



Core livestock data and indicators: results of a stakeholder survey

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May 2012



A paper of the World Bank, FAO, ILRI Livestock Data Innovation in Africa Project,
with support from the Gates Foundation



1. INTRODUCTION

Available agricultural data and indicators are often inadequate for decision makers to formulate efficient and equitable public and private sector investments. The Global Strategy to Improve Agriculture and Rural Statistics, endorsed by the United Nations Statistical Commission in February 2010, represents a major effort towards assisting developing countries in improving their agricultural statistical systems. It 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.¹

The 2010-2013 World Bank-FAO-ILRI Livestock Data Innovation in Africa Project, which supports the implementation of the livestock component in the Global Strategy, aims at drawing and disseminating lessons ‘towards review/collection/analysis of livestock data in selected African countries [Niger, Uganda, Tanzania] which guides better decision making and investment to support livelihood improvement among smallholder livestock producers’.² A first step in this direction is the identification of core livestock data/indicators which, as per the Global Strategy, countries are expected to collect on a regular basis to satisfy the need of decision makers, both in the public and the private sector.

Between January and February 2012 the Livestock Data Innovation Project administered a global online survey among livestock stakeholders with the objectives to:

- rank livestock domains/areas for which information is demanded (see box 1);
- review perceptions of the quality of available livestock data and indicators;
- identify and prioritize livestock domains/areas where investments are needed to better meet the demand for data/indicators of livestock stakeholders.

Box 1. Livestock information domains and data/indicators

The identification of core livestock data and indicators firstly requires some agreement on the livestock domains/areas for which information is needed. A domain represents a fundamental or distinguishing element/segment along the livestock value chain, such as the livestock population domain; the livestock feed domain; and the animal health domain. An indicator is some quantitative/qualitative measure of that domain. Example indicators for the livestock population domain are: number of cattle by species; value of cattle stock; etc. Example indicators for consumption of animal food are: per-capita consumption of fresh milk; market value of the fresh milk consumed. Data are the pieces of information that are needed to generate indicators: they are either directly observed and collected (primary data) or retrieved from other sources (secondary data).

This survey does not cover broad livestock-development data and indicators, such as household livestock-derived income, the contribution of livestock to agricultural value added and livestock

¹ World Bank, FAO and UNSC (2011). *Global Strategy to Improve Agricultural and Rural Statistics*. Report no. 56719-GLB, World Bank, Washington DC. www.fao.org/economic/ess/ess-capacity/ess-strategy/en/

² www.africalivestockdata.org

sector multipliers. These types of data/indicators are relevant to better position the actual and potential role of livestock in household livelihoods and/or in economic development, while supporting advocacy for the importance of the sector and prioritizing interventions between sectors. They are necessary but not, however, sufficient to guide investment decisions within the livestock sector.

This survey targets livestock-related data and indicators along the value chain which are necessary to identify bottlenecks and opportunities for investments within the sector. Essentially, these include information on livestock inventories, inputs and husbandry practices, production and consumption of livestock products, i.e. data and indicators that measure, provide information on livestock market opportunities, and production and marketing-related constraints.

The survey-questionnaire was sent out to the contact list of the Livestock Data Innovation in Africa Project as well as to livestock-related lists of the FAO and the ILRI. It was also advertised through the IFAD Community of Practice for Pro-poor Livestock Development³ and the January 2012 Newsletter of the International Meat Secretariat⁴. Participants in the survey were asked to provide information on:

- Region of origin and affiliation (e.g. government; private sector, etc.).
- Priority uses of livestock data and indicators (e.g. policy and planning, research, etc.).
- Priority rankings in terms of livestock domains for which data/indicators are needed (e.g. animal health/diseases; animal feed, etc.).
- Preferred unit of reference of livestock data/indicators (e.g. country; household, etc.).
- Preferred time frequency of livestock data/indicators (e.g. annual; monthly, etc.).
- An assessment of the quality (from very poor to excellent) of available livestock data/indicators.
- Priority domains for improvement in livestock data/indicators (e.g. livestock inventories; consumption of animal food, etc.).

This report reviews the results of the project survey with the objectives of better informing governments of critical data gaps and feeding into the establishment of a minimum set of livestock core data that governments should collect, as mandated by the Global Strategy.

2. THE RESPONDENTS

A total of 641 respondents filled in the survey questionnaire, with the majority coming from Africa (29%) and OECD countries (36%). Approximately 12 percent of respondents reside in East or Southeast Asia, 11 percent in Latin America and 9 percent in South Asia. The sample reflects the focus of the Livestock Data Innovation Project, which is on Africa.

