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The Contribution of Livestock to the Somali Economy

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DISCLAIMER

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 Somali 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 IGAD member states. Building on lessons and in particular the methods used in previous series, this report is an output of the study on the contribution of livestock to Somalia national economy and assesses and assigns monetary values to the marketed and non-marketed goods and services that livestock provide and the extent to which this contribution is reflected in national account.

The methodology adopted to assess the contribution of livestock to the economy of Somalia follows a production approach as adopted in other studies in IGAD member states (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, Somalia's Statistics Department generally follows the commodity flow approach, which differs largely from the IGAD adopted production approach.

Conclusions

- The government bases its estimates on information on marketed livestock output, while this study uses livestock population data and outputs from each livestock enterprise. Even though the methodology is advantageous in many ways, the study relied on a very narrow data base, with limited field studies on the livestock sector in Somalia. No recent surveys have been conducted in Somalia undermining the reliability of the data based on projections and off-take coefficients thereof.
- The use of production based approach to estimate the contribution of livestock to economy of Somalia yielded an estimate of **8.157 Billion USD** in 2013. This estimate is above the IMF estimate of Agriculture GDP of **5.7 Billion USD** where livestock contributes **2.28 Billion USD**, equivalent of 40% of Agriculture contribution to GDP. Thus our estimate would place the contribution of livestock to GDP above the IMF estimates.
- The total estimated value of goods and services provided by livestock i.e. direct use value of livestock to economy was **8.157 Billion USDs**, including 93.6% derived from conventional goods common in agricultural GDP and 6.4% from financial services provided by livestock.
- Milk is Somalia's most economically important livestock product, with a value of **6.58 Billion USDs** in 2013, equivalent to 81% of livestock contribution to economy.
- About 6.4% 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.
- Camel are Somalia's most important source of red meat, supplying 52% of meat needed and contributing **266.1 Million USDs**, equivalent to 3.3% of the livestock contribution to the economy.

- Somalia is a net livestock exporter with the main destinations being Saudi Arabia and Yemen. Approximately **191.91 Million USD** is derived from exports of live animals, equivalent to 2.3% of livestock's contribution to agricultural GDP in 2013.
- In terms of contribution to agricultural GDP, milk is about 6 times more important than meat.
- The production of meat and milk for domestic consumption in Somalia averages 4.0kg of beef, 4.3kg of small ruminant meat and 21.2 kg of camel meat per person in 2013. The overall red meat consumption per capita in 2013 averaged 21.21 kg per person in 2013 while milk consumption averaged 329 litres per person in 2013. The domestic meat availability is higher than 15 kg of meat per person in Kenya, but lower than an estimated 41 kg of meat per person in Sudan. The domestic availability of milk per person is however much higher than the 26 litres and 198 litres of milk per person in Sudan and Kenya respectively.

Recommendations

- The government of Somalia should update its livestock population by undertaking a rigorous livestock census in all its regions.
- The livestock sector and the national bureau of statistics staff should be trained on the procedure for gathering data and estimating the economic value of the livestock in the national economy using the production approach which has obvious advantages when compared to the commodity flow approach
- A cost benefit estimate would also be necessary with regard to pastoral livestock production systems taking into account the cost of pastures, water, animal health, etc. At the moment, the government of Somalia seems to cover most other intermediary costs including animal health and at times feeds.

¹Behnke 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>.

ACRONYMS

ASAL	Arid and semi-arid lands
AU IBAR	International Bureau for Animal Resources of the African Union
DFID	Department Kingdom's Department for International Development
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
ICPALD	IGAD Centre for ASALs and Livestock Development
ICRC	International Committee of the Red Cross
IGAD	Intergovernmental Authority on Development
ILCA	International Livestock Centre for Africa
ILRI	International Livestock Research Institute
ISIC	International Standard Industrial Classification of All Economic Activities
KSA	Kingdom of Saudi Arabia
MFI	Microfinance Institution
MOAAF	Ministry of Agriculture, Animal Resources and Fisheries
NBS	National Bureau of Statistics
USD	United States Dollar
WHO	World Health Organization

1.0 INTRODUCTION AND STUDY OBJECTIVES

1.1 Introduction

In the Arid and Semi-Arid lands of Africa, livestock are vital as a source of livelihoods. 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 and to international settings. The opportunity to engage with policy processes is often limited, and the challenges are enormous, but the potential impact can be significant. In addressing the policy challenges, there is always a need for evidence-based data for policy shifts or formulation.

The IGAD Centre for Pastoral Areas and Livestock Development (ICPALD) works to promote dry lands' livelihoods and livestock development policies in the IGAD member states by complimenting efforts of IGAD member states to sustainably generate wealth, and employment and to be a regional policy reference institution for sustainable livestock development and resilient dry land livelihoods. It seeks these through promoting and facilitating sustainable and equitable dry-lands and livestock development in the IGAD region. Among its key objectives are to promote and facilitate elaboration and harmonization of regional livestock and dry-lands policies and development of initiatives of member states; facilitate and support the domestication, and adoption and transfer of appropriate research and technology in dry-lands and livestock development among others.

To support IGAD member states advocate for livestock representation commensurate with its contribution to economy in key national strategy documents like Poverty Reduction Strategy Papers (PRSPs), a study was commissioned to assess the contributions of livestock to the Agricultural GDP of Somalia. This is to be achieved by assigning monetary values to the marketed and non-marketed goods and services that livestock provide and the extent to which this contribution is reflected in national accounts in 2010 - 2013. As part of a series of reports on the contribution of livestock to the economies of the IGAD member 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 ICPALD. In addition, it provides a justification for the approach used in the study to estimate the contribution of livestock to the economy of Somalia 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 off-take and milk output, manure as fertilizer, animal draught power, hides and skins and livestock-based financial services. Part 3 highlights the non-agricultural contributions livestock make to the wider Somalia

economy including in 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 Background

Somalia is located on the Horn of Africa bordering the Indian Ocean in the east, Gulf of Eden on the North, Ethiopia in the west and Kenya in the south west (Figure 1). The Federal Republic of Somalia has been inhabited since the Palaeolithic period. Ancient Somalia domesticated the camel during the 3rd and 2nd millennium BC, and developed a profitable trade system. However, early in 1991, Somalia descended into decades of turmoil, factional fighting and anarchy culminating in seizing of key towns and ports in central and southern Somalia by Al-Shabaab in 2007 and 2008. Conflict continues in the southern and central parts of the country between government troops and extremist Islamist militants with links to al-Qaeda. Beside conflicts, famine struck Somalia in 2011 following the worst drought of East Africa in 60 years.

