IGAD Centre for Pastoral Areas and Livestock Development (ICPALD)

The Contribution of Livestock to the Eritrean Economy

December 2015

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The authors' views expressed in this publication do not necessarily reflect the views of IGAD, the IGAD Centre for Pastoral Areas and Livestock Development (ICPALD) and the Eritrean government and or their agents.

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Dr. S. J. Muchina Munyua
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EXECUTIVE SUMMARY

This report is part of a series of publications on the contribution of livestock to the economies of the Horn of Africa. Building on lessons and in particular the methods used in previous series, the report is an output of the study on the contribution of livestock to the Eritrean national economy. It assesses and assigns monetary values to the marketed and non-marketed goods and services that livestock provide and also the extent to which this contribution is reflected in national accounts.

The methodology adopted to assess the contribution of livestock to the Eritrean economy follows a production approach as adopted in other studies in Kenya, Uganda, Ethiopia and Sudan and relies on estimates of the amount of physical product generated on average by a given number of animals. To estimate the agricultural GDP, Eritrea's Statistics Office generally follows the commodity flow approach, which differs largely from the production approach.

Conclusions

- Using a production approach based on livestock population data and outputs from each livestock enterprise provides a much higher estimate of the contribution of livestock to GDP. The official estimates put livestock contribution at **0.157 Billion USD,** equivalent to 39% of the overall agricultural sector GDP and 4.6% of the national GDP in 2013. However, using a production approach, this study places livestock contribution at **1.650 Billion USD**, equivalent to 410% of the overall agricultural sector GDP and 47.9% of the national GDP in 2013. This production approach for estimating GDP includes direct benefits generated by livestock, especially financial services.
- Using the production approach, the total gross value of livestock products was **1.442 Billion USD** in 2013.
- The total estimated value of goods and services provided by livestock i.e. the direct use value of livestock to the Eritrean economy was **1.737 Billion USD**, including 87% derived from conventional goods common in agricultural GDP and 13% from financial services provided by livestock.
- Using a production approach, live animal offtakes is Eritrea's most economically important livestock product, with a value of **0.818 Billion USD** in 2013, equivalent to **49.58%** of the total gross value of livestock contribution to the agricultural sector in 2013.
- About 13% of the direct benefits derived by livestock owners from their animals are attributable to the financial services provided by livestock and are always omitted in the quantification of economic functions of livestock at household and national levels.
- Cattle is Eritrea's most important source of red meat, supplying 64% of meat needs and contributing **0.452 Billion USD**, equivalent to 27.4% of livestock contribution to GDP.

- In terms of contribution to agricultural GDP, meat is one and half times more important than milk; sheep and goats are two times more important than camels while chicken are about two times more important than pigs in GDP contribution.
- The domestic production of meat and milk for consumption is low in Eritrea, averaging 8.07 kg of beef, 1.5 kg of camel meat, 0.99 kg of sheep meat, 1.95 kg of goat meat, 0.04 kg of chicken meat and 0.01 kg of pork was consumed per person in 2013. The overall red meat consumption per capita in 2013 was 12.55 kg while that of white meat was 0.05 kg. Milk consumption averaged 58.1 litres per person in 2013.
- Milk consumption is high compared to 26 litres of milk per person in Kenya but lower than the 198 litres per person in Sudan. Meat consumption compares well with estimated 15 kg of meat per person in Kenya, but lower than the estimated 41 kg of meat in Sudan.
- Eritrea is a net livestock exporter, with cattle being the most important export commodity and contributing **0.36 Billion USD**, equivalent to 53% of export values and 20% of agricultural GDP in 2013.
- Offtake rates are high indicating that the official population statistics may be grossly overestimated. Hides and skins offtake were also low, indicating high post slaughter loses of hides and skins through wastage or rots.
- Milk production contributes **0.609 Billion USD**, equivalent to 37% of the value of livestock's contribution to agricultural GDP, and milk from cattle is Eritrea's single most valuable dairy product contributing **0.52 Billion USD** in 2013.
- Animal traction contributes about **0.038 Billion USD**, equivalent to 2% of the value of livestock contribution to agricultural GDP in Eritrea.
- The contribution of livestock to the agricultural sector of Eritrea is significant, with high dependence among nomadic pastoralists for livelihoods.
- Livestock constitutes a sizable portion of Eritrea's exports, contributing **0.698 Billion USD**, equivalent to 40% of agricultural GDP in 2013. However, the moderate contribution of the processed products like hides and skins to export trade indicate relative local market competiveness.
- Although there was minimum official documentation of cross border livestock movement with neighbouring countries, this exists and contributes to the Eritrean economy.

Recommendations

- As a matter of urgency, the Government of Eritrea should update its livestock population by undertaking a rigorous livestock census in all its regions.
- Increase veterinary department enforcement of screening procedures and institute strict vetting of animals at cross border markets before granting movement permits, as well as inspection at the point of destination.
- The livestock based staff should be trained on the procedure for gathering data and estimating the economic value of the livestock sector in the national economy using the production approach which has obvious advantages when compared to the commodity flow approach.

- Improve tick control and branding by pastoralists, increase the processing of hides and skins, enhance pre and post-slaughter operations (e.g. flaying, storage) and strategically enhance value addition along the hides and skin value chain.
- There is need for a research to quantify the levels of cross border livestock trade between Eritrea and its neighbouring countries. At the moment, no reliable data is available in this regard, yet it is common knowledge that some livestock in Eritrea pass through its borders, especially with Sudan.

ACRONYMS

AfDB	African Development Bank
ASAL	Arid and semi-arid lands
AU IBAR	International Bureau for Animal Resources of the African Union
ERN	Eritrean Nakfa
FAO	Food and Agricultural Organization of the United Nations
FAOSTAT	Food and Agricultural Organization's Statistics
FEWSNET	Famine Early Warning System Network
GDP	Gross Domestic Product
HA	Hectares
ICPALD	IGAD Centre for ASALs and Livestock Development
ICRC	International Committee of the Red Cross
IGAD	Intergovernmental Authority on Development
ILRI	International Livestock Research Institute
MOA	Ministry of Agriculture
NSA	National Statistics Office
PRSP	Poverty Reduction Strategy Paper
TOR	Terms of Reference
USD	United States Dollar
WHO	World Health Organization

1.0 INTRODUCTION AND STUDY OBJECTIVES

1.1 Introduction

African Union through the Vet-Gov Project seeks to promote drylands livelihoods and livestock development policies for countries within the IGAD region to sustainably generate wealth and employment and to be a regional policy reference institution for sustainable livestock development and resilient dryland livelihoods. It seeks to do this through promoting and facilitating sustainable and equitable drylands and livestock development. Among its key objectives are to promote and facilitate elaboration and harmonization of regional livestock and dryland policies and development of initiatives of IGAD region states and also to facilitate and support the domestication, adoption and transfer of appropriate research and technology in drylands and livestock development.