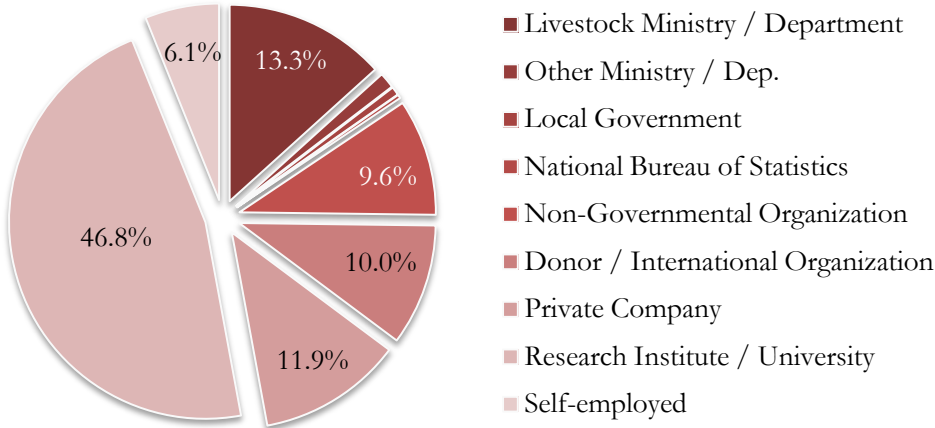
As to affiliation, nearly 47 percent of the 641 respondents, i.e. 300 stakeholders, classified themselves as researchers or from a university, followed by 13 percent (or 84 respondents) from

³ www.cop-ppld.net

⁴ www.meat-ims.org

Livestock Ministries or Departments, 12 percent (or 76 respondents) from private companies and about 10 percent (more than 60 respondents) from Non-Governmental Organizations (NGOs) as well as from Donors and International Organizations. Relatively few respondents (from 0.3 to 1.3 percent) come from non-Livestock Ministries, Local Governments and the National Bureaus of Statistics. This limits the undertaking of a more disaggregated analysis on the priority data concerns of these particular stakeholders (fig.1).

Fig. 1. Categories of respondents



3. USES AND SOURCES OF LIVESTOCK DATA AND INDICATORS

Respondents were asked to list major uses and sources of livestock data and indicators, classifying data requirements for policy and planning; project design and implementation; monitoring and evaluation; research; and private investment, which also encompasses market analysis.

The nature of the livestock ‘list serves’ and the institutions contacted to disseminate the survey resulted in a participatory bias in terms of the respondents stated data requirements. The results indicated a strong focus on research, with almost 70 percent of the demand for data/indicators for research purposes. Designing projects and sector policy planning were close seconds in terms of demand for data/indicators: 54 and 46 percent of respondents respectively. Use of data/indicators for private investment (over 30%), both local and international, ranked higher than the use for monitoring and evaluation (9%). These percentages, however, provide limited insights into the use of livestock information as they cross-cut across an unbalanced sample of respondents.

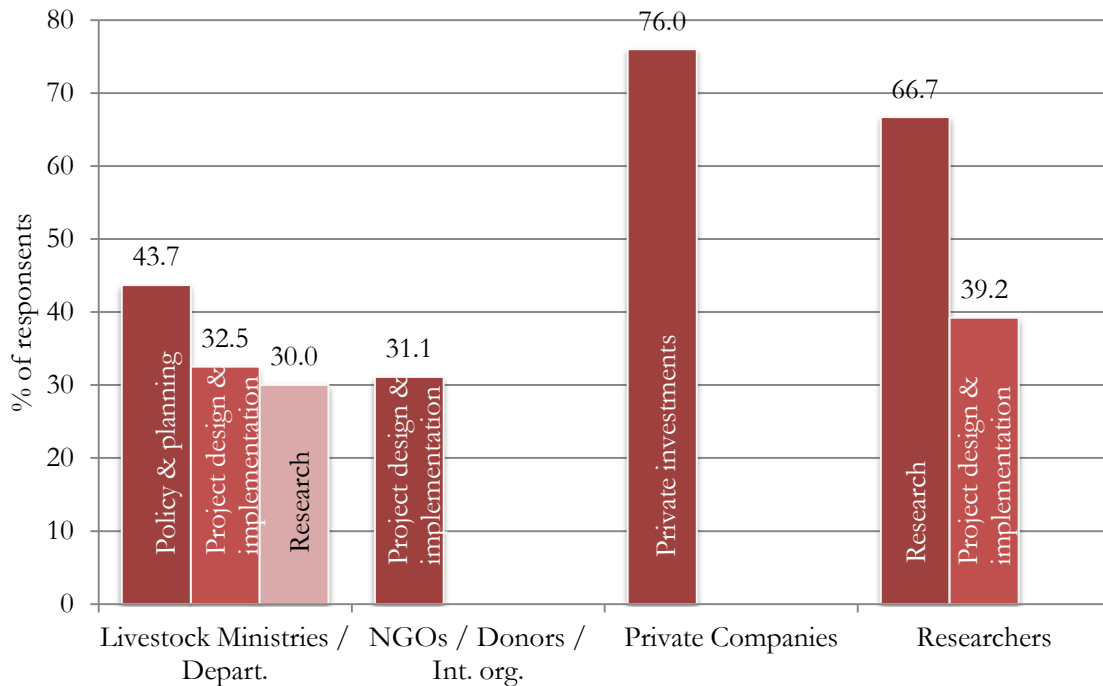
Why do people need livestock data / indicators?