Somalia's terrain consists mainly of plateaus, plains and highlands. Hot conditions prevail year-round, along with periodic monsoon winds and irregular rainfall. Geology suggests the presence of valuable mineral deposits. Conditions in Somalia range from arid in the north eastern and central regions to semiarid in the northwest with annual rainfall of less than 4 inches (100mm). The central plateaus receive 200-300 mm, while the north-western and south-western parts of the nation receive considerably more rain.

Somalia is vast with a land area of 637,657 km² and a population of 10.8 million, which grows at a rate of 3% per annum. Somalia is classified by the United Nations as a least developed country where about 40% of the population lives in extreme poverty. The country's GDP was estimated at 1.06 Billion USD in 2012 and growing at 2,6% with a

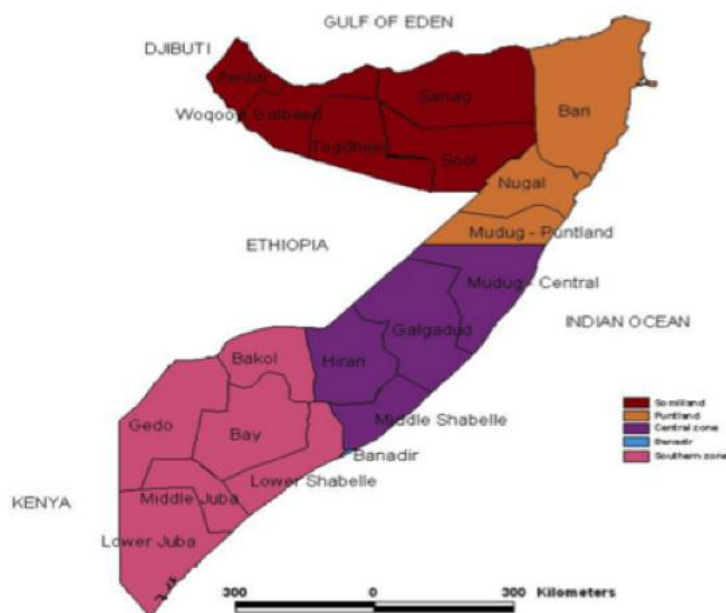


Figure 1: Somaliland, Puntland & South-Central Somalia

per capita of 187 USD. Somalia's economy consists of both traditional and modern production, with a gradual shift to more modern industrial techniques. According to the Central Bank of Somalia, about 80% of the population is nomadic or semi-nomadic pastoralists, who keep goats, sheep, camels and cattle. The nomads also gather resins and gums to supplement their income.

Livestock production has been the backbone of the Somali economy for many centuries. It is the most important source of food and income for the predominantly rural population, as well as the country's biggest export commodity. Prior to the war, some 46% of the total population were engaged in nomadic pastoralist and livestock accounted for 40% of the GDP and 80% of all export earnings. It was also one of the few production systems to remain unaffected during the civil war, due to the relative mobility of this sector, where livestock can be moved from regions of conflict to more stable environments quite readily.

In Somaliland, livestock production accounts for 60- 65% of the Gross Domestic Product (GDP). Based on 1998 FAO estimates of livestock numbers and past growth rates, Somaliland had about one million six hundred ninety thousand (1.69M) camels, four hundred thousand (400,000) heads of cattle, eight million four hundred thousand (8.4M) goats and eight million seven hundred and fifty thousand (8.75M) sheep in 2011. The Sool, Sanaag and Togdheer regions account for about 75% of all livestock.

Somaliland's major livestock exports are sheep and goats, accounting for 91% of all animal exports. In 2010, a total of two million three hundred and fifty two thousand (2.352M) sheep and goats were exported through the Berbera port (including from Ethiopian sources). Of this total, one million six hundred and twelve thousand (1.612M), equivalent to 69% of the sheep and goats population, were exported between September and November for the Hajj festivities. Assuming an average export price of US\$70, the estimated total value would be over US\$160 million. With government taxes at around US\$3.60 per head, this means tax revenue of around US\$8.5 million, or 10% of the Somaliland government's total revenue.

Somaliland, and to a certain extent the other exporters from the Horn of Africa, depends on only a few countries for exports. For example out of the 2.585 million heads of sheep and goat exported through the Port of Berbera in 2010, about 78% went to Saudi Arabia, 20% to Yemen and the rest to Egypt and Oman.

Table 1: Trends in livestock population from 2009—2013 in Somaliland ('000 Heads)

Year	Goats	Sheep	Camel	Cattle	Total
2009	8,072,000	8,458,000	1,646,000	394,000	18,570,000
2010	8,266,000	8,602,000	1,664,000	399,000	18,931,000
2011	8,464,000	8,748,000	1,682,000	404,000	19,298,000
2012	8,667,000	8,897,000	1,701,000	409,000	19,674,000
2013	8,875,000	9,048,000	1,720,000	414,000	20,057,000

Sources: Ministry of National Planning & Development (Department of Statistics & Research) *Note: The estimates are based on 1975 Somalia census of livestock population and annual growth rate, goat: 2.4% sheep: 1.7% camel: 1.1% and cattle: 1.2%.

In Puntland, the climate is arid with an average rainfall that is neither sufficient nor reliable enough for the production of staple crops. Conversely though, the interaction of climatic and ecological factors could only support livestock production. It is the only means of producing food from inedible vegetation, thus livestock production is predominant throughout the country and the only viable land use system that has been adopted by the people over the centuries.

Livestock reared in pastoral systems also contribute significantly to the national economy and is the major source of household wealth and supply end products that include milk, meat and hides and skins and transport. Domestic animals in the broader Somali context are, nonetheless, an indispensable source of human livelihoods and welfare. The livestock kept in Puntland are indigenous breeds of goats, sheep, camel and cattle breeds that are more adaptable to arid environment and more resistant to diseases, drought and capable of surviving on poor nutrition that have become major challenges to livestock production. Productivity is low compared to improved types of livestock; nevertheless, it is widely agreed that these indigenous breeds should be promoted and conserved while enhancing the traits for meat and milk production.