The study aims at supporting Djibouti, Somalia, South Sudan and Eritrea to advocate for livestock representation commensurate with its contribution to economy in key national strategy documents like Poverty Reduction Strategy Papers (PRSPs). This study assigns monetary values to marketed and non-marketed goods and services that livestock provide and the extent to which this contribution is reflected in national accounts. As part of a series of publications on the contribution of livestock to the economies of IGAD region states, this report therefore, presents the findings consisting of a summary narrative, detailed findings, conclusions, recommendations and annexes.
The report is organized into 6 parts. Part 1 is the introduction and provides a brief on Eritrea and Vet Gov Project. In addition, it provides the steps and justification for the production approach adopted to estimate the contribution of livestock to the Eritrean economy and also outlines study objectives and methods used. Part 2 is a presentation of the direct-use benefit values of livestock, covering among others, livestock offtake and milk output, manure as fertilizer, animal draught power, hides and skin and livestock-based financial services. Part 3 highlights the non-agricultural contributions livestock make to the wider Eritrean economy including household consumption, as inputs into other sectors and in export trade. Part 4 gives the conclusions and recommendations arising from findings while Part 5 and 6 are the bibliography and annexes respectively.

1.2 Country Background

Eritrea is located on the Horn of Africa bordering the Red Sea to the east, Sudan to the North West, Ethiopia to the south and west and Djibouti to the South-East (Figure 1). Eritrea is a relatively small country with an area of 117,600 km², a GDP per capita of USD 1,784 (total GDP, 3.858 Billion USD) and growing at 2%[1]. It has a rising population (growing at 1.5%) and poverty levels are at 69%.

[1] World Bank 2014

Agriculture, animal husbandry and fishing remain the mainstay of the economy, with approximately 75% of the population relying on these sectors for their livelihoods. The land is characterised by three eco-regions - central highlands, dry coastal plains and western lowlands associated with temperate climate in the mountains and hot in the lowlands, a hot, dry desert strip along Red Sea coast. Approximately 49% of Eritrea land mass is rangeland which harbour indigenous grasses and browse plants, water points, (mainly boreholes) and shade provided by vegetation. The rangelands are the main grazing land for cattle, sheep, goats and camels. The inhabitants of these rangelands practice primarily mixed farming, with about 520,000 Ha under cropping (mostly rain-fed with insignificant irrigation). Table 1 below gives the main crops grown and their respective coverage.

Figure 1: The Map of the Republic of Eritrea

Table 1: Field crops, area planted and crop type in Ha (2010-2014)

Year	Cereals in Ha	Area in %	Pulses In Ha	Area In %	Oils In Ha	Area In %	Total
2009	453,744	94	20,667	4	6,674	2	481,085
2010	456,580	93	22,452	5	9,764	2	488,796
2011	434,999	91	28,437	6	15,683	3	479,119
2012	420,413	90	24,279	5	22,360	5	467,052
2013	426,979	93	23,182	5	9,993	2	460,154
2014	473,289	90	25,312	5	27,550	5	526,151

Although the majority of the population depends on agriculture, animal herding and fishing for their survival, these sectors only account for 16.9% of GDP and 20-30% of commodity exports (Eritrea's Agriculture Sector Strategy, 2014). Other sectors' GDP contributions in 2012 were as follows: Service sector, 28%; trade and market services,19%; agriculture, forestry, fisheries,16.9%; manufacturing industries, 5.9%; transport, storage and communication, 12.4%; construction, 15%; and electricity, gas and water, 1.7%.

Livestock are reared under mixed farming conditions, with management practices differing considerably in the 6 agro-ecological zones. In the highlands, cereals and livestock are managed in an integrated system where animals are grazed on hillsides and crop residues left on fields after harvest and supplemented by harvested crop residues during critical periods. Most livestock are in the lowlands, with 71% of cattle, 50% of sheep and goats and 60% of camels in western lowlands. In low rainfall areas, agro-pastoralists supplement their grazing livestock with crop residues while pastoralists migrate long distances in search of pasture. Except for some peri-urban commercial production, livestock production is primarily carried out by the traditional sector under natural conditions (extensive system). Dairy cattle are also reared, including exotic breeds (e.g. Holstein), intensive local breeds and cross breeds.

Eritrea's GDP trends are indicated in Table 2 below. Overall, from 2010 to 2013, the country witnessed growths in national and agricultural GDPs, with minimal changes noted on livestock contribution to both agricultural and national GDP.

Table 2: Eritrea's GDP trends (2010-2013)

	2010	2011	2012	2013
Eritrean National GDP (US$)	2,117,039,511	2,607,700,000	3,092,000,000	3,444,100,000
Agriculture (US$)	236,873,870	242,163,840	247,098,920	245,561,440
Livestock (US$)	158,831,290	154,559,700	155,992,200	156,786,880
Total Primary Sector(Agric & Livestock) (US$)	395,705,160	396,723,540	403,091,120	402,348,320
% Contribution of Primary Sector* to National GDP	18.69%	15.21%	13.04%	11.68%
% Contribution of Agriculture to National GDP	11.19%	9.29%	7.99%	7.13%
% Contribution of Livestock to National GDP	7.50%	5.93%	5.05%	4.55%
% Contribution of Agriculture to Primary Sector GDP	59.86%	61.04%	61.30%	61.03%
% Contribution of Livestock to Primary Sector GDP	40.14%	38.96%	38.70%	38.97%

Source: Ministry of Agriculture, World Bank data; study calculations. *This includes livestock, forestry, crops, wildlife, etc

From Table 2 above, in 2013, the national GDP was 3.444 Billion USD (World Bank 2014), with primary sector (overall agricultural and livestock) contributing 402,348,320 USD, equivalent to 11.7% of the national GDP. Agriculture (crop production) contributed 245,561,440 USD, equivalent to 61% of the overall agricultural sector GDP and 7.1% of national GDP. The livestock sector contributed 156,786,880 USD, equivalent to 39% of the overall agricultural sector GDP and 4.6% of national GDP.

1.3 A production – based approach for estimating GDP

The methodology adopted for assessing the contribution of livestock to the Eritrean economy follows a production approach as applied in other studies in Kenya, Uganda, Ethiopia and Sudan and relies on estimates of the amount of physical product generated on average by a given number of animals. The approach follows four key stages:

i) Stage 1: Estimating the national livestock population for Eritrea – with comparative figures from the Ministry of Agriculture, AfDB, IMF and FAOSTAT database;
ii) Stage 2: Estimating average and corresponding total livestock outputs (milk, etc);
iii) Stage 3: Estimating 'farm gate' prices in ERN and total gross value of outputs;
iv) Stage 4: Estimating input costs and their deduction from gross values from outputs.