Fig. 2 presents priority uses of livestock data/indicators for four major categories of livestock stakeholders, including Livestock Ministries/Departments, NGOs/Donors/International Organizations, the private sector and researchers. Specific livestock data and indicators is considered a priority if at least 25 percent of the respondents within the reference category of stakeholders use the data/indicators for the purpose at hand.

Within **governments** livestock data and indicators are used for three major purposes, including policy and planning (44%), development projects (33%) and research (30%). This contrasts with all other stakeholders who require more specialized livestock-related information. **NGOs/Donors/International Organizations** use data/indicators primarily to design and implement development projects (31%); **private companies to formulate investments** (76%); **researchers** for research purpose (67%) and to formulate and implement development projects (39%). The use of data/indicators by the **Bureaus of Statistics** is uncertain as only two respondents come from such institutions: in general, these institutions conduct surveys and/or use secondary data and indicators to generate key statistics (e.g. the value added of livestock and the consumer price index) and to produce reports of use to sector Ministries and other stakeholders.

Given the different priority uses of livestock related information, the ensuing question – to which this survey does not provide an answer – is whether stakeholders can use the same data/indicators or whether different systems of data collection, analysis and/or dissemination should be in place.

Fig. 2. Priority uses of livestock data by stakeholder



Where do they get data and indicators?

Three priority sources of livestock data and indicators are revealed through the survey: these include the **Ministries/Departments of Livestock** (73%), the **Bureaus of Statistics** (56%), followed by **self-collection** (49%). Interesting enough, most of stakeholders directly collect some data, though not necessarily on a regular basis. The sources of data/indicators are not much different between categories of respondents, with the exception of private companies that rely more on self-collected data (75%) than other actors. Emphasis on self-collection may be influenced by the high number of researchers responding to the survey. Note also that data and indicators provided by International Organizations are typically collected by national institutions and are only processed and disseminated

through international databases, such as the FAOSTAT or the Animal Resources Information System (ARIS) of the Africa Union Inter-African Bureau of Animal Resources (AU-IBAR).

Fig.3. Major sources of livestock data



4. CORE LIVESTOCK DOMAINS, DATA AND INDICATORS

Respondents were asked to rank the importance of data/indicators, referencing 15 identified livestock domains. Ranking is based on a 5 level rating scale (most important; important; useful; partly useful; marginally useful), while the livestock domains are:

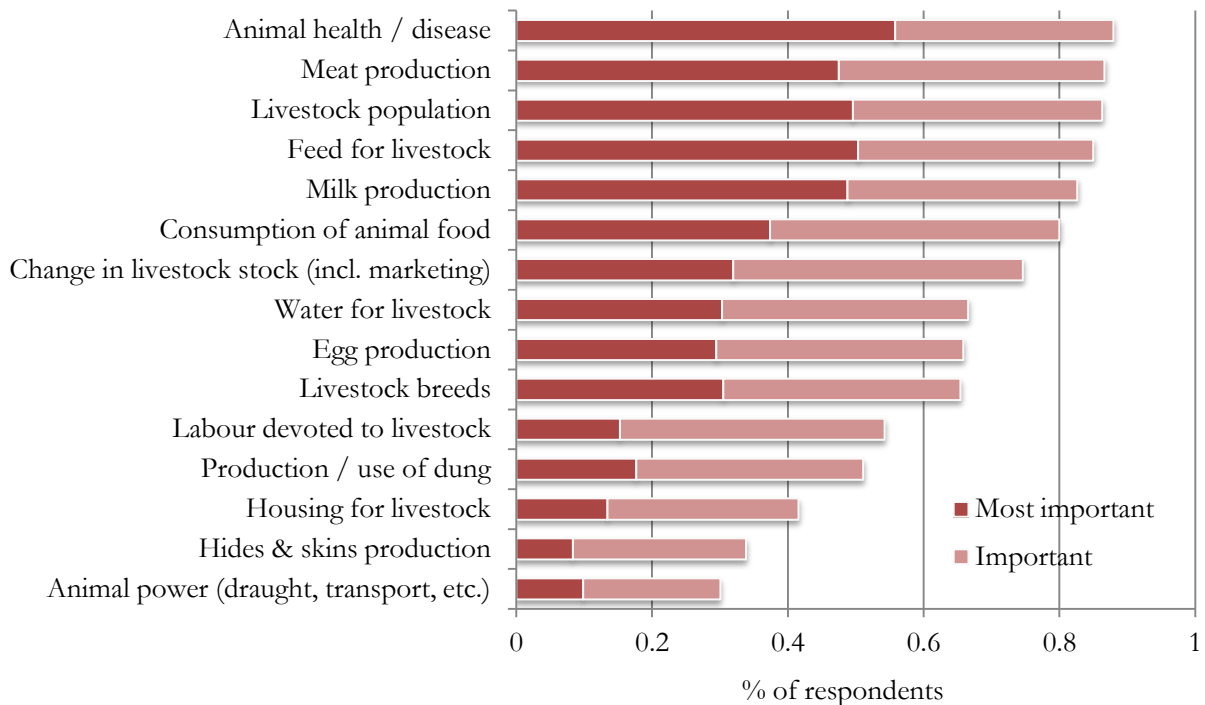
- Livestock inventory, which includes data/indicators on the livestock population;
- Change in livestock stock, which includes data/indicators on births, deaths, slaughter, marketing, etc.;
- Animal health and disease;
- Livestock breeds;
- Water for livestock;
- Feed for livestock;
- Housing for livestock;
- Labour force devoted to livestock;
- Animal power, which primarily includes data/indicators on the use of animals for draught power and for hauling services;
- Meat production;
- Milk production;
- Egg production;
- Production and use of dung, including but not only as manure;
- Hides & skins production;
- Consumption of animal source foods.