The livestock production system is exclusively nomadic pastoralism and rangeland is communal or free grazing throughout the country. With the exception of some salts, animals are not given any sort of supplementary feeding. The livestock number is subject to many factors that include vicious cycles of major droughts that sometimes reduces the national herd to more than half. Disease epidemics also have an impact on herd size and productivity of animals. The population of livestock in Puntland is estimated to be 17,464,180 animals. This includes 10.69% camels, 2.29% cattle, 35.4% sheep and 51.6% goats. However, no census has been carried out since 1988, and the above data is derived from an estimated growth rate of 0.07% in camels, 0.01% in cattle, 0.012% in goats and 0.021% in sheep.

Table 2: Trends in livestock population from 2009—2013 in Puntland

Year	Goats	Sheep	Camel	Cattle	Total
2009	9,008,000	6,180,000	1,863,000	400,000	17,452,000
2010	9,009,000	6,181,000	1,864,000	400,000	17,455,000
2011	9,010,000	6,182,000	1,866,000	400,000	17,458,000
2012	9,011,000	6,183,000	1,867,000	400,000	17,461,000
2013	9,012,000	6,183,000	1,868,000	400,000	17,464,000

Source: Puntland Ministry of Planning and international relation.

Just as found countrywide, a majority of the farmers in South and Central regions of Somalia are pastoralists. Thus, livestock is the backbone of the economy in this region

providing the main source of Somali livelihoods. In the wide economy of Somalia, livestock exports contribute 40% of the national GDP and 80% of foreign currency earnings, excluding direct remittances from Somalis in the diaspora. Beside livestock, other main exports are bananas, skins, fish, charcoal and scrap metal. Traditionally, exports from these regions have been previously through Bosaso and Berber ports before the Mogadishu port was re-established. The main destinations of Somalia's export include the United Arab Emirates, Yemen and Oman. Data on exports however has been scanty.

Export of live animals dominated the trade for a long time until the 1999 ban by Kingdom of Saudi Arabia (KSA) and other traditional trading partners in the Middle East. Since then traders diversified and are now exporting chilled meat to UAE. With the collapse of the Somali state and its institutions, the private sector and private sector organisations have managed to grow impressively, particularly in the areas of export trade. These exporters engage in activities that are supported with technical and financial assistance by the UNDP and FAO. In particular, they have been assisted in the establishment of good quality slaughterhouses that produce export-grade meat for the Gulf. New, higher standard abattoirs have been built in all major cities of the south to supply chilled meat to local export companies. Approximately 20-30 tonnes of chilled goat meat are exported by air on a weekly basis with the largest chilled meat exporter, Somali Meat (SOMEAT).

Farmers in south and central Somalia use animals for ploughing and to provide transport services when they are moving from place to place in search of pasture. There is, however, scanty information showing the number of animals used in providing this service.

Information on the estimated animal population and its distribution in south and central regions of the country is scarce and varies by source. This, again, is mainly due to the fact that no census has been carried out since the beginning of civil strife. Information obtained for this study estimates the total animal population between 35 and 40 million. This figure is similar to that reported by the Ministry of Planning and National Development in conjunction with the Ministry of Livestock after an aerial survey undertaken in 1987. The animal structure is composed of 43% camel, 2% cattle, 10% sheep and 5% goats. The Table 3 below shows animal population trends in these regions.

Table 3: Trends in Livestock Population from 2010—2013 in South/Central

Year	Camel	Cattle	Sheep	Goats
2010	4,600,000	4,100,000	6,500,000	8,700,000
2011	4,600,000	4,000,000	6,500,000	8,600,000
2012	4,800,000	4,200,000	6,700,000	8,800,000
2013	4,900,000	4,300,000	6,800,000	8,800,000

Source: Ministry of Planning and Forestry

1.3 A Production-based Approach for Estimating GDPs

The methodology adopted to assess the contribution of livestock to the economy of Somalia follows a production approach as adopted in other studies in IGAD member states (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 involves four key stages:

- i) Stage 1: Estimating the national livestock population for Somalia – with comparative figures from the Ministry of National Planning and Development (Department of Statistics and Research), Ministry of Livestock (Department of Planning and Marketing) and FAOSTAT database;
- ii) Stage 2: Estimating the average and corresponding total livestock outputs (example milk);
- iii) Stage 3: Estimating ‘farm gate’ prices in dollars, and the total gross value of outputs;
- iv) Stage 4: Estimating input costs and their deduction from gross values generated from outputs.

When estimating National GDP, Somalia’s Department of Statistics and Research generally follows the commodity flow approach that provides a systematic and consistent frame for estimation of GDP by final expenditures. In estimating agriculture GDP, the department sums up the value of agricultural outputs by combining the value of marketed agricultural products, based on the recorded value, quantities and prices for different commodities. However, the method does not estimate the volume of output for different livestock products, and is silent on both farm gate prices of livestock products and enterprise specific input costs. This approach is not appropriate since the agricultural economy is less commercialized and is limited in livestock and livestock products estimations. Its accuracy depends on the reliability of annual statistics, most of which are incomplete. There is need to adopt new analytical methods for estimating livestock outputs. One such method is the production approach that was used in this study and is widely adopted by IGAD.

Table 4 below shows the livestock population trends in Somalia, with most projections based on FAO estimates. Since they are projections, they may not be entirely reflective of the actual herds and flocks and do not indicate dynamics of herd growth or decline over a four-year period. Most of these figures correspond with official estimates. Overall, the national livestock statistics are deficient and likely to vary if any ‘ground-truthing’ is to be carried out. However, the study adopts the figures, largely because they are official.

Table 4: Livestock Populations Trends, Somalia ('000)

Livestock type	Region	2010*	2011*	2012*	2013*
Cattle	South and Central	4,100,000	4,000,000	4,200,000	4,300,000
	Puntland	400,000	400,000	400,000	400,000
	Somaliland	399,000	404,000	409,000	414,000
Camels	South and Central	4,600,000	4,600,000	4,800,000	4,900,000
	Puntland	1,864,000	1,866,000	1,867,000	1,868,000
	Somaliland	1,664,000	1,682,000	1,701,000	1,720,000
Sheep	South and Central	6,500,000	6,500,000	6,700,000	6,800,000
	Puntland	6,181,000	6,182,000	6,183,000	6,183,000
	Somaliland	8,602,000	8,748,000	8,897,000	9,048,000
Goats	South and Central	8,700,000	8,600,000	8,800,000	8,800,000
	Puntland	9,009,000	9,010,000	9,011,000	9,012,000
	Somaliland	8,266,000	8,464,000	8,667,000	8,875,000

* Sources: Ministry of National Planning & Development (Department of Statistics & Research)

1.4 Limitations

The production approach adopted for this study faced numerous limitations especially in Somaliland where gross deficiencies in reliable livestock population figures exist. Also, with limited studies carried out on livestock production in Puntland, Somaliland and South-Central Somalia, comparative estimation of production coefficients proved difficult.