The Eritrean National Statistics Office (NSO) has been unable to undertake GDP estimations since 2009. The estimates prior to 2009 were also unavailable. This study was therefore not able to get direct input from the government offices in terms of GDP estimations and the methodology used. Nevertheless, the current study adopted a production approach, which greatly depends on farm gate prices of livestock products and enterprise specific input costs. The approach is however limited by lack of recent data on livestock census. It is worth noting that the local agricultural economy is less commercialized, with most outputs used for various reasons within households and for such, no data on quantities and prices is available (e.g. use of dung as manure and in lighting, camel milk and about 50% of cattle, sheep and goat milk consumed at home).

1.4 Livestock production and population in Eritrea

Table 3 below shows the livestock population trends in Eritrea, with most projections based on estimates prepared by the Ministry of Agriculture. Since they are projections, they may not be entirely reflective of the actual herds and flocks over a five-year period.

Table 3: Livestock population trends, Eritrea (2010-2014)

Livestock Type	2010	2011	2012	2013	2014
Cattle	2,193,626	2,215,562	2,237,717	2,260,095*	2,282,696
Sheep	2,422,937	2,447,166	2,100,000	2,496,354	2,521,318
Goats	5,305,546	5,358,602	5,412,188	5,466,310	5,520,973
Camel	362,954	366,583	323,000	373,952	377,691
Pigs	4,000	4,000	4,000	5,000	5,000
Horses & Donkeys	525,000	525,000	525,000	525,000	525,000
Indigenous Chicken	1,138,760	1,510,817	768,540	984,716	1,094,026
Exotic Chicken	40,986	30,085	28,576	190,123	73,226

Source: Eritrea's Ministry of Agriculture, 2015; *Estimate excludes intensive bred cattle

The official figures in Table 3 above show significant variances from the FAO (2013) data.FAO livestock population estimates for 2013 are as shown below:

- Cattle - 282,792
- Sheep - 465,124
- Goats - 511,239
- Camels - 370,000

This study however adopts the official population estimates in calculating the livestock contribution to agricultural GDP.

1.5 Limitations

The production approach adopted for this study faced some limitations especially in Eritrea where variations in livestock population figures exist between the official Ministry of Agriculture figures, FAOSTAT and research outputs (e.g. 2012 AfDB funded livestock study). Also, with limited studies on livestock production in Eritrea, comparatives estimation of some production coefficients was difficult.

2.0 DIRECT USE BENEFITS OF LIVESTOCK

2.1 Introduction

These are livestock goods and services, both marketed and non-marketed or for subsistence and broader than conventional definitions of agricultural GDPs. Official agricultural GDP estimates for Eritrea only include the value of marketed goods produced by livestock and excludes the value of the un-marketed livestock services such as financial services, animal draught power, among others. The direct use value sums up all the various economic benefits derived from livestock including the range of livelihood benefits that livestock owners depend upon in practice, but which are never reflected in national accounts. Part 2 therefore estimate the value of these goods and services to the Eritrean economy. The estimates are based on the 2013 livestock outputs.

2.2 Live animal and milk offtakes

These are the main components in estimating the contribution of livestock to GDP.

2.2.1 Cattle milk output

Three systems of dairy cattle production are noted in Eritrea - an extensive (traditional) system involving local cattle breeds, intensive (exotic breeds) system involving exotic cattle and intensive (local breeds) system. According to the Ministry of Agriculture, the estimated daily milk production of indigenous cows reared under both intensive and extensive production systems is 4 liters per day. Dairy production coefficients vary depending on the production system adopted as follows:

In the extensive system, lactating cows comprise 18%, milk output average 4 litres per day over a 180 days lactation period, translating to 720 litres annually. Based on these figures, the total volume of milk produced from extensive system in 2013 was thus:
Volume of cattle milk from extensive system: 2,260,095 heads * 18%* 720 litres per head = 292,908,312 litres in 2013.

In the intensive (exotic breeds) system, in 2013, the herd size was 17,622 with 27% lactating cows while milk output averaged 12 litres per day over a lactation period of 300 days, giving annual milk output of 3,600 litres. Based on these figures, the total volume of milk produced from intensive (exotic) system was thus:
Volume of cattle milk (intensive exotic breeds): 17,622 heads * 27%* 3,600 litres per head = 17,128,584 litres in 2013.

In the intensive (local breeds) system, in 2013, the herd size was 13,729 with 27% lactating cows while milk output was 4 litres per day over a lactation period of 210 days, giving an annual milk output of 840 litres. Based on these figures, the total volume of milk produced from intensive (local breeds) system was thus:
Volume of cattle milk (intensive local breeds): 13,729 heads * 27%* 840 litres per head = 3,113,737 litres in 2013.

Total volume of cattle milk: 292,908,312 + 17,128,584 + 3,113,737 litres = 313,150,633 litres in 2013.

The value of cattle milk

Using an estimated farm gate price of 25 ERN per litre of cattle milk and the figures above, the value of cattle milk production was:

Value of national cattle milk: 313,150,633 litres * 25 ERN = 7.8 Billion ERN (0.52 Billion USD) in 2013.

2.2.2 Camel milk output

Eritrean Ministry of Agriculture and FAO estimated camel population at 373,952 and 370,000 heads respectively in 2013. The official estimates places adult female at 75% of herd, a lactating proportion of 6%, a daily milk output of 2 litres and a lactation length of 120 days, equivalent to 240 litres per head annually. Without any other estimates for camel milk outputs, this study adopts the Ministry of Agriculture's 2013 national camel herd estimate to calculate the volume of camel of milk in 2013. Based on these figures, this study estimates the volume of camel milk production in 2013 as:

Volume of camel milk: 373,952 heads * 6% * 240 litres/head = 5,384,909 litres.

The Ministry of Agriculture estimates the farm gate price of 25 ERN per litre for camel milk in 2013. Based on these figures, the value camel milk output in 2013 was:

Value of camel milk: 5,384,909 litres * 25 ERN = 134.6 Million ERN (8.97 Million USD).

2.2.3 Goat and sheep milk output

The Ministry of Agriculture estimated goat population at 5,466,310 heads in 2013 while FAO places it at 511,239. According to the official estimates, 18% of the flock is lactating females with milk output averaging 400 mls per day over a 120-day lactation period, equivalent to 48 litres annually. This study uses the official 2013 national flock estimate to calculate the volume of goat milk. The milk production in 2013 was thus:

The volume of goat milk: 5,466,310 heads * 18% * 48 litres per head = 47,228,919 litres in 2013.