Given the relevance of price information to formulate economically sustainable investments, a specific question on the importance of getting price information was added: indeed, prices could be a feature of indicators in all other domains (e.g. value of meat production = quantity of meat produced × unit price). In over 83 percent of cases stakeholders consider getting price data as most important or important.

Priority domains for data and indicators

Respondents identified six core livestock domains, which are here considered as those ranked as most important or important by at least 80 percent of the sample. Beyond **prices**, these include data/indicators on **animal health and disease; meat production; livestock population; feed; milk production; and consumption of animal foods** (fig. 4). This information represents the core minimum needed to identify business opportunities (e.g. indicators on the consumption of animal food) and constraints along the value chain (e.g. animal health and feed-related indicators), and is consequentially critical to formulate effective investments for livestock sector growth. It should be noted that – but for animal power, hides & skins and housing for livestock – 12 out of the 15 identified domains are ranked by at least half of stakeholders as most important/important.

Fig 4. Core Livestock Domains



Disentangling priority domains for data/indicators: who wants what?

Domain priorities are similar across groups of stakeholders: table 1 below lists core and marginal livestock domains, and hence data/indicators, for the four categories of stakeholders for which a relatively large sample is available. Core data/indicators are those assessed as most important/important by 80% or more of the respondents; marginal data/indicators are those considered partly or marginally useful by at least 20% of the respondents.

Table 1. Core and marginal livestock domains by category of respondents

	Livestock Ministries / Departments	NGOs / Donors / Int. Org.	Private Sector	Researchers
Core livestock domains*	<ul style="list-style-type: none"> – Livestock inventory – Animal health / disease – Meat production – Milk production 	<ul style="list-style-type: none"> – Livestock inventory – Animal health / disease – Feed – Meat production 	<ul style="list-style-type: none"> – Livestock inventory – Change in livestock stock 	<ul style="list-style-type: none"> – Livestock inventory – Animal health / disease – Animal feed – Meat production – Milk production – Consumption of animal food
Marginal livestock domains**	<ul style="list-style-type: none"> – Animal power – Hides & skins production 	<ul style="list-style-type: none"> – Housing for livestock 	<ul style="list-style-type: none"> – Livestock breeds – Housing for livestock – Labour – Animal power 	<ul style="list-style-type: none"> – Hides & skins production

* assessed as most important/important by $\geq 80\%$ of respondents; assessed as partly useful/marginally useful by $\geq 20\%$ of respondents.

5. TIME AND SPACE DIMENSIONS OF LIVESTOCK DATA AND INDICATORS

The seasonal nature of agriculture, including some aspects of livestock, requires more timely and seasonally-defined data collection with many believing that fast reactions to information are crucial to success. Advances in information technology have dramatically increased the speed at which information could be delivered to decision makers and the speed with which decision can be made. Similarly, the ability to make investment decisions or respond to emergencies can be sensitive to the localized nature of data collection and/or the level of data disaggregation. Consequently, the survey asked questions about the preferred time-frequency and the preferred unit of reference for livestock data and indicators (table 2 and table 3).

Data and indicators: what time dimension is required?