2.0 DIRECT USE BENEFITS OF LIVESTOCK

2.1 Introduction

Livestock specialists frequently argue that livestock production is underrepresented in the GDP estimates of African nations. In this section we present estimates of the value of goods and services derived from livestock to the Somali economy. 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 Somalia only include the value of marketed goods produced by livestock and excludes the value of the un-marketed livestock services such as financial services and animal draught power. The production approach estimates the value of direct use benefits of livestock by summing up all the various economic benefits derived from livestock including the range of livelihood benefits that livestock owners depend upon in practice. Some of these benefits are not captured in the country's national accounts. The estimates derived in this section are based on the 2013 livestock outputs.

2.2 Live Animal and Milk Off-takes

The main components of direct benefits of livestock include sale of live animals, beef off-takes, milk off-takes, hides and skins. We present the various value estimates of these components as a contribution of livestock to Somali GDP.

2.2.1 Cattle milk

Pastoral dairy production is among the least reported in Somali, with most of the published quantifications by FAOSTAT. Among the key variables in the study are the proportions of cows in the national herd, the proportion of milking cows, the average milk output per cow per day, the average milk output per lactation period in litres, the total milk produced in litres, the proportion of off-take and the average farm gate price per litre of cow milk. These are summed up to give the value of total cow milk produced per year and the corresponding value of marketed milk.

The Ministry of Livestock, in conjunction with the Ministry of Planning and National Development estimate cattle population at 414,000 heads in 2013 in Somaliland, 400,000 heads in Puntland and 4,300,000 in South and Central Somalia. The herd structure is comprised of 80-87% female herd with 20-30% lactating. It is estimated that the average milk production per cow is 2 litres per day with an estimated gate farm price of 1 USD. The Ministry of Planning and National Development estimates the proportion of milking cows at 25%. The average lactation period for a milking cow is estimated to stand at 283 days. These estimates compares well with estimates presented in studies in other ASAL regions like South Sudan, where typical herds comprised 27% milking cows with milk output at 1.1 litres per day and 88-day lactation length. Based on our estimate of 2013 cattle population for the three regions, milk production in 2013 was computed as follows:

A: The Volume of cattle milk from Somaliland: $414,000 * 0.81 * 0.25$ heads * 2 * 283 litres per head = 47,450,610 litres or 47.45 Million litres

B: The Volume of cattle milk from Puntland: $400,000 * 0.81 * 0.25$ heads * 2 * 283 litres per head = 45,846,000 litres or 45.85 Million litres

C: The Volume of cattle milk from South and Central Region: $4,300,000 * 0.81 * 0.25$ heads * 2 * 283 litres per head = 492,844,500 litres or 492.84 Million litres

Total Volume of cattle milk = A + B + C = 586,141,110 litres or 586.1 Million litres

The mean farm gate price for cow milk in 2013 was estimated at 1 USD per litre. This is an estimated farm gate price for the South and Central Somalia and Hargeisa region and this was taken as the gate farm price for all other regions. No other study was available for comparative analysis of the milk pricing in Somalia over this period. Further there was no available information as to classify milk produce as peri-urban or rural hence all milk produce was considered as coming from the rural areas.

Total Value of Cattle milk: 586,141,110 litres * 1 USD = 586.1 Million (\$0.586 billion) USD in 2013

2.2.2 Camel milk

The Ministry of Livestock, in conjunction with the Ministry of Planning and National Development estimate camel population at 1,720,000 heads in 2013 in Somaliland, 1,868,000 heads in Puntland and 4,900,000 heads in South and Central Somalia. The camel herd structure constitutes 80-87% female and 13-23% males. This gives an estimated female population of 1,436,200 in Somaliland, 1,559,780 in Puntland and 4,091,500 in South and Central Somalia (FAO 2013). The estimated milking herd is 23.5% with milk output of 5 litres per camel per day and an average lactation period of 290 days. Thus the expected milk production per head of camel is 1,450 litres annually.

Without any other estimates for camel milk outputs, this study adopts the FAO herd structure and milk output per head estimate as well as the Ministry of Livestock 2013 national camel herd estimate to calculate the volume of camel milk.

A: The volume of camel milk in Somaliland: 337,507 head * 1450 litres/head = 489,385,150 litres of milk or 489.4 million litres in 2013.

B: The volume of camel milk in Puntland: 366,548 head * 1450 litres/head = 531,494,600 litres of milk or 531.49 million litres in 2013.

C: The volume of camel milk in South and Central Somalia: 961,502 head * 1450 litres/head = 1,394,177,900 litres of milk or 1,394.18 million litres in 2013.

Total volume of camel milk in Somalia = A+B+C = 2,415,057,650 litres of milk or 2,415.1 million litres in 2013.

The Ministry of Livestock (2013) estimates the farm gate price of 2.3 USD per litre for camel milk. Based on these figures, this study estimates the value of camel milk production in 2013 as:

Value of camel milk: 2,415,057,650 litres * 2.3 = 5,554,632,595 USD or 5.555 Billion USD in 2013

2.2.3 Goat and sheep milk

The Ministry of Livestock estimates the population of goats at 8,875,000 in Somaliland, 9,012,000 in Puntland and 8,800,000 in South and Central regions of Somalia with an annual output of 32.4 litres. The flock structure consists of 80-91% female and 9-20% male. No other reliable data or documentation exists on goat milk production in Somalia. Thus in this study we assume that the milk output for goats is 32.4 litres annually.