The Ministry of Agriculture gives the farm gate price for goat milk at 25 ERN per litre. Using these estimates, the value of goat milk in 2013 was thus:

Total value of goats milk: 47,228,919 litres * 25 ERN per litre = 1.2 Billion ERN (0.08 Billion USD) in 2013.

2.2.4 Sheep milk output

There are no data on sheep milk production since sheep are seldom milked. The study thus concludes that sheep milk has negligible economic value to the Eritrean economy.

2.2.5 Cattle offtake

The Ministry of Agriculture estimates cattle offtake at 15% per annum in 2013. Using the cattle population of 2,260,095 heads and the cattle offtake rate of 15%, the volume of domestic offtake in 2013 was:

2,260,095 * 15% gross offtake rate = 339,014 heads of cattle in 2013.

A part from domestic offtakes, some cattle are imported into Eritrea for slaughter. However, the study was unable to find estimates of livestock imports and conclude that imports accounted for negligible value in 2013. The total beef supply in 2013 was thus:

2,260,095 * 15% gross offtake rate = 339,014 heads of cattle in 2013.

The Ministry of Agriculture (2013) estimated cattle prices at 20,000 ERN per head. Using these figures, the value of cattle offtake in 2013 was:

Value of cattle offtake: 339,014 heads*20,000 ERN = 6.780 Billion ERN (0.452 B USD)

2.2.6 Camel offtake

According to the Ministry of Agriculture, camel population was 373,952 in 2013, with offtake for sale of 13%, equivalent to 48,614 heads. Based on these estimates, the total camel offtake for Eritrea was thus:

373,952 * 13% gross offtake rate = 48,614 heads of camel in 2013

The Ministry of Agriculture (2013) estimated camel prices at 40,000 ERN per head. Based on these figures, the value of camel offtake in 2013 was:

48,614 heads of camels * 40,000 ERN per head = 1.9 Billion ERN (0.13 Billion USD).

2.2.7 Sheep and goat offtake

In 2013, the Ministry of Agriculture estimated sheep and goat populations at 2,496,354 and 5,466,310 heads and offtake rate of 20% and 18% respectively. Using these estimates, the offtake in 2013 is:

Sheep: 2,496,354 heads * 20% offtake rate = 499,271 sheep.
Goats: 5,466,310 heads * 18% offtake rate = 983,936 goats.

The Ministry of Agriculture estimated sheep and goat prices at 3,000 and 2,000 ERN per head respectively in 2013. Using these figures, the value of sheep and goat offtake was:

Sheep: 499,271 heads * 3,000 ERN = 1.5 Billion ERN (0.1 Billion USD) in 2013.
Goats: 983,936 heads * 2,000 ERN = 1.97 Billion ERN (0.13 Billion USD) in 2013.

2.2.8 Pigs offtake

In 2013, the Ministry of Agriculture estimated pig population at 5,000 heads and offtake rate of 75% respectively. In the absence of any other comparative offtake data for pigs,

this study adopts the official offtake rates, and using the official 2013 pig figures, it estimates the 2013 offtake to:
Pigs: 5,000 heads * 75% offtake rate = 3,750 pigs

The Ministry of Agriculture estimated pig prices at 10,000 ERN per head in 2013. Using these figures, the value of pig offtake was:
Pigs: 3,750 heads * 10,000 ERN = 37.5 Million ERN (2.5 Million USD) in 2013.

2.2.9 Poultry offtake

According to the Ministry of Agriculture, in 2013, indigenous chicken population was 984,716 while exotic chicken were 190,123, with offtake for slaughter of 20% and 46%, equivalent to 196,943 and 87,457 heads respectively. Without other comparative offtake data, this study adopts the official figures to estimate chicken offtake to:
Indigenous chicken: 984,716 * 20% gross offtake rate = 196,943 birds in 2013.
Exotic chicken: 190,123 * 46% gross offtake rate = 87,457 birds in 2013.

The Ministry of Agriculture (2013) estimated chicken prices at 170 and 200 ERN per indigenous and exotic bird respectively. Thus the value of chicken offtake in 2013 was:
Local chicken offtake: 196,943 * 170 ERN = 33.48 Million ERN (2.23 Million USD).
Exotic chicken offtake: 87,457 * 200 ERN = 17.5 Million ERN (1.16 Million USD).
Total value chicken offtake: (33.5 + 17.5) Million = 51 Million ERN (3.4 M USD).

2.2.10 Chicken eggs offtake

According to the Ministry of Agriculture, in 2013, indigenous chicken population was 984,716 while exotic chicken were 190,123. From official estimates, 95% and 60% of the indigenous flock are females and laying birds respectively while the egg output averaged 38 pieces per annum. This proportion of hens to cocks is high due to the number of female and male chicks distributed to farmers through a government funded poultry breeding program. The program is aimed at supporting and popularising poultry rearing and egg production among the pastoral communities. The same estimates give 100% and 90% of the exotic flock as females and laying birds respectively, with egg output averaging 178 pieces per annum. This study uses the Ministry of Agriculture 2013 flock estimates to calculate the volume of eggs offtake. The egg production in 2013 was thus:
Indigenous chicken eggs: 984,716 * 60% * 38 eggs = 22,451,525 eggs in 2013.
Exotic chicken eggs: 190,123 * 90% * 178 eggs = 30,457,704 eggs in 2013.

The Ministry of Agriculture (2013) gives producer egg prices at 6 and 4 ERN per local and exotic egg respectively. Based on these figures, value of egg offtake in 2013 was:
Value local chicken egg offtake: 22,451,525 * 6 ERN per egg = 134.7 Million ERN (8.98 Million USD) in 2013.

Value of exotic chicken egg offtake: 30,457,704 * 4 ERN per egg = 121.4 Million ERN (8.1 Million USD) in 2013.

Total value eggs offtake: 134.7 + 121.4 = 256.1 Million ERN (17.07 M USD) in 2013

2.3 Hides and skins offtakes

2.3.1 Cattle hides and skins offtake

The Ministry of Agriculture estimated cattle hides and skins offtake for 2014 was 150,000. This is equivalent to 37% of **406,817 cattle** offtake per annum. In the absence of any other comparative offtake documentation for cattle hides and skins, this study adopts the official 2014 figures to estimate the economic value of cattle hides and skins offtake. Assuming that the national official cattle hide and skins offtake grew by 3% between 2013 and 2014, this study uses the same growth rate to discount the 2014 official estimates. Based on these, this study estimates cattle hides and skins offtake volume in 2013 to be 97% of the 2014 volume as shown below:

Volume of cattle hides and skin: 150,000 heads * 97% = 145,500 hides and skins.

The producer price for cattle hides and skins was estimated at 150 ERN per piece in 2014. Assuming the price of cattle hides and skins grew apace with hides and skins offtake rate, the producer prices for cattle hides and skins in 2014 had increased 3% over that in 2013. Thus the 2013 prices are discounted to 146 ERN per hide/skin. The value of cattle hides and skins offtake in 2013 was:

Value of cattle hides and skins: 146 * 145,500 = 21.2 Million ERN (1.41 Million USD).