For all domains, **respondents largely look for annual data and indicators, followed by quarterly and monthly information.** No major differences in preferences were found between the various categories of respondents (table 2). However, **information on animal health/disease is demanded on a monthly basis, which is due to the need for immediate public responses to livestock disease outbreaks and increased concerned about zoonotic diseases.**⁵

This response implies the need for evaluating the necessity and cost for establishing targeted systems of data collection and/or dissemination to provide adequate animal health/disease information to stakeholders. Finally, the results possibly underestimate the need for quarterly data given that only

⁵ Animal diseases which are transmissible to humans.

0.3 percent of the respondents come from the National Statistics Authority. Typically quarterly data are needed in most countries to produce quarterly estimates of livestock value added and GDP.

Table 2. Preferred time-frequency for livestock data and indicators

Livestock domain	Rank	Annually	Quarterly	Monthly	Fortnightly	Weekly	Daily
Animal health / disease	1	+	+	++	-	-	-
Meat production	2	++	+	+	-	-	-
Livestock population	3	+++	-	-	-	-	-
Feed for livestock	4	+	+	+	-	-	-
Milk production	5	+	+	+	-	-	-
Consumption of animal food	6	++	+	+	-	-	-
Change in livestock stock (incl. marketing)	7	++	+	+	-	-	-
Water for livestock	8	++	+	+	-	-	-
Egg production	9	++	+	+	-	-	-
Livestock breeds	10	+++	-	-	-	-	-
Labour devoted to livestock	11	++	+	+	-	-	-
Production / use of dung	12	+++	+	+	-	-	-
Housing for livestock	13	+++	++	-	-	-	-
Hides & skins production	14	+++	++	-	-	-	-
Animal power (draught, transport, etc.)	15	++	+	-	-	-	-

- < 15% of respondents; + 15%-30%; ++ 30%-45%; +++ > 45%

How localized do the data/indicators need to be?

Respondents primarily **require national level data/indicators, but also look for regional (within country) data and, to some extent, for district and household level data** (table 3). In particular, stakeholders prefer national, region and district level data/indicators for the core livestock domains, and household level data/indicators for the marginal domains, such as for the production and use of animal dung, livestock housing and animal power. These results could overlook the demand for district level data as only 0.7 percent of the respondents come from local governments. The latter, due to ongoing decentralization processes, are increasingly responsible for the design and implementation of district level programmes and projects, including for animal health and disease control. Noteworthy is also that there is little demand for broader regional aggregates, such as data/indicators on East and West Africa or South and Southeast Asia, which are relevant for formulating and implementing policies that are consistent with the broader development context of Regional Economic Blocks and Communities.

In sum, given that data/indicators are demanded at many levels by the different stakeholders, a system of data collection should be designed – to the extent that it is possible – to consistently generate data at different levels, thereby avoiding duplication of investments in data collection. This has implications for the types of surveys, including sample selection, which can be designed and implemented.

Table 3. Preferred unit of reference for livestock data and indicators

Livestock domain	Rank	Household	Village	District	Country- regions	Country	World / World regions
Animal health / disease	1	-	-	+	-	+	-
Meat production	2	-	-	+	+	++	-
Livestock population	3	-	-	+	+	++	-
Feed for livestock	4	+	-	+	+	+	-
Milk production	5	+	-	+	+	++	-
Consumption of animal food	6	++	-	-	+	+++	-
Change in livestock stock (incl. marketing)	7	-	-	+	+	++	-
Water for livestock	8	+	+	+	+	+	-
Egg production	9	+	-	-	+	++	-
Livestock breeds	10	-	-	-	+	++	-
Labour devoted to livestock	11	++	-	-	+	+	-
Production / use of dung	12	++	+	-	+	+	-
Housing for livestock	13	++	-	-	+	+	-
Hides & skins production	14	-	-	+	+	++	-
Animal power (draught, transport, etc.)	15	+	-	-	+	++	-