As is common in most ASAL regions, and based on studies in other ASAL regions (e.g. Ethiopia's Oromia region) the milking goats are assumed rural. This study assumes that 41% of all female goats in rural areas of Somali are milked, producing 600 mls of milk per day for 54 days each year. Using these figures, the study estimates goats' milk production as follows:

A: Volume of goat milk in Somaliland: 8,875,000 * 0.855 * 0.41 * 32.4 litres per head = 100,800,652 litres or 100.8 Million Litres

B: Volume of goat milk in Puntland: 9,012,000 * 0.855 * 0.41 * 32.4 litres per head = 102356674 litres or 102.4 Million Litres

C: Volume of goat milk in South and Central Somalia: 8,800,000 * 0.855 * 0.41 * 32.4 litres per head = 99,948,816 litres or 99.95 Million Litres

Total Volume of goat milk produced in Somalia = A + B + C = 303,106,142 litres or 303.11 Million Litres

In the year 2013, the Ministry of Livestock, and the Ministry of Planning and National Development estimated sheep population at 9,048,000 heads in Somaliland, 6,183,000 in Puntland and 6,800,000 in South and Central Somalia. The flock structure is similar to that of goats consisting of 80-91% female and 9-20% male. No other reliable data or documentation exists on sheep milk production in Somalia. Thus in this study we assume a 41% milking sheep flock, producing 600 ml of milk per day for 54 days each year equivalent to 32.4 litres annually. Using these figures, the study estimates sheep milk production as follows;

A: Volume of sheep milk in Somaliland: 9,048,000 head of sheep * 0.855 * 0.41 * 32.4 litres per head = 102,765,555 litres of milk or 120.8 million litres.

B: Volume of sheep milk in Puntland: 6,183,000 head of sheep * 0.855 * 0.41 * 32.4 litres per head = 70,225,401 litres of milk or 70.2 million litres.

C: Volume of sheep milk in South and Central Somalia: 6,800,000 head of sheep * 0.855 * 0.41 * 32.4 litres per head = 77,233,176 litres of milk or 77.2 million litres

Total Volume of sheep milk produced in Somalia = A + B + C = 250,224,132 litres of milk or 250.2 million litres

The Ministry of Livestock, in conjunction with the Ministry of Planning and National Development gives the farm gate price for small ruminant milk at 0.8 USD per litre. Using these estimates, the value of sheep and goat milk in 2013 was thus:

Total Value of goat milk: 303,106,142 litres * 0.8 USD per litre = 242,484,914 or 242.5 Million USD

Total Value of sheep milk: 250,224,132 litres * 0.8 USD per litre = 200,179,306 USD or 200.2 Million USD

Total Value of sheep and goat milk: 242,484,914 + 200,179,306 = 442,664,220 USD or 442.7 Million USD (\$0.44 billion).

2.2.4 Cattle off-take

The Ministry of Livestock estimates cattle off-takes in Somaliland at 38,916 heads in 2013, equivalent to 9.4% off-take rate per annum. In Puntland the estimated cattle off-take is 37,600 in 2013 equivalent to 9.4% whereas in South and Central Somalia, the estimated off-take is 210,700 in 2013, equivalent to 4.9% off-take rate per annum. The FAO estimates off-takes at 53,540 heads of cattle, equivalent to 9.95% off-take rate per annum (based on 538,000 FAO 2013 estimates). This study adopts the official estimates of 9.4% and 4.9% off-take rate to calculate the volume of livestock off-take in 2013. Thus the volume of cattle off-take is calculated as follows;

A: Cattle off-take in Somaliland: 414,000 * 9.4% gross off-take rate = 38,916 heads of cattle in 2013;

B: Cattle off-take in Puntland: 400,000 * 9.4% gross off-take rate = 37,600 heads of cattle in 2013;

C: Cattle off-take in South and Central Somalia: 4,300,000 * 4.9% gross off-take rate = 210,700 heads of cattle in 2013.

Total Cattle off-take in Somalia = A + B + C = 38,916 + 37,600 + 210,700 = 287,216 heads of cattle in 2013

The Ministry of Livestock, in conjunction with the Ministry of Planning and National Development gives the farm gate price for cattle at 500 USD per head in Somaliland, 450 USD in Puntland and between 350-650 USD in South and Central Somalia. Using these estimates, the value of cattle off-take in 2013 was thus:

A: Value of cattle off-take in Somaliland: 38,916 heads * 500 USD = 19,458,000 USD or 19.46 Million USD

B: Value of cattle off-take in Puntland: 37,600 heads * 500 USD = 18,800,000 USD or 18.8 Million USD

C: Value of cattle off-take in South and Central Somalia: 210,700 heads * 450 USD = 94,815,000 USD or 94.8 Million USD

Total Value of Cattle off-take in Somalia = A + B + C = 19,458,000 + 18,800,000 + 94,815,000 = 133,073,000 or 133.07 Million USD

2.2.5 Camel Off-take

In 2013, Ministry of Planning and National Development estimated camel population at 1,720,000 heads in Somaliland, with a net annual off-take for slaughter of 249,400 heads, equivalent to annual off-take of 14.5% per annum. However, based on the Ministry of Livestock data, off-take for sale is 32,680 heads, equivalent to 1.9% annually. The off-take rates for sale in Puntland and South and Central Somalia are 11.4% and 1.9% respectively. This study adopts the official Ministry of Planning and National Development estimates. Thus in 2013 the volume of domestic camel off-take is derived as follows:

A: Volume of Camel off-take in Somaliland = 1,720,000 * 14.5% gross off-take rate = 249,400 heads of camel in 2013

B: Volume of Camel off-take in Puntland = 1,868,000 * 11.4% gross off-take rate = 212,952 heads of camel in 2013

C: Volume of Camel off-take in South and Central Somalia = 4,900,000 * 1.9% gross off-take rate = 93,100 heads of camel in 2013

Total camel off-take in Somalia = A + B + C = 249,400 + 212,952 + 93,100 = 555,452 heads of camel in 2013.

The Ministry of Livestock and Planning and National Development (2014) estimate camel prices at 585 USD per head. Assuming that producer camel prices grew at the same rate as the national herd, the producer prices for camel in 2014 had increased 1.11% over that in 2013. Thus the 2013 camel producer prices are discounted to 479 USD per camel.