2.3.2 Camel hides offtake

The study was not able to find any data on the rates of offtake or sale of camel hides since most offtakes are for export, with minimal local hides extraction. However, from the slaughter offtakes, the study estimates the local camel hides offtake volume. Thus, using the offtake rate for slaughter of 48,614 heads of camel in 2013 and assuming, like in Ethiopia, an offtake rate of 2%, the offtake volume for camel hides was:

Volume of camel hides: 48,614 heads * 0.02 = 972 camel hides offtake in 2013.

Because of lack of offtake prices placed on camel hides, this study concludes that camel hides have negligible economic value to the Eritrean economy.

2.3.3 Small ruminant skins offtake

The Ministry of Agriculture estimated sheep and goatskins offtakes for 2014 was 350,000 and 700,000; equivalent to offtake rate of 70% and 71% per annum based on the 499,271 and 983,936 offtake rates for slaughter for sheep and goats respectively in the same year. In the absence of any other comparative offtake data for sheep and goat skins, this study adopts the official 2014 figures to estimate the economic value of sheep and goat skins. Assuming that the national official sheep and goat skins offtake grew by 3% between 2013 and 2014, this study uses the same growth rate to discount the 2014 official estimates. Based on these figures, the volume of sheep and goat skins offtake in 2013 was:

Volume of sheep skins: 350,000 heads * 97% = 339,500 skin offtake in 2013.

Volume of goat skins: 700,000 heads * 97% = 679,000 skin offtake in 2013.
The producer price for sheep and goat skins was estimated at 45 and 40 ERN per piece of sheep and goat skin respectively in 2014. Assuming that producer prices for sheep and goats skins grew at the same rate as the hides and skins offtake rate, the producer prices for sheep and goat skins in 2014 had increased 3% over that in 2013. Thus the 2013 sheep and goat skins producer prices are discounted to 44 and 39 ERN per sheep and goat skin respectively. The value of sheep and goat skins offtake in 2013 was:
Value of sheep skins: 339,500 skins * 44 ERN = 14.94 Million ERN (0.996 M USD).
Value of goat skins: 679,000 skins * 39 ERN = 26.5 Million ERN (1.8 M USD).

2.4 Manure as fertilizer

In Eritrea, livestock manure is seldom sold but used by households as farm fertilizer and fuel in brick making. In agropastoral areas, manure is spread on cropping fields and let to set before tillage. Anecdotal evidence indicates a 50% rise in crop yields and fodder output upon use of manure. Despite its agronomic value in rangeland productivity, it is not possible to place any commercial value on manure and thus limits its inclusion in economic estimates including GDP.
According to the Ethiopian Energy Authority, non-dairy cattle produced 2.27 kg/head/day of manure (Asress Wolde Giogris n.d). Based on this information and recognizing that Ethiopia and Eritrea rear the same breed of cattle under similar environmental conditions, it is estimated that the manure output per day from the total population of 2,260,095 is 5,130,416 kg which amounts to 1,872,601,712 (1,872,602 tonnes) per year. On average a tonne of manure is composed of 6.3 kgs of Nitrogen, 2kgs of Phosphorus and 4kgs of Potassium. The nutrient content of 50 tonnes of manure is equivalent to one tonne of commercial fertilizer of the type NPK (30-10-10). The price of one tonne of imported NPK (30-10-10) is USD 235 which is equivalent to a tonne of manure estimated to cost USD 4.70 or 70.5 ERN. Based on the estimated prices, the value of cattle manure is estimated to be:
1,872,602 tonnes *70.5 ERN per tonne = 132,018,441 ERN (8,801,229.4 USD).

2.5 Animal draught power

According to the Ministry of Agriculture, nearly 93% of farmers in Eritrea use draught animal power for ploughing (camel ploughing, 3%; ox-ploughing, 90%; tractor services, 5% and *Suluka* ploughing 2%). The cost of ploughing varies depending on method used. For instance, it costs 1,200 ERN to plough one hectare by animal and 1,800 ERN per hectare by tractor. According to Ministry of Agriculture, 520,000 Ha are cultivated over a single farming season. The value of animal ploughing services was thus:
520,000 Ha * 93% * 1,200 ERN = 0.58032 Billion ERN (0.038 Billion USD) in 2013.

2.6 Livestock based financial services

2.6.1 Livestock as credit

This is the value of the finance (in this case interest) equivalent to the value of livestock offtakes and in a way, is the opportunity cost of credit finance or what it would otherwise

cost a livestock owner to obtain funds comparable to those produced by liquidating the herd and flocks. Table 4 below gives the estimated value of livestock offtake in 2013.

Table 4: Value of livestock offtakes (2013)

Livestock	Offtake Values (Billion USD)
Cattle	0.4520
Camel	0.1300
Small ruminant	0.2300
Poultry	0.0034
Pigs	0.0025
Total offtake Value	**0.8179**

Source: Study estimates, 2015

A number of financial institutions operate in Eritrea providing credit. The interest rates vary from 6% to 18%. This study uses the average interest rate of 12% to estimate the value of livestock as credit in Eritrea. The financial value of livestock offtake in 2013 was hence **0.818 Billion USD * 12% = 0.098 Billion USD**, equivalent to 12% of annual value of offtake in 2013. Thus the value of livestock as credit for Eritrea as a whole is an extra **0.098 Billion USD**, in addition to the value of their physical productivity.

2.6.2 Livestock as self insurance

This is same as the value that would be accrued if livestock producers were to sell off their herds, for instance, during calamities. It is the value of livestock assets as a function of self-insurance and gives annual cost of insurance equivalent to value of livestock offtakes as indicated in Table 5 below. In this study, the value of livestock as capital is estimated at 100% of the farm gate value, without any discounting.

Table 5: Estimated capital value of Eritrea livestock, 2013

Livestock	Population (2013)	2013 producer prices (USD)	Capita Values of livestock (Billion USD)
Cattle	2,260,095	1,333	3.01271
Camel	373,952	2,667	0.99733
Sheep	2,496,354	200	0.49928
Goats	5,466,310	133	0.72702
Pigs	5,000	667	0.00334
Indigenous chicken	984,716	11.3	0.01111
Exotic chicken	190,123	13.3	0.00253
Total capital value of livestock			**5.25331**

Source: Study estimates, 2015

The insurance value of livestock is the ability of owners to liquidate their herds and flocks in an emergency and is equivalent to the annual cost of insurance premium that herd owners would need to pay to purchase insurance coverage equal to the capital value of their herds and flocks. With the capital value of Eritrea herd in 2013 at **5.253**

Billion USD (Table 5), the insurance value of livestock is equivalent to the cost of premium required by herd/flock owners to provide them with 5.253 Billion USD of insurance coverage.