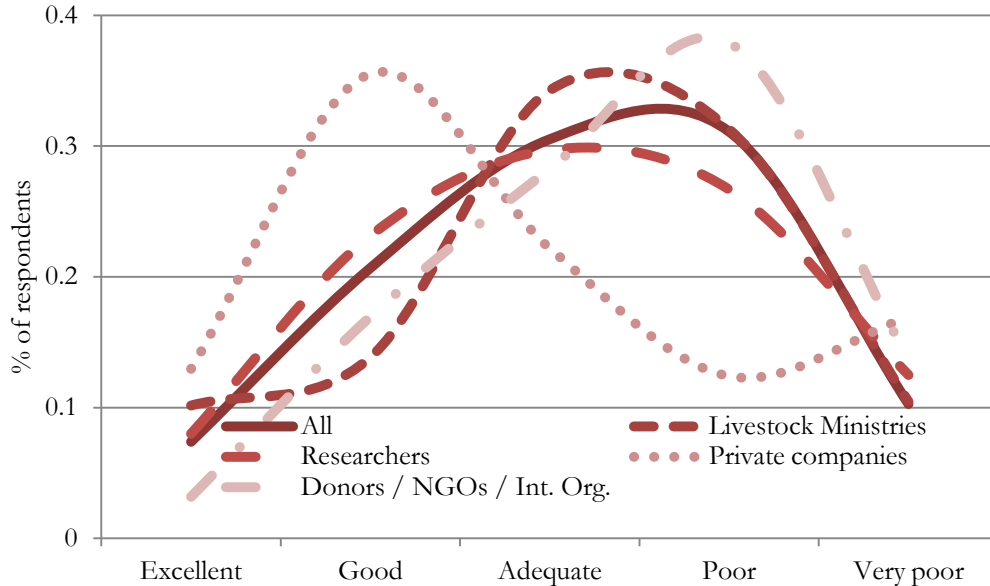
- < 15% of respondents; + 15%-30%; ++ 30%-45%; +++ > 45%

6. QUALITY OF LIVESTOCK INDICATORS

While livestock data availability/accessibility is typically highlighted as a problem, the quality of the data, as defined as ‘fitness for purpose’ amongst most National Statistics Office, is also recognized as particularly problematic because the complexity of the sub-sector, which is characterized by livestock numbers which are affected by births, deaths, farm slaughter, and often, non-seasonal animals movements. In addition, a consensus on quality is difficult to derive through an online survey. Quality includes various dimensions (e.g. relevance, accuracy, timeliness, accessibility and interpretability) and qualitative categories (excellent, good, adequate, poor and very poor), which are subject to personal interpretation, were used to assess the quality of available livestock data and indicators.

Figure 5 displays the distribution of the overall quality rate of livestock data/indicators as perceived by all stakeholders together (continuous line), and separately for staff in Livestock Ministries/Departments, private companies, universities/research institutes and NGOs/Donors/International Organizations (dotted lines). **Most of the responses in this survey seem to indicate that the quality of available data/indicators falls into the adequate and poor categories. In particular, a majority (but not an absolute majority) of respondents rate as adequate data/indicators falling into 7 domains (livestock population, animal health/diseases, livestock breeds, meat production, milk production, egg production, and consumption of animal food) and as poor data/indicators in the remaining 8 domains (changes in livestock stock; water; feed; housing; labour; animal power; production and use of dung; production of hides & skin).**

Fig.5. Quality of livestock data as perceived by stakeholders



There is considerable diversity in the responses. **While staff in Livestock Ministries/Departments and researchers rate the data/indicators they use as adequate, NGOs/Donors/International Organizations mostly rate them as poor, and private companies largely as good**, which shows that the general level of satisfaction appears inversely related to stakeholders' interest in connections between livestock and livelihoods/income. This different perception about the quality of available livestock information may be related the underling access to other data/expertise by stakeholders. For example, staff in government Ministries/Departments regularly collect and use livestock data and, therefore, typically have more knowledge about on-going sector developments which helps to well interpret the data, beyond the constituent numbers. Second, NGOs, Donors and International Organizations have, in most cases, a less detailed knowledge of the current situation and invariably find it very difficult to get adequate indicators/data, particularly as they formulate/implement projects and programmes with some public good component, i.e. for which information is rarely provided by the market. Finally, private actors invest only when they believe to have a very good understanding of the situation on the ground, i.e. they tend to use only data/indicators which they perceive as of good or excellent quality.