Based on these figures above, the value of camel off-take in 2013 was:

A: Value of Camel off-take in Somaliland = 249,400 head of off-take * 479 USD = 119,462,600 USD or 119.46 Million USD in 2013

B: Value of Camel off-take in Puntland = 212,952 head of off-take * 479 USD = 102,004,008 USD or 102 Million USD in 2013

C: Value of Camel off-take in South/Central = 93,100 head of off-take * 479 USD = 44,594,900 USD or 44.59 Million USD in 2013

Total Value of Camel off-take for sale = A+B+C = 119,462,600 + 102,004,008 + 44,594,900 = 266,061,508 USD or 266.1 Million USD (\$0.266 billion)

2.2.6 Sheep and goat off-take

In 2013, goat annual off-take for slaughter in Somaliland was 2,041,250 heads, equivalent to annual off-take of 23% per annum based on Ministry of Livestock and National Planning and Development estimated population of 8,875,000 heads in 2013. In Puntland and South and Central Somalia goat annual off-takes were 2,072,760 and 2,024,000 heads respectively. This is equivalent to an annual off-take of 23% per annum. The Ministry of Livestock and the Ministry of National Planning and Development also estimates sheep annual off-take for slaughter at 2,081,040 in Somaliland, equivalent to 23% per annum, based on its population estimate of 9,048,000 heads in 2013. In the absence of any other comparative off-take documentation for small ruminants this study adopts the Ministry of Livestock and the Ministry of Planning and National Development and applies it in the three regions. The Ministry estimates the off-take price for sale of goats to be 50 USD in Somaliland and in South and Central Somalia but 75 USD in Puntland. Given these estimates, the study estimates value of sheep and goat off-take to:

A: Value of goats off-take in Somaliland = 8,875,000 * 23% gross off-take rate = 2,041,250 heads of goat in 2013*50 = 102,062,500 USD

B: Value of goats off-take in Puntland = 9,012,000 * 23% gross off-take rate = 2,072,760 heads of goat in 2013 * 70 = 155,457,000 USD

C: Value of goats off-take in South and Central Somalia = 8,800,000 * 23% gross off-take rate = 2,024,000 heads of goat in 2013 * 50 = 101,200,000 USD

Total Value of goats off-take in Somalia = A + B + C= 102,062,500 + 155,457,000 + 101,200,000 = 358,719,500 USD or 358.7 Million USD (\$0.359 billion) in 2013

A: Value of sheep off-take in Somaliland = 9,048,000 * 23% gross off-take rate = 2,081,040 heads of goat in 2013 * 50 = 104,022,000 USD

B: Value of sheep off-take in Puntland = 6,183,000 * 23% gross off-take rate = 1,422,090 heads of goat in 2013 * 70 = 99,546,300 USD

C: Value of sheep off-take in South and Central Somalia = 6,800,000 * 23% gross off-take rate = 1,564,000heads of sheep in 2013 * 50 = 78,200,000 USD

Total Value of sheep off-take in Somalia = A + B + C= 104,022,000 + 99,546,300 + 78,200,000 = 281,768,300 USD or 281.8 Million USD (\$0.282 billion) in 2013

2.2.7 Pigs off-take

Because of negligible numbers of pigs in Somalia, its contribution to national economy was not taken into account in this study

2.2.8 Poultry off-take

The Ministry of Livestock and National Planning estimates indigenous chicken at 22,000 birds in 2014. This study however, was unable to find any data on rates of off-take and thus conclude that poultry has negligible economic value to the Somalia economy.

2.3 Hides and Skins Off-takes

2.3.1 Cattle hides and skin off-take

The Ministry of Livestock and the Ministry of Planning and National Development estimated cattle hides and skins off-take rate for 2013 as 15,800, equivalent to extraction rate of 41.5% per annum based on the 38,094 off-take rate for slaughter in Somaliland in the same year. The off-take rate for cattle in Puntland was 9,761 and 62,956 in South and Central Somalia based on 30,988 and 200,300 off-take rate for slaughter respectively.

The producer price for cattle hides and skins is estimated at 7 USD per head in 2013 in Somaliland, 3.8 USD in Puntland and 5.5 USD in South and Central Somalia. Using these estimates this study estimates the official cattle hides and skins off-take volume and value in 2013 to:

A: Cattle hides off-take volume in Somaliland = 38,094 cattle heads * 41.5% = 15,800 cattle hides off-take in 2013

Value of Cattle hides and skin (Somaliland): 15,800 cattle hides * 7 = 110,600 USD (\$0.00011 billion) in 2013

B: Cattle hides off-take volume in Puntland = 30,988 cattle heads * 31.5% = 9,761 cattle hides off-take in 2013

Value of cattle hides and skin (Puntland): 9,761 cattle hides * 5.5 = 53,687 USD (\$0.000054 billion) in 2013

C: Cattle hides and skins off-take Volume in South and Central Somalia = 200,300 cattle heads * 31.4% = 62,956 cattle hides off-take in 2013

Value of Cattle hides and skins (South and Central): 62,956 cattle hides * 3.8 = 239,234 USD or 0.239 Million USD (0.000239 billion) in 2013

Total Value of Cattle Hides and Skins = A + B + C = 110,600 + 53,687 + 239,234 = 403,521 USD or 0.404 Million USD (\$0.000403 billion) in 2013

2.3.2 Camel hides off-take

The Ministry of Livestock and the Ministry of Planning and National Development estimated camel hides off-take rate for 2013 as 49,380 for Somaliland region, equivalent to extraction rate of 19.8% per annum based on the 249,400 off-take rate for slaughter in the same year. Estimated camel off-take for Puntland and South and Central Somalia are 270,860 heads and 93,100 heads respectively. The extraction rates

for these regions are 48,755 and 15,362 translating to 22.9% and 16.5% in Puntland and South and Central regions respectively.

The producer price for cattle hides and skins varies from region to region. In Somaliland price per piece of camel skin is estimated at 4.2 USD whereas it is 5.5 USD in Puntland and 3.5 USD in South and Central regions per piece in 2013. Using these figures this study estimates the official camel hides and skins off-take volume and value in 2013 to:

A: Camel hides off-take volume in Somaliland = 249,400 camel heads * 19.8% = 49,380 camel hides off-take in 2013

Value of camel hides (Somaliland): 49,380 camel hides * 4.2 = 207,396 USD (\$0.000207 billion) in 2013

B: Camel hides off-take volume in Puntland = 212,952 camel heads * 22.9% = 48,755 camel hides off-take in 2013

Value of camel hides (Puntland): 48,755 camel hides * 5.5 = 268,153 USD (\$0.000268) in 2013

C: Camel hides off-take Volume South and Central regions = 93,100 camel heads * 16.5% = 15,362 camel hides off-take in 2013

Value of Camel hides (South and Central): 15,362 camel hides * 3.5 = 53,767 USD (\$0.000054billion) in 2013

Total value of camel hides off-takes = A + B + C = 207,396 + 268,153 + 53,767 = 529,316 USD or 0.529 Million USD (\$0.000529 billion) in 2013

2.3.3 Small ruminant skins off-take

The Ministry of Livestock and the Ministry of Planning and National Development estimated goat skins off-take for 2013 at 1,918,775, equivalent to extraction rate of 94% annually based on the 2,041,250 off-take rate for slaughter in the same year. Similarly, the estimated sheep skins off-take was 1,860,000, equivalent to extraction rate of 89.4% annually based on the 2,081,040 off-take for slaughter in the same year.