Using a premium cost of 3% on the value of coverage based on coverage in similar regions like Ethiopia, the self-insurance value of Eritrea livestock in 2013 was **5.253 Billion USD * 3%** = **0.159 Billion USD**. Thus, the incremental value of livestock as insurance was an extra 0.159 Billion USD in addition to their value as capital.

2.7 Summary Of Part II

The gross value of the livestock goods in Eritrea in 2013 is indicated in Table 6 below.

Table 6: Gross value of domestic livestock production in Eritrea, 2013

Product	Value(Billion USD)
Cattle milk	0.52
Camel milk	0.00897
Sheep milk	-
Goat milk	0.08
Subtotal estimated milk offtake	**0.60897**
Cattle offtake	0.452
Camel offtake	0.13
Sheep offtake	0.1
Goat offtake	0.13
Poultry offtake	0.0034
Pigs offtake	0.0025
Subtotal estimated livestock offtake	**0.8179**
Cattle hides and skins	0.00141
Camel hides	-
Sheep skins	0.000996
Goat skins	0.0018
Subtotal estimated hides and skins offtake	**0.004206**
Chicken eggs	0.00171
Subtotal estimated chicken eggs offtake	**0.00171**
Manure as fertilizer	**0.008801**
Total Product Output	**1.441587**

Source: Study estimates, 2015

From Table 6 above, the total value of livestock products i.e. the gross value of domestic livestock production/products was **1.442 Billion USD** in 2013.

The total estimated value of goods and services provided by livestock – i.e. the direct use value of livestock to the Eritrean economy in 2013 are shown in Table 7 below.

Table 7: Direct use benefits derived from livestock, 2013 (Billion USD)

Benefit type	Value of agric GDP (Billion USD)	Services not in GDP estimate
Value added livestock products (slaughter animals, milk, manure for fertilizer, eggs, hides & skins)	**1.441587**	
Traction ploughing		0.038
Livestock as Credit		0.098
Livestock as Self Insurance		0.159
Subtotals	**1.441587**	**0.295**
Total Economic Benefits	**1.736587**	
Cost of Inputs	**0.08682935**	
Livestock gross value added	**1.64975765**	

Source: Study estimates, 2015

From Table 7 above, in 2013, the total estimated value of goods and services provided by livestock i.e. direct use value of livestock to the Eritrean economy was **1.737 Billion USD**. In terms of inputs, about 90% of feeds come from grazing on pastures, crop residues and agro-industrial by-products while water for livestock is from groundwater resources. According to the Ministry of Agriculture, input costs mainly involve medicines (dewormers and anti-parasites) and vaccines. Without reliable data on costs of treatment and other husbandry practices and levels of input usage in Eritrea, this study uses a conservative rate of 5%[2] of the value of total livestock products to take care of input costs like treatment. The inputs cost based on values above is about **0.087 Billion USD** in 2013.

The contribution of livestock to agricultural GDP (i.e. livestock gross value added) is therefore arrived at by subtracting the cost of inputs from the total value of livestock outputs in 2013, or **1.737 Billion USD less 0.087 Billion USD,** equalling **1.650 Billion USD** in 2013. This value includes 88% derived from conventional goods common in agricultural GDP and 12% from financial services provided by livestock.

From the results above, cattle are Eritrea's most economically important livestock, with a value of **0.982 Billion USD** in 2013, equivalent to **59.54%** of the total gross value of livestock contribution to the agricultural sector.

[2] This estimate is based on variable costs estimates in standard livestock management handbooks estimates for pastoral areas of Kenya.

3.0 CONTRIBUTION OF LIVESTOCK TO THE WIDER ECONOMY

3.1 Introduction

Part III analyses the various disposal methods for livestock products in Eritrea, including in household consumption, inputs into sectors and as exports.

3.2 The role of livestock in household consumption

This study estimates the local milk and red meat consumption per caput using the Ministry of Agriculture's estimate of national population (6,300,000 persons in 2013) and the results from milk, meat, pork and chicken meat in accordance to domestic production offtakes for 2013 are shown on Table 8 below.

Table 8: Domestic red meat and offal available for consumption, 2013

Product	Total meat and offal offtake for consumption	Total offtake for meat and offal in kg for domestic consumption	Consumption per Caput(kg)
Total beef & offal, heads	339,014	50,852,100	8.07
Camel meat & offal	48,614	9,722,800	1.54
Sheep meat & offal	499,271	6,240,888	0.99
Goat meat & offal	983,936	12299200	1.95
Sub-total red meats and offal		***79,114,988***	***12.55***
Poultry meat & offal	377,178	282,884	0.04
Pigs meat & offal	3,750	73,750	0.01
Sub-total white meats and offal		***356,634***	***0.05***
Total		**79,471,622**	**13**

Source: Estimated slaughter weights for meat and offal are taken from Ministry of Agriculture, 2015

From Table 8 above, based on carcass yields of 150 kg for cattle, 200 kg for camels, 7.5 kg for shoats, 0.75 kg for chicken, and 25 kg for pork, on average, 8.07[3] kg of beef, 1.5 kg of camel meat, 0.99 kg of sheep meat, 1.95 kg of goat meat, 0.04 kg of chicken meat and 0.01 kg of pork was consumed per person in Eritrea. The red meat consumption per capita in 2013 was **12.55** kg while that of white meat was **0.05** kg per person.

The milk production estimates given in this report are indicated in Table 9 below:

[3] Behnke and Muthami 2011 (p. 6) give an estimate of 15.25 kg for Kenya population. This is also near similar to FAOSTAT's most recent estimate (2007) of 16.34 kg per capita http://faostat.fao.org/site/610/default.aspx#ancor.

Table 9: Domestic milk available for consumption, 2013

Product	Amounts (litres)	% of national total	Total offtake for consumption	Consumption per Caput(litres)
Total cattle milk	313,150,633	85%	313,150,633	49.7
Total camel milk	5,384,909	1.5%	5,384,909	0.85
Total goat milk	47,228,919	13.5%	47,228,919	7.5
Total milk	**362,650,724**	**100%**	**362,650,724**	**58.1**

Source: Study findings, 2015

Based on the estimated 2013 country population figures of 6,300,000, per capita liquid milk consumption from domestic supply was **58.1** litres per person per year.

3.3 Livestock products as inputs in other sectors

Table 10 below shows the value of the dairy related livestock products processed in Eritrea. Apart from the dairy related livestock products, no other reliable data was available to quantify the livestock based products that are destined and used as inputs in other sectors in Eritrea and thus their values were difficult to estimate.