Linking the importance of the data to quality requirements

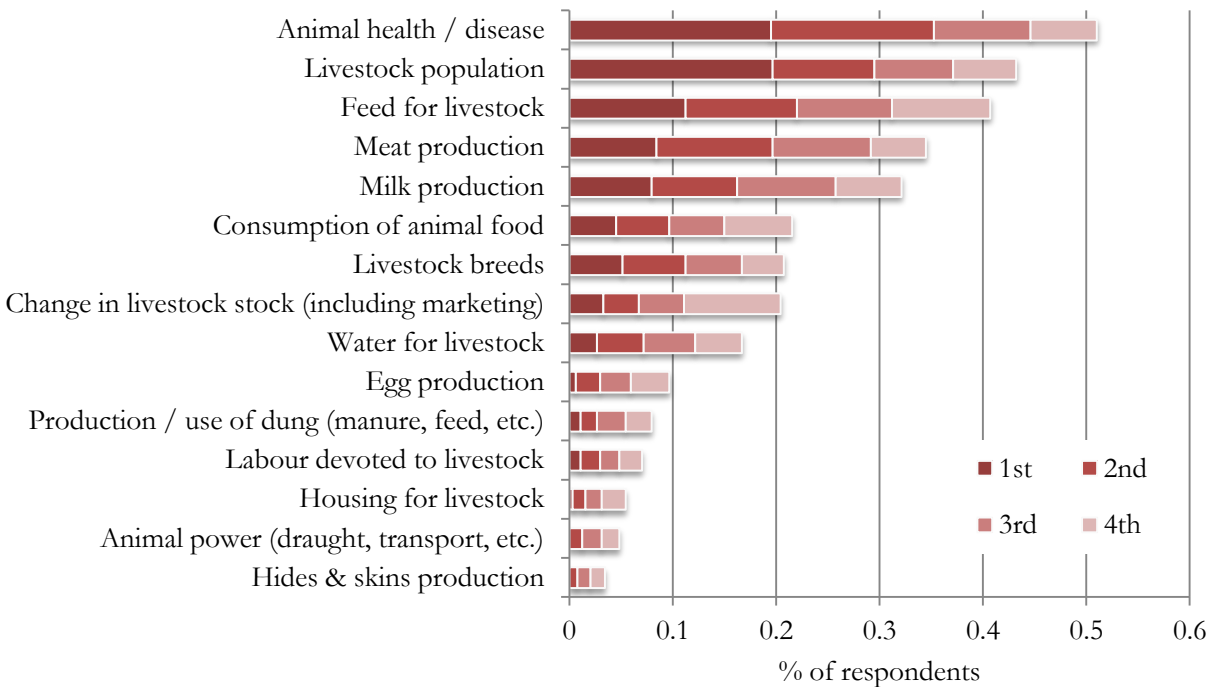
There appears to be some positive relation between the rank in importance of the data/indicator (fig.4) and its perceived quality – i.e. data/indicators in the core domains are usually of better quality than the others, though this is not fully true for all categories of respondents. **The majority (though not the absolute majority) of respondents in Livestock Ministries/Departments, among researchers and in private companies consider as excellent or good data/indicators on livestock population, which is one of the core livestock domains.** This is followed by data/indicators for meat and milk production, rated as excellent or good by over one-third of

Livestock Ministries/Departments and researchers, and by data/indicators on animal health/disease, which the relative majority of researchers and private actors consider as excellent or good . **There are no cases, however, in which some majority of staff in NGOs/Donors/International Organizations rate as good or excellent livestock data/indicators**, and in no circumstances some data or indicators are considered as very poor by more the majority of the respondents.

7. IMPROVING THE QUANTITY AND QUALITY OF LIVESTOCK DATA AND INDICATORS

Finally, respondents were asked to identify and rank (from 1 (most important) to 4) four livestock domains for which they would like investments in additional data/indicators and of better quality. **Fig. 6 shows that the majority of stakeholders (51%) require better data/indicators on animal health/disease, and that most users would prioritize investments to improve data/indicators in the domains of livestock population (43%), livestock feed (41%) and meat production (34%).** Very few respondents (<10%) recommend investing scarce resources towards improving the quantity and quality of livestock data/indicators on hides & skins production, animal power, housing for livestock, labour, production and use of dung, and production of eggs.

Fig. 6. Priority improvements of livestock data and indicators



Different investment priorities by stakeholders

There is not any significant difference in the priority demand for better livestock data/indicators between the different categories of stakeholders. **More and better data/indicators on livestock population and animal health are priority requirements by the majority of staff in Livestock Ministries/Departments and NGOs/donors/International Organizations, and by the**

majority (not absolute) of private companies and researchers. Improved feed, meat and milk-related data and indicators are prioritized by over one third of private companies; and better meat and feed data/indicators by the relative majority of staff in Livestock Ministries/Departments and NGOs/Donors/International Organizations respectively.

Different investment priorities by importance and quality of data/indicators

Respondents would prefer investing resources towards improving the quantity and quality of core data/indicators most important/important to them, which in most cases are assessed of already adequate, good or excellent quality. Few would instead agree to invest resources in partly useful or marginally useful data and indicators, most of which are considered of poor or very poor quality (fig.7 and fig. 8).