The producer price for sheep and goats skins was estimated at 1.5 USD per head in 2013. This study estimates the official sheep and goats hides and skins off-take volume and value in 2013 to:

A: Goat skin off-take volume in Somaliland region: 2,041,250 heads * 94% = 1,918,775 goat skins off-take in 2013

Value of goat skins (Somaliland): 1,918,775 goat skins * 1.5 USD = 2,878,163 USD (\$0.0029billion) in 2013.

B: Goat skin off-take volume in Puntland region: 2,072,760 heads * 91% = 1,886,212 goat skins off-take in 2013

Value of goat skins (Puntland): 1,886,212 goatskins * 1.3 USD = 2,452,075 USD (\$0.0025 billion) in 2013.

C: Goat skin off-take volume in South and Central regions: 2,024,000 heads * 78% = 1,578,720 goat skins off-take in 2013

Value of goats skins (South and Central): 1,578,720 goat skins off-take * 0.8 USD = 1,262,976 USD or 1.263 Million USD (\$0.0013 billion) in 2013

Total Value of goat skins for Somalia = A + B + C = 2,878,163 + 2,452,075 + 1,262,976 = 6,593,214 USD or 6.59 Million USD (\$0.0066 billion) in 2013

A: Sheep skin off-take volume in Somaliland region: 2,081,040 heads * 94% = 1,956,178 sheep skins off-take in 2013

Value of sheep skins (Somaliland): 1,956,178 sheepskins off-take * 1.5 USD = 2,934,267 USD (\$0.0029 billion) in 2013.

B: Sheep skin off-take volume in Puntland region: 1,422,090 heads * 91% = 1,294,102 sheep skins off-take in 2013

Value of sheep skins (Puntland): 1,294,102 sheepskins off-take*1.3 USD = 1,682,332 USD (\$0.0017 billion) in 2013.

C: Sheep skin off-take volume in South and Central regions: 1,564,000 heads * 78% = 1,219,920 sheep skins off-take in 2013

Value of sheep skins (South and Central): 1,219,920 sheepskins off-take*0.8 USD = 975,936 USD (\$0.00098 billion) in 2013.

Total Value of sheepskins for Somalia = A + B + C = 2,934,267 + 1,682,332 + 975,936 = 5,592,535 USD or 5.59 Million USD (\$0.0060 billion) in 2013.

2.4 Manure as fertilizer

Like Djibouti, it is evident that adoption of manure for fertilizer is uncommon in Somalia. Sales are seldom done and therefore it is not possible to place any commercial value on manure and this limits its inclusion in national economic estimates including GDP. Although it is clear that manure has an agronomic value in rangeland productivity, this economic value is insignificant given that negligible farming activities occur in Somalia. Thus manure has no quantifiable agro - economic value.

2.5 Animal draught power

Only 1.6% of Somalia's total area is under cultivation. There are two main types of agriculture, one indigenous and the other introduced by the European settlers. The Somalis have traditionally engaged in rain-fed dry-land farming or in dry-land farming complemented by irrigation from waters of Shabeelle and Juba rivers or from collected rain waters. Due to unsuitability of local climate, uptake of agro activities in the country is very low. As a result, use of draught power is limited in Somalia. The Ministry of Planning and National Development estimates that 20% of the households in Somali

use traction power for ploughing. Among the local population, camel and donkey haulage is used sparingly whereas traction power is commonly used in ploughing. Estimates of the value of animal draught are therefore based on the value of traction power in providing ploughing services.

The local cost of renting a tractor to plough per hour is estimated at 10 USD. Assuming that a tractor, on the average tills an acre of land for 3hrs, then the cost of tilling an acre is estimated at 30 USD. Due to lack of information to validate these estimates, the Ministry of Planning estimates were used to determine the value of traction power for ploughing. Assume the same is paid for hire of traction power then the value of traction power for ploughing in 2013 is thus:

Estimated Area under Cultivation= $637,657 \text{ km}^2 * 1.6\% = 10,202.51 \text{ km}^2 = 10,202.51 * 1000 * 1000 / 4840 = 2,107,957 \text{ Acres}$.

Estimated Area ploughed using traction service = $20\% * 2,107,957 = 421,591 \text{ Acres}$

Estimated Value of traction services= $421,591 * 30 \text{ USD} = 12,647,742 \text{ USD}$ or 12.65 Million USD (\$0.013 billion) in 2013

Somalia possess the greatest number of pastoralists in Africa with an estimated over 65% of the Somalia population participating in nomadic or semi-nomadic pastoralism². A great majority of nomadic pastoralists use animals especially camels to provide transport services. The use of animals to provide routine transport service such as carrying children, carrying the sick and old in addition to carrying water and other essential house hold goods is pre-historic. It is however difficult to find data that cost these transport services, since majority of nomadic families own the camels and not hired in contrast to donkeys which are seldom used except in mountainous regions where camels cannot access. It is estimated that it costs an urban house hold between 4-6 USD to hire a donkey to provide transport services in a day in 2015. Assuming the same shall be paid for services rendered by camels and discounting this cost at 2%, the camel population growth rate, then the cost of hiring camel transport services is 4.8 USD in 2013. Assuming the pastoral house hold size of 7, then estimated value of haulage services is as follows;

Estimated number of Nomadic pastoralist House Holds = $10,800,000 * 65\% = 7,020,000 / 7 = 1,002,857 \text{ House Holds}$

Estimated Value of haulage services= $1,002,857 * 4.8 \text{ USD} = 4,813,714 \text{ USD}$ or 4.81 Million USD (\$0.0048 billion) in 2013

² Samatar 1989a: 41; Handulle and Gay 1987: 36

2.6 Livestock based financial services

2.6.1 Livestock as credit

In this section we present the financing benefits of livestock as credit and we look at the value of the finance (in this case interest) equivalent to the value of livestock off-takes derived from the ability of livestock owners to dispose of their animals for some need. Thus in a way, we determine 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 5 below is the total estimated value of livestock off-take in 2013.

