



# Criteria for country-level prioritization of Africa's livestock sector for increased public and private sector engagement and investment

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## Background

Livestock is a mainstay of livelihoods across the continent of Africa. A significant proportion of Africa's livestock are owned by poor smallholders with 40% to 80% of rural populations directly involved in the livestock sector (FAO 2015; IFAD 2015). The energy and nutrient-dense milk, meat and eggs produced by livestock provide hundreds of millions of families with basic livelihoods, incomes, food, and nutrition. In dryland and semi-arid areas, livestock rearing is the only viable and sustainable production activity. Globally, livestock contribute an average of 40% of agricultural gross domestic product (GDP) and over 1 billion people worldwide are involved in the livestock sector (Herrero et al. 2014; Thornton et al. 2002).

Livestock has the potential to contribute to sustainable development and be an economic driver for millions throughout the continent.

The contribution of the livestock sector to the national economies of many African countries is, however, often underestimated. Consequently, levels of investment in the livestock sector do not reflect its contribution to livelihoods. The low prioritization of the sector in development and policy strategies at national level could be attributed largely to paucity of robust empirical evidence to support it. Furthermore, it is not always clear what aspects of the livestock subsector should be prioritized in investment decisions. Emerging empirical evidence shows that the potential contribution of the livestock sector is much larger than is currently acknowledged. The sector has big potential to contribute to economic growth, poverty reduction, food security and nutrition, livelihoods support and income generation, asset base for finance and insurance, soil and fertility improvement.

Available evidence points to a large and rapidly growing Africa's demand for livestock-derived foods projected to increase by a remarkable 80% in just two decades (from 2010 to 2030) and by more than 200% by 2050 (FAO 2018). This growth is largely attributed to increasing population, economic growth and urbanization. In 2030, the population is expected to consume 125% more beef, 60% more poultry, 46% more milk and 77% more eggs than in 2010 (WEF 2019). Under the current scenario, a large share of this demand will be met through imports from outside Africa.

For livestock to play its rightful role in sustainable development it must receive its proportionate share of public investment in National Agricultural Investment Plans (NAIPs).<sup>1</sup> Investing in sustainable livestock systems is essential to achieve the [Comprehensive Africa Agricultural Development Program](#) (CAADP) agenda and sustainable development goals. For investments to increase, there is need for evidence on the potential returns and impacts to inform the national governments, private sector, and development partners.

## Livestock sector in the National Agricultural Investment Plans (NAIPs)

In the [CAADP/Malabo framework](#), NAIPs are the blueprint investment document for the agriculture sector. NAIPs ought to capture investment commitments of the government (public sector), private sector, development partners and other nonstate actors. The principles and practices of CAADP such as planning and inclusive planning processes should be used in NAIP development. This would lead to identification of challenges, prioritization of investment and policy measures required for agriculture growth and development. Therefore, the NAIPs process offers a good opportunity to capture the critical role of the livestock sector and guide in directing adequate investment to it.

A review of the NAIPs of several countries indicates that there are varying levels of use of evidence in guiding their development especially for the livestock sector. There is clear need to revisit some of the NAIPs and strengthen the evidence base for supporting prioritizing investments for the livestock sector.

In recognition of this need the African Union-Interafrican Bureau for Animal Resources (AU-IBAR) through the Sustainable Development of Livestock for Livelihoods in Africa (Live2Africa) project, in collaboration with the

International Livestock Research Institute (ILRI), initiated a process that would support select countries revise their NAIPs by improving the livestock evidence base and analysis. ILRI and its partners desire to extend this initiative by supporting other countries in Africa to develop livestock master plans (LMPs). To guide selection of countries, there is need to develop criteria for prioritizing the countries to participate in this process. This is necessary because the importance and contribution of livestock vary between countries and hence the potential returns for investment vary too. Furthermore, high level political support is necessary if the implementation of the resulting LMPs is to be effective. This political support would be expressed through prioritization of livestock in the NAIP and budget allocation among other factors.