Table 10: Values in USD of processed livestock related products, 2013

Products	2010	2011	2012	2013
Butter, cow milk	631.5	639	648	654
Ghee, butter oil of cow milk	789	799	810	818
Milk, skimmed cow	26997	27317	27702	27959
Cheese, whole cow milk	632	639	648	654
Cheese (All Kinds)	632	639	648	654
Butter and Ghee	1421	1438	1458	1472
Total Value	**31101**	**31471**	**31914**	**32210**

3.4 The export of livestock, hides, skins and leather goods

Live animals form the core of Eritrea's livestock-based exports. Hides and skins, leather and leather products are also important. In Table 11 below, the livestock export throughput volumes and values are estimated based on Ministry of Agriculture records. Overall, in 2013, the value of livestock-related exports was **0.68 Billion USD** while the value of export of hides and skins was **17.6 Million USD**. The value of products such as leather and footwear were however not documented. Thus the total value of exports was **0.698 Billion USD** in 2013, equivalent to **40%** of agricultural GDP in 2013.

Table 11: Livestock and livestock products exports, 2013

Livestock/livestock products	Numbers	Export Price(USD)	Value(USD)	% of population
Cattle	180,808	2,000	361,616,000	8%
Camel	29,916	2,667	79, 776, 000	8%
Sheep	199,708	400	79,883,200	8%
Goats	270,609	330	89,300,970	5%
Pigs	0		-	0%
Poultry	-		-	0%
Subtotal -Livestock			**610,576,170**	
Cattle hides	39,250		5,730,500	-
Sheep skin	-		-	
Goat skin	297,589		11,903,560	
Footwear	-		-	-
Sub-total -Livestock products			**17,634,060**	
Grand total			**628,210,230**	

Source: Study findings, 2015

3.5 Summary of Part III

The domestic availability of livestock food items such as meat and milk is low and close to other countries in the region but are lower than WHO recommended thresholds[4]. In terms of contribution to agricultural GDP, while meat products are Eritrea's most economically important livestock products, with a value of **0.818 Billion USD** in 2013, equivalent to **49.58%** of the total gross value of livestock contribution to economy, cattle are the country's most economically important livestock, with a value of **0.982 Billion USD** equivalent to **59.54%** of the total gross value of livestock's contribution to economy in 2013. Overall, meat is one and half times more important than milk while small ruminants are nearly two times more important than camels. Also, chickens are about two times more important than pigs in GDP contribution.

Eritrea is a net livestock exporter with 8% of cattle, 8% of camels, 8% of sheep and 5% of goats population respectively exported in 2013. Export of hides and skins are also significant indicating relatively moderate to high competitiveness. However, export of higher value added products like leather and shoes is insignificant.

[4]At 200 litres of milk and 37 kg of meat per capita

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

Using a production approach based on livestock population data and outputs from each livestock enterprise (reliability of official estimates are a concern though) provides much higher estimate of the contribution of livestock to GDP. The World Bank[5] puts livestock contribution at **0.157 Billion USD,** equivalent to 39% of the overall agricultural sector GDP and 4.6% of the national GDP in 2013. However, using a production approach, this study places livestock contribution at **1.650 Billion USD**, equivalent to 410% of the overall agricultural sector GDP and 47.9% of the national GDP in 2013. The study GDP estimate includes direct benefits generated by livestock, especially financial services.

The total estimated value of goods and services provided by livestock i.e. direct use value of livestock to the Eritrean economy was **1.737 Billion USD**, including 87% derived from conventional goods common in agricultural GDP and 13% from financial services provided by livestock.

Using a production approach, live animal offtakes is Eritrea's most economically important livestock output, with a value of **0.818 Billion USD** in 2013, equivalent to **49.58%** of livestock contribution to economy. Also, from the method, the contribution of livestock to agricultural GDP (i.e. livestock gross value added) was **1.650 Billion USD** in 2013.

About 13% of the direct benefits derived by livestock owners from their animals are attributable to the financial services provided by livestock and are always omitted in the quantification of economic functions of livestock at both household and national levels.
Cattle is Eritrea's most important source of red meat, supplying 64% of meat needs and contributing **0.452 Billion USD**, equivalent to 27.4% of livestock contribution to economy.
Eritrea is a net livestock exporter, with cattle the most important export livestock and contributing **0.36 Billion USD**, equivalent to 53% of export values and 20% of agricultural GDP in 2013.

In terms of contribution to agricultural GDP, meat is about one and half times more important than milk. Small ruminants are nearly two times more important than camels. Also, chickens are about two times more important than pigs in GDP contribution. The domestic production of meat and milk for consumption is low in Eritrea, averaging 8.07 kg of beef, 1.5 kg of camel meat, 0.99 kg of sheep meat, 1.95 kg of goat meat, 0.04 kg of chicken meat and 0.01 kg of pork was consumed per person in 2013. The overall red meat consumption per capita in 2013 was 12.55 kg while that of white meat was 0.05 kg in 2013. Milk consumption was 58.1 litres per person in 2013. While milk consumption

[5] The Eritrean government has not carried out official estimates of national and sectoral GDPs since 2009.

are high compared to estimated 26 litres of milk per person in Kenya but lower than the 198 litres in Sudan; meat consumption compares well with estimated 15 kg of meat per person in Kenya, but lower than the estimated 41 kg of meat in Sudan. Without reliable livestock census, official livestock populations may be exaggerated.

Slaughter animals

The slaughter volumes and hide and skin outputs are shown in Table 12 and 13 below.

Table 12: Slaughter volumes, 2013

	Cattle	Camel	Sheep	Goat	Pigs	Poultry
2010	394,853	47,184	484,587	954,998	3,000	246,778
2011	398,801	47,656	489,433	964,548	3,000	348,668
2012	402,789	41,990	420,000	974,194	3,000	211,286
2013	406,817	48,614	499,271	983,936	3,750	289,721
MOA livestock average (2010-2013)	400,815	46,361	473,323	969,419	3,188	274,113
Offtake rate based on MOA slaughter volumes	18	13	20	18	75	20

Source: Calculated based on Ministry of Agriculture 2015 data

From Table 12 above, offtake rates based on official slaughter figures show a lower offtake rate compared to the population. The low slaughter rates indicate that the livestock populations may be grossly overestimated.

Table 13: Hides and skins volumes, 2014

	Cattle	Camel	Sheep	Goats
2010	77,753	-	180,980	646,920
2011	45,120	-	129,270	180,866
2012	-	-	-	-
2013	-	-	-	-
MOA hides/skins offtake average(2010-2013)	61,437		155,125	413,893
Mean offtake rate based on MOA hides/skins offtakes	7%	0	12%	17.5%

Source: Department of Veterinary Services, MOLD, 2014; FAOSTAT, 2015

The figures on marketed hides and skins in Table 13 above also show low offtake rates for hides and skins, figures that are significantly higher than the FAO estimated offtakes from 2010-13. Overall, the low hides and skins offtake rates, especially for camels indicate gross post slaughter wastage of hides and skins, either from spoilage or discarding. The variation in offtakes between Ministry of Agriculture and FAO estimates indicate high levels of livestock exports or gross overestimation of official figures.

