to jointly agree on what are the data that are really needed, which we could not live without, and that this country should endeavor to

collect regularly to provide at least some basic core information to livestock data stakeholders. Let me stress that this is very much consistent with the Global Strategy to Improve Agricultural and Rural Statistics – endorsed by the United Nations in 2010, including an Action Plan for Africa for the next five years – of which pillar one is about the identification of core indicators. Dr Gashash from AU-IBAR will be giving some more details on the Global Strategy in his coming presentation.

The third major reason for which FAO welcomes this workshop, is that it is part of a broader partnership between MAAIF and UBOS, and I wish to also add the Academia. This partnership includes (i) the identification of core livestock indicators – which as I said is the objective of this workshop; (ii) then some joint review and analysis of data and systems of data collection, which will lead to identifying options to improve systems of agricultural data collection, so that the core indicators can be regularly produced, for the benefit of livestock stakeholders. (iii) I am reliably informed that the final recommendations on how to improve systems of data collection will be jointly presented by MAAIF and UBOS in a workshop towards the end of this year or early next year.

Let me say that joint collaborations of this kind between MAAIF and UBOS are not common, yet they are very valuable as they not only involve sharing information and data, but also joint activities over several months, which would certainly help MAAIF and UBOS to better understand each other. This is a precondition for effective agricultural statistical systems to be put in place. What I would like to recommend to MAAIF and UBOS is that, out of their partnership, all agreed proposals to improve systems of data collection should build on what is already the ground, also considering availability of financial and human resources. This is essential for ensuring sustainability of any data collection system, which is what is much needed. Indeed, with some extra resources everybody is good at collecting and disseminating data, but the real challenge is about having in place regular system of data collection and dissemination which are sustainable and satisfy users' needs. I must say, that the fact that MAAIF and UBOS have agreed to collaborate to identify core livestock indicators suggests that both MAAIF and UBOS are well aware that – as I said – not all data and indicators can be produced on a regular basis, and which are of good quality. It is definitely more sensible, at least for the coming years, to focus on few core indicators of good quality, rather than producing several indicators of relatively poor quality, which would be of little use for MAAIF, UBOS and other stakeholders.

As I conclude, I wish to thank the World Bank for sponsoring the workshop, and in particular the World Bank-FAO-ILRI Livestock Data Innovation in Africa Project (International Livestock Research Institute), represented here by Nancy Morgan, FAO liaison to the World Bank and by Ugo Pica-Ciamarra, FAO Animal Production and Health Division. It is worth mentioning that the Livestock Data Project has played only the role of a knowledge broker and facilitator, while MAAIF and UBOS are really taking the lead in this process. For this, I wish to sincerely thank both Dr. Kauta and Mr. Male-Mukasa. Be aware,

however, that FAO is ready, through the Livestock Data Project, to provide the necessary technical assistance, when required.

With this I declare this workshop open and I wish you a fruitful discussion and constructive deliberations. I look forward to seeing what will be the agreed core livestock indicators and also to participate in the coming workshop, in which recommendations on how to improve current systems of agricultural data collection will be jointly presented by MAAIF and UBOS.

Thank you for your kind attention.

Closing remarks by Dr. Nicholas Khauta, Director Animal Resources, MAAIF

(delivered by Dr. Robert Khaukha, MAAIF Assistant Commissioner M&E)

The FAO Representative in Uganda,

The Executive Director UBOS,

The Representative from AU-IBAR,

Ladies and Gentlemen,

On behalf of the Ministry I congratulate you on having successfully completed this important workshop on 'IMPROVING LIVESTOCK DATA: MAAIF-UBOS WORKSHOP ON CORE LIVESTOCK INDICATORS'. I particularly thank all the participants and in particular the international guests for having spared their valuable time to come and attend the workshop. I believe that efforts have been made to improve on the existing systems of livestock data collection and dissemination in the livestock sub-sector.

Let me take this opportunity to thank the various agencies that have worked together in a partnership for the success of this workshop. These have included the Food and Agricultural Organisation, the World Bank, the International Livestock Research Institute (ILRI) and the African Union Inter-African Bureau for Animal Resources (AU-IBAR). I particularly thank MAAIF and UBOS for agreeing to come together and jointly co-host this landmark activity. My request is that the joint collaboration should be consolidated further and sustained to review and analyse the collected data on livestock.

This workshop has discussed various proposals that will lead to the improvement of the quantity and quality of livestock data and indicators available to decision makers in the livestock subsector. Since we have now identified the key livestock indicators it is my belief is that we shall have the starting point towards good quality livestock data that will enhance the development of the industry.

Finally, let me take this opportunity to wish each one of you a safe journey to your various destinations.

FOR GOD AND MY COUNTRY

DIRECTOR ANIMAL RESOURCES