## Objectives

The overall objective of this brief is to propose and describe criteria to guide engagement with African countries in the development of country-level LMPs.

Specific objectives are to:

1. Describe the criteria and propose indicators to consider in selecting African countries to engage with in the development of LMPs.
2. Develop a scoring and ranking method using the criteria and proposed indicators.

## Target audience

The brief is prepared as a guidance tool for stakeholder groups with interest in supporting the development of LMPs in countries. These include government officers in charge of livestock development, funding agencies, technical partners including national and international research organizations and other non-state actors with interest in the livestock sector.



ILRI's Sirak Bahta (left) facilitating a livestock sector stakeholders consultation meeting (photo credit: ILRI/Ojanji Wandera).

1. NAIPs are the developed by countries by aligning their agricultural strategies and investment plans with the spirit, values and principals of CAADP.





ILRI's Francis Wanyoike facilitating livestock sector stakeholder discussions (photo credit: ILRI/Ojanji Wandera).

## Proposed criteria for assessment of livestock sector

Twelve (12) broad criteria are proposed for assessing the importance of livestock sector to the economy, livelihoods, and socio-economic development of the countries. For each criterion, one or more indicators are proposed. The following criteria and indicators are proposed:

### 4.1 Livestock population

Africa has a high population of livestock; accounting for about one third of the world's livestock population. Distribution of livestock across countries vary widely; for example, four countries (Ethiopia, Sudan, Chad and Niger) account for about 40% of the cattle population in Africa (computed based on [FAOSTAT Online](#)).

Africa's total livestock population in 2018 was estimated at 2 billion poultry birds (1.9 billion chickens, 26 million guinea fowl, 27 million turkeys, 22 million ducks, and 11.5 million pigeons), 438 million goats, 384 million sheep, just under 356 million cattle, 40.5 million pigs, almost 31 million camels, and 38 million equines (including 30 million donkeys, 6.5 million horses, and 885,000 mules) ([FAOSTAT Online](#)).

Given the wide variation in livestock population across countries, one criterion for objective prioritization would be countries with higher livestock population would receive higher priority in the development of LMPs. To standardize comparison across different livestock species and countries, the livestock will be converted to tropical livestock units (TLUs).

Proposed indicator in this category is:

- Proportion of a country's livestock population (by species) to Africa's total livestock population (in TLU units)
- $$\frac{\text{Total livestock population in a country (by Spp)} - \text{TLU units}}{\text{Africa's total Livestock population (by Spp)} - \text{TLU units}}$$

### 4.2 Contribution of the livestock sector to the economy

The livestock sector accounts for about 40% of agricultural GDP in Africa; but ranges widely from 30% to 80% in individual countries. The livestock sector has the potential to deliver both the agricultural-led growth and the socio-economic transformation and is expected to become the largest contributor to agriculture as economic development progresses because of a growing demand for high-value food items, including meat and dairy products. In industrialized economies, the livestock sector accounts for about 50% of agricultural GDP (computed based on FAOSTAT online, <https://www.fao.org/faostat/en/#data/MK>). Due to the wide variation among the countries, it is important to consider the levels of contribution of the livestock sector to the economies.

Indicators proposed in this category include:

- Contribution of livestock sector to AgGDP (%)

### 4.3 Contribution poverty reduction

Majority of the poor people in Africa live in rural areas and are dependent on agriculture and livestock for their livelihoods. Efforts to tackle poverty must address challenges in the livestock sector to unlock the potential of the sector to reduce poverty. Level of rural poverty is proposed as indicator for gauging the extent to which livestock sector can contribute to poverty reduction.

Countries with higher poverty levels should be given higher priority in supporting the livestock sector to develop effective strategies through the LMP process.