Fig. 7. Importance of indicators and priority indicators for improvement

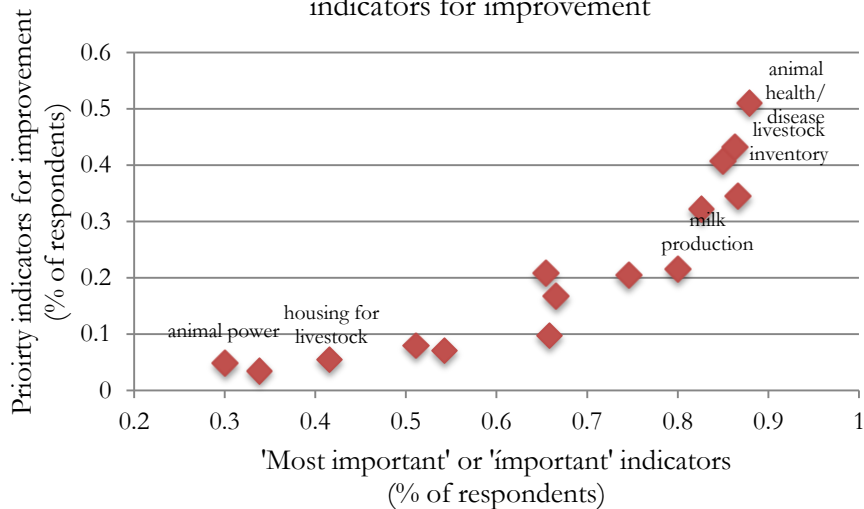
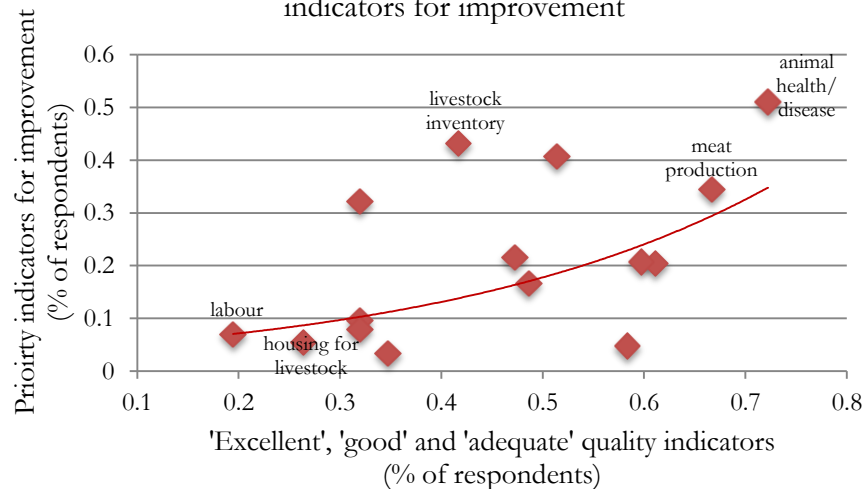


Fig. 8. Quality of indicators and priority indicators for improvement



8. CONCLUSIONS

The Livestock Data Innovation in Africa Project administered an online survey among livestock stakeholders to identify core livestock domains/areas for which livestock information is demanded; review the perceived quality of available livestock data and indicators; and identify livestock domains/areas where to prioritize investments to better satisfy the demand of livestock data and indicators.

The survey questionnaire was filled in by 641 respondents. The sample is not random: it largely consists of stakeholders from Africa and OECD countries (65% of respondents) and of researchers (47%), though a good number of respondents also came from Livestock Ministries/Departments, NGOs/Donors/International Organizations, and from the private sector.

Results of the survey suggest that there are six core domains for which livestock data/indicators are considered as most important/important by the largest share (over 80%) of stakeholders:

- Livestock inventory;
- Animal health and disease;
- Feed;
- Meat Production;
- Milk production;
- Consumption of animal source foods.

There is also strong demand for data/indicators all along the livestock supply chain, as at least half of stakeholders rate as most important/important getting information in 12 out of the 15 identified domains.

In general, data/indicators are needed on an annual basis and at country level with the relevant exception of animal health/disease data/indicators, which are recommended to be reported on a monthly basis, both at the country and district level. The overall quality of available livestock data/indicators ranges from adequate to poor, with stakeholders mostly perceiving the quality of core data/indicators as adequate. Investments recommended to improve the quantity and quality of livestock information target core data/indicators, which are mostly assessed of already adequate, good or excellent quality. Few stakeholders recommend investing resources to measure the non-monetary outputs of livestock production, such as on draught power, transport services, dung, as well as on labour inputs, for which current data/indicators are of poor or very poor quality.

Respondents in different categories, including Livestock Ministries/Departments; NGOs/Donors/International Organizations; researchers; and private companies tend to have similar preferences towards data and indicators, the only relevance difference being in the perceived quality. This is considered adequate/poor by most stakeholders, but as definitely poor by NGOs/Donors/International Organizations and rated as good by private companies.

The results of this survey provide a good basis for designing and implementing further consultations, which are recommended to better appreciate the use and demand of livestock data/indicators by different categories of users and in different world's regions. In particular, the

results represent an input for the Livestock Data Innovation Project to assist country governments in discussing and identifying core livestock indicators to be generated on a regular basis and, more in general, towards the implementation of the livestock component of the UN Global Strategy to Improve Agricultural and Rural Statistics.