Milk and dairy production

From this study, cattle milk contributes about 85% of total milk output, with goats and camels contributing 13.5% and 1.5% each. From estimates, milk production contributes

0.61 Billion USD, equivalent to 37% of the value of livestock contribution to agricultural GDP and milk from cattle is Eritrea's single most valuable dairy product contributing **0.52 Billion USD** in 2013.

Animal power

Animal traction contributes about **0.038 Billion USD**, equivalent to 2% of the value of livestock contribution to agricultural GDP in Eritrea.

Other Observations

a) The contribution of livestock to the agricultural sector of Eritrea is significant, with high dependence among nomadic pastoralists for livelihoods.
b) This study relied to a great extent on the official statistics. However, significant variances were noted with FAO estimates.
c) Live animal exports contribute significantly to the Eritrean economy. However, the moderate contribution of processed products like hides and skins to the export trade indicate relative local market competiveness.
d) While it is obvious that cross border movement is common with neighbouring countries, this study was unable to find enough evidence on the extent of the cross-border trade in live animals.

4.2 Recommendations

a) As a matter of urgency, the Government of Eritrea should update its livestock population by undertaking a rigorous livestock census in all its regions.
b) The veterinary department should enhance enforcement of screening and vetting procedures of animals at cross border markets prior to issuance of movement permits, as well as institute livestock inspection at the point of destination. These measures will strengthen disease surveillance and control, thereby reducing risks and costs to traders and improving efficiency along the value chain.
c) The livestock based staff should be trained on the procedure for gathering data and estimating the economic value of the livestock sector in the national economy using the production approach which has obvious advantages when compared to the commodity flow approach.
d) Improve tick control and branding by pastoralists in order to reduce damage to hides and skins. This should be undertaken hand in hand with promotion of processing of hides and skins so as to strategically enhance the value the hides and skin production chain.
e) Conduct a study to quantify the levels of cross border livestock trade between Eritrea and its neighbouring countries. At the moment, no official data is available in this regard, yet it is common knowledge that some livestock found in Eritrea enter through its borders, especially with Sudan.

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6.0 ANNEXES

Annex 1: Study Terms of Reference

A Study on the Contribution of Livestock to the GDP of the Republics of Djibouti, Somalia, South Sudan and Eritrea

Background

In Africa livestock are vital for poor households. Predictions of future global demand for livestock products indicate considerable opportunities for African producers. However, many of the emerging challenges in livestock production are not technical, but in the complex area of policies and institutions. The challenge is to develop the capacity of African governments and stakeholders to meet the new policy and institutional challenges, from national to regional to international settings. The opportunity to engage with policy processes is often limited, and the challenges are great, but the potential impacts can be significant. In addressing the policy challenges, there is always a need for evidence-based data for policy shifts or formulation.

During the implementation of the IGAD LPI, data was generated on the contribution of livestock to the GDPs of Ethiopia, Kenya, Sudan and Uganda. The re-estimated value added to national GDP by livestock was, depending on the country in question, 19% to 150% higher than official estimates for 2009, and the monetary value added by livestock ranged from a low of over half a billion US dollars in Uganda to over fourteen and a half billion US dollars in Sudan, totalling more than 23 billion US dollars for the four countries combined. This new regional estimate represented a 37% increase in value added over the combined official estimates in 2009 for the countries concerned.

Rationale for studies on the contribution of livestock to GDP

Clearly livestock are big business in the Eastern African region – much bigger, in fact, than had been previously suspected. Livestock specialists frequently argue that livestock production is underrepresented in the GDP estimates of African nations. With respect to Ethiopia, Kenya, Sudan and Uganda, this argument has been confirmed. However, the picture is not complete for the IGAD region as the studies did not cover Djibouti, Somalia, Eritrea and the newly independent Republic of South Sudan. An estimate of the contribution of livestock in these IGAD member States will contribute more effectively to livestock policy formulation than is presently the case in these countries.

Overall objective

The major objective of this consultancy conduct studies on the contribution of livestock to the GDPs of the Republics of Djibouti, Somalia, Eritrea and South Sudan.

Specific objective

i. To adopt a production approach to estimating the contribution of livestock to agricultural GDP of the respective IGAD member states under the study

Expected Results

The consultancy will achieve the following results:

- Produce an updated national livestock population estimates
- A comprehensive report on the contribution of livestock to the GDPs of the Republics of Djibouti, Somalia, Eritrea and South Sudan;

Methodology

The consultancy is required to propose a methodology of addressing the overall and specific objectives of the assignment that shall be followed in response to the TORs. The approach should include, among others, the following:

- Proposed data collection instruments and methodology for data analysis
- Schedules to review
- w relevant documents
- Schedule of meetings with relevant bodies in the member states

Duration of the Consultancy

Location and Field Missions

The exercise shall mainly comprise of desk study, online research and consultations largely through exchange of correspondences with specified member countries and relevant regional organizations. Where necessary, field trips may be undertaken to relevant institutions in the target countries for data collection.

Commencement Date and Duration of Assignment

The duration of this consultancy would be between 60 and 90 calendar days.

Requirements

Qualification

The successful candidates shall have an advanced degree in livestock and or agricultural economics or the equivalent with a strong bias in statistics.

Specific Experience

The candidate should have:

- At least 10 years' experience in livestock sector development in Africa
- At least 5 years' experience working in the Central Bureau of Statistics particularly with systems of national accounts.

Reports

The Consultant is required to prepare the following technical reports in English/French:

i. Inception Report (IcTR)

An Inception Report (IcTR) shall be produced within 5 days of commencing duty. The IcTR of not more than 10 pages should include the proposed methodology, the timeline/calendar and programme of activities, places to visit, people to meet and an outline of the contents of the Final Technical Report.

ii. Interim Technical Report (InTR)

The interim Technical Report is perceived to be the First Draft of the Final Technical Report (FTR), before a final clean copy of the FTR is formally and officially submitted to and for acceptance by ICPALD.

iii. Final Technical Report (FTR)

The Final Technical Report (FTR) should take into account contributions and comments from the relevant IGAD/ICPALD MS and ICPALD. The draft final report must be submitted at the end of the period of implementation of the tasks.

iv. Submission & Approval of Progress Reports

Three copies of the progress reports referred to above must be submitted to IGAD/ICPALS. The progress reports must be written in English/ French. IGAD/ICPALD is responsible for approving the progress reports.