- Level of rural poverty (% of rural poor)

### 4.4 Growth in demand for livestock products

Rapid urbanization and growth in income and the associated shift in dietary demand is leading to an increase in demand for livestock and other animal-sourced foods. In many countries, this demand is being met through imports mainly from outside the continent. This increasing demand offers an opportunity for growth in the livestock sector for increasing local production and also incomes for livestock producers. For this criteria, we propose two indicators relating to urbanization and income growth as below:

Proposed indicators:

- Rate of urbanization (% of population living in urban areas)
- Growth in income % (based on purchasing power parity)

#### 4.5 Contribution to nutrition

Livestock are an important source of nutritious foods for many people across Africa. Animal-source foods are an important source of readily absorbed and used proteins and they are especially important for vulnerable groups like children and sick people and in areas where other nutritious foods are not available.

Ensuring access to animal-source foods (ASFs) is an effective way to ensure the Africa's poorest and vulnerable groups like children and the sick can improve their diet, either through the animals they raise or the income they receive from them. Experimental studies have shown that even small amounts of ASF provided to children regularly, such as an egg a day, can have very significant positive effects on children's physical and cognitive development. Low levels of consumption of ASFs is associated with poor nutrition outcomes. Livestock's contribution to nutrition would be an important consideration in prioritizing support for the livestock sector in countries. Priority should be given to countries for which growth rate of per capita consumption of ASFs is low because more consumption of ASFs will lead to better nutrition outcomes.

In addition to consumption of ASFs, a longterm outcome indicator for nutrition, prevalence of stunting for children under five, would be an appropriate indicator to guide prioritization of livestock support in countries. Countries with higher levels of stunting should be prioritized in supporting development of livestock master plans.

The proposed indicators for livestock contribution to nutrition are:

- Per capita consumption of livestock sourced proteins (growth rate %)
- Prevalence of stunting for children under 5 (%)

#### 4.6 Livelihood's support and income generation

Across the continent, livestock is considered as one of the most valuable agricultural assets for the rural and urban poor, especially for women and pastoralists. Globally, the livestock sector is an important source of jobs, providing livelihoods and incomes for at least 1.3 billion people. Livestock keeping is one of very few livelihood options in challenging settings such as

drylands: Nearly 200 million pastoralists produce food and generate incomes where crop farming is limited, risky or impossible.

Livestock play multiple roles in supporting livelihoods. One of the most important is as a source of household income. According to nationally representative data from across the developing world, 68% of households earn income from livestock (Davis et al. 2007). Staal et al. (2009) analysed 92 case studies from the developing world and found that livestock contributed, on average, 33% of the income in mixed crop-livestock systems, with higher incomes being associated with dairy and poultry production. They also reported average livestock incomes from pastoral production of 55% of total income. Therefore, livestock's share of rural household income would be an important factor in deciding the countries to prioritize LMP development.

Proposed indicators

- Livestock income (as %) of total farm income
- Livestock income (as %) of total household income

#### 4.7 Asset base for finance and insurance

Livestock are capital assets, produced in the past and contributing to future product output. Investment in, or the acquisition of, livestock involves saving or borrowing, justified by the expected future return on capital. Apart from durable capital embodied in the animals, circulating capital is needed to meet current costs of production.

In the absence of banks and insurance policies, livestock serve as 'piggy banks', a way for people to save and store money and manage risk. Using the average household livestock holding (in value) the following indicator is proposed:

- Livestock contribution to household asset value (%)

#### 4.8 Contribution to sustainable resource management

Well managed livestock can ensure sustainable land and water management. Livestock manure is a ready source of natural fertilizer for crops, providing 12% of the nitrogen used for crop production globally, rising to 23% in mixed crop livestock systems. Livestock can also help restore degraded land; and in rangelands, livestock keeping can contribute to the biodiversity of plants, soils and animals. In this theme, the countries will be rated based on amount of livestock manure applied to soil. The proposed indicator is:

- Manure applied to soils (N content in %)

## 4.9 Returns on investment

The livestock sector in Africa offers an excellent investment opportunity going into the future. Africans are eating more animal products, as their population grows, and their incomes rise. In 2013, the average person on the continent annually consumed around 20 kg of meat and 45 kg of milk—by 2050 this is projected to increase to more than 25 kg of meat and almost 65 kg of milk. Meanwhile, Africa's population is expected to nearly double to 2.2 billion in the same period. This rising demand for livestock products provides an opportunity for investments by the government and the private sector. Proposed indicators include:

- Proportion of profits (gross margin) realized from livestock keeping as a % of total profits (GM) achieved from total farming keeping at household level
- Returns on investment (ROI) public investment in livestock sector (%)

## 4.10 Contribution to gender equity

Men and women make important contribution to the livestock sector in terms of the roles they play in different nodes of livestock value chains. Women often face greater constraints than men in accessing resources, extension services, marketing opportunities and financial services as well as in exercising their decision making powers. There is increased evidence that the livestock sector is key in supporting women's empowerment. Consequently, the sector is an important means of enhancing gender equity by promoting women's empowerment (Galiè et al. 2019). Moreover, women's input in food consumption decisions in their households, places greater importance to women's ownership and management of livestock and ASFs and contributes to better household nutrition, empowerment and overall well-being of their families. In addition, awareness creation programs among women on the nutritional value of ASFs, especially for infants, would improve household nutrition. Proposed indicators include:

- % of households where women own livestock (by and across species in TLUs)
- Gender inequality index

## 4.11 Livestock negatives—contribution to greenhouse house gases emissions

The bulk of greenhouse gas (GHG) emissions by livestock originate from four main categories of activities: enteric fermentation, manure management, feed production and energy consumption.

Global livestock production contributes an estimated 18% of anthropogenic GHG emissions mainly in terms

of methane and nitrous oxide. Enteric fermentation from livestock amounts to 6.2 Gt of CO<sub>2</sub> equivalents (4.4% of global emissions) (FAO 2006).

Large scope to reduce GHG emissions exists through increased livestock productivity (measured per unit of livestock product). Enhancing rangeland productivity through better pasture management and use of higher productivity animals can significantly reduce unit emissions. Biogas digester plants on small dairy farms can reduce GHG emissions from manure. Climate change mitigation policies should aim to enhance the efficiency of livestock production. Funding should be channeled to the livestock sector to facilitate adoption of appropriate productivity increasing technologies.

Livestock production is an effective way to help farmers adapt to climate change and the drier conditions that may occur. After a climate shock, livestock are often the only asset that people have to help them recover.

The Livestock Manure domain under the FAO-STAT section of Agri-Environmental Indicators contains estimates of nitrogen (N) inputs to agricultural soils from livestock manure. The data from FAOSTAT will be used to select countries to prioritize in LMP development. Data on the amount of manure excreted and manure left on the pasture will be used to compute the following proposed indicator:

- Manure left on pasture that volatilizes (N content as a %)

## 4.12 Political and policy support for the livestock sector

LMP implementation requires political and policy support for the livestock sector. The LMP process supports countries to generate the evidence needed to develop a livestock sector strategy and livestock commodity specific roadmaps using a set of analytical tools. The identified priorities in the LMP can then be incorporated in the NAIP. However, even where a NAIP has already been developed, LMP is still critical as a comprehensive sub-sector level investment document for the livestock sector. Furthermore, any new evidence that would arise from the NAIP process can be incorporated when the NAIPs are revised or new ones developed. The LMP is then incorporated in NAIP, a nationwide agriculture sector document that defines national priorities, goals and outcomes over a defined time frame. In order to establish whether political and policy support exists for the sector we propose the following indicators and sub-indicators:

- Whether the country has developed a NAIP or not (specifically second generation NAIP) (if yes 100% otherwise 0%)



- Whether the livestock sector is expressly recognized in the NAIP (if yes-100% otherwise 0%)
- Whether the NAIP clearly identifies challenges in the livestock sector & whether specific livestock programs are proposed in the NAIPs and whether the livestock programs address the identified challenges in (c) [If yes, 100% otherwise 0%]
- Budget allocation (%) to livestock sub-sector (as a proportion of the total agriculture budget)
- Whether the evidence (livestock related) is used in the development of the NAIP (yes 100% otherwise 0%)
- Whether the country has expressed demand for the development of LMP (100%) otherwise 0%.

polymakers, development partners, research organizations, etc.) to develop their own priorities for intervening in the livestock sector.



Part of data gathered during stakeholder meetings (photo credit: ILRI/Ojanji Wandera).

## Scoring and ranking approach

To ease comparison between countries through ranking, the indicator scores will be normalized between 0 and 100, where 0 represents the lowest and 100 represents the highest score. In this brief, the normalization process is simplified because the indicators have been formulated for reporting in percentages.

By normalizing the indicators, it becomes possible to rank countries based on their performance for each indicator. Furthermore, overall ranking can be derived by summing up the normalized scores for all indicators. This approach is widely used by the World Bank in generating the ease of doing business score among countries (see [Ease of Doing Business Scores](#)) for details.

The outstanding issue would be on weights associated with each criterion. For the initial scoring and ranking equal weights can be assumed for all indicators. To make the ranking more reflective of the reality the following actions are proposed:

1. Expert consultation to be conducted to obtain opinions/consensus on weights for different criterion and indicators. It is proposed that a group of livestock experts (researchers) and policy makers and incountry practitioners be convened to discuss and provide opinion on the ranking criteria and building consensus on the possible weights of each criterion and indicators. The total weight should be 100 and should be distributed across the prioritization criteria and indicators.
2. An online toolkit of the criteria be developed with built-in flexibility for varying the weights of criteria and indicators.

This will allow for flexibility to fit the unique circumstances and needs of different stakeholders (e.g. country-level

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Table 1. Parameters used to determine the direction of influence on prioritization of the livestock sector

	Criteria	Parameters/indicators	Direction of influence on prioritization
1.	Livestock population	Proportion of livestock (by Spp) in TLU to Africa's total	↑
2.	Contribution of the livestock sector to the economy	Contribution of livestock sector to AgGDP (%)	↑
3.	Contribution to poverty reduction	Levels of rural poverty (%)	↑
4..	Growth in demand for livestock products	Rate of urbanization (% of population living in urban areas) Growth in income % (based on purchasing power parity)	↑
5.	Contribution to nutrition	Per capita consumption of livestock-sourced proteins (growth rate %) Prevalence of stunting for children under 5 (%)	↑
6.	Livelihoods support and income generation	Livestock income as a percentage of total farm income	↑
		Livestock income as a percentage of total household income	↑
7.	Asset base for finance and insurance	Livestock contribution to household asset base (percentage)	↑
8.	Contribution to sustainable natural resource management	Manure applied to soils (N content in %)	↑
9.	Returns to investment	Proportion of profits from livestock keeping (% of total) at household level	↑
		Returns to investment (RoI) of public investments in livestock sector (%)	↑
10.	Contribution to gender equity	% of households where women own livestock (by and across species)-TLU units	↑
		Gender Inequality Index	↑
11.	Livestock negatives—greenhouse house gases emissions	Manure left on pasture that volatilizes (N content %)	↑
12.	Political and policy support for the livestock sector	Whether the country has developed a NAIP or not	↑
		Whether the livestock sector is expressly recognized in the NAIP	↑
		Whether the livestock sector is expressly recognized in the NAIP	↑
		Whether the NAIP clearly identifies challenges in the livestock sector	↑
		Whether specific livestock programs are proposed in the NAIPs and whether the livestock programs address the identified challenges in	↑
		Budget allocation to livestock sector (as a proportion of the total Ag. budget)	↑
		Whether the evidence (livestock related) is used in the development of the NAIP	↑
		Whether country has expressed demand for LPMP	↑

The current version of the data base is available on the link— [livestock importance scoredcard](#).



Stakeholders at the KLMP workshop held in November 2021 in Naivasha (photo credit: ILRI/Ojanji Wandera).

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### Photo credit

Page 1: Stakeholders at the Kenya Livestock Master Plan workshop held in July 2021 in Naivasha (ILRI/Ojanji Wandera)

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