Table 5: Value of Livestock Offtakes (2013)

Livestock	Off-take Values (Million USD)
Cattle	133.07
Camel	266.1
Goats	358.7
Sheep	281.8
Poultry	-
Pigs	-
Total offtake Value	1,039.67

Source: Study estimates, 2015

Somalia has eleven commercial lending institutions among them Al Barakaat Bank, Amal Bank and International Bank of Somalia. These lending Institutions can be categorized as Islamic or International Banking Institutions. The average interest rate charged by this institution is 13% annually for commercial loans. As is common in other African countries, informal money lenders such as self-help groups, merry-go-rounds, commodity based credit providers, Microfinance Institutions (MFIs) and government based agro financing are less developed in Somali. Based on this average interest rate charged on credit in Somalia, the financial value of livestock off-take in 2013 was:

1,039.67 Million USD * 13% = 135.16 Million USD, equivalent to 13% of annual value of off-take in 2013.

2.6.2 Livestock as self insurance

The study attempts to assess the value of livestock as self insurance by looking at the value that would be accrued if herders were to sell off their herds, for instance, during calamities. Table 6 below gives the value of livestock off-takes. Using these values, it seeks to determine the annual cost of insurance equivalent to the value of the livestock off-takes. It estimates the value of livestock as capital at 100% of the farm gate value, without any discounting.

Table 6: Estimated Capital value of Somali Livestock, December 2013

Livestock	Region	Livestock Population (2013)	2013 Producer prices (USD)	Capita Values of livestock (Million USDs)
Cattle	Somaliland	414,000	500	207
	Puntland	400,000	500	200
	South /Central	4,300,000	450	1,935
Camel	Somaliland	1,720,000	479	823.88
	Puntland	1,868,000	479	894.77
	South /Central	4,900,000	479	2,347.1
Goats	Somaliland	8,875,000	50	443.75
	Puntland	9,012,000	70	630.84
	South /Central	8,800,000	50	440
Sheep	Somaliland	9,048,000	50	452.4
	Puntland	6,183,000	70	432.81
	South /Central	1,564,000	50	78.2
Pigs		-		-
Total capital value of livestock		-		8,885.75

Source: Study estimates, 2015

From the Table 6 above, the capital value of the Somali herds and flocks in 2013 was about **8.886 Billion USDs**. The estimated value of the livestock assets as self-insurance is equivalent to the insurance premiums that herders in Somalia would need to pay to provide themselves with **8.886 Billion USDs** of insurance coverage, i.e. the opportunity cost of comparable levels of coverage. There is no agency offering livestock insurance in Somalia and therefore this study uses the premium rates offered by livestock insurance providers in Kenya which is between 3.25% and 5% of the animal value (average rate of 4.2%). Thus the premium to coverage ratio in Kenya is 2142/5100 equivalent to 0.042. The study estimates the self-insurance value of Somali livestock in 2013 as the capital value of the national herd or **8.886 Billion USD multiplied by the premium to coverage ratio**.

The estimate of self-insurance is thus: **8.886 Billion USD * 0.042 = 0.373 Billion USD = 373 Million USD**.

2.7 Summary of Part II

The gross value of the livestock goods in Somalia in 2013 is indicated in Table 7 below.

Table 7: Gross Value of Domestic Livestock Production in Somalia, 2013

Product	Value (Million USD)
Cattle milk	586.1
Camel milk	5,555
Goat milk	242.5
Sheep milk	200.2
Subtotal estimated milk off-take	6,583.8
Cattle off-take	133.07
Camel off-take	266.1
Goats off-take	358.7
Sheep off-take	281.8
Poultry and pigs off-take	-
Subtotal estimated livestock off-take	1,039.67
Cattle hides and skins	0.404
Camel hides	0.529
Goats skins	6.59
Sheep Skins	5.59
Subtotal estimated hides and skins off-take	13.113
Manure as fertilizer	0
Total Product Output	7,636.583

Source: Study estimates, 2015

From the Table 7 above, the value of the total livestock products i.e. the gross value of domestic livestock production/products was **7.64 Billion USD in 2013**. The total estimated value of goods and services provided livestock shows i.e. the direct use value of livestock in 2013 shown in Table 8 below.

Table 8: Direct use benefits derived from livestock, 2013 (Million USDs)

Benefit type	Value of agric GDP (Million USDs)	Services not in GDP estimate (Million)
Value added livestock products (slaughter animals, milk, manure for fertilizer, eggs, hides & skins)	7,636.583	
Traction ploughing		12.65
Transport/Haulage		4.81
Livestock as Credit		135.16
Livestock as Self Insurance		373
Subtotals	7,636.799	525.62
Total Economic Benefits	8,162.419	
Cost of Inputs	5.28	
Livestock gross value added	8,157.139	

Source: Study estimates, 2013

From the Table 8 above, in 2013, the total estimated value of goods and services provided by livestock i.e. the direct use value of livestock to the Somalia economy was **8,162.419 Million USDs**. According to the Ministry of Livestock and Ministry of Planning and National Development, veterinary services, medicine, dips sprays and vaccines are publicly available free of charge (donated by agencies) and therefore form an insignificant part of cost to livestock producers in the country. The major cost elements to the national herd are from imports of animal feeds/fodder, water repairs and maintenance estimated at **5.28 Million USDs** 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 **8,162.419 Million USDs less 5.28 Million USDs, equalling 8,157.139 Million in 2013**. This value includes 93.6% derived from conventional goods common in agricultural GDP, and 6.4% from financial services provided by livestock. From the results, goats are Somalia's most economically important livestock, with a value of **358.7 Million USDs** in 2013, equivalent to **4.4 %** of the total gross value of livestock's contribution to the agricultural sector.

3.0 CONTRIBUTION OF LIVESTOCK TO THE WIDER ECONOMY

3.1 Introduction

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

3.2 The role of livestock in household consumption

This study estimates the local milk and red meat consumption per caput using Somalia's Ministry of Planning and National Development's estimate of national population and the results from the milk and meat production off-takes for 2013. These are based on the country 2013 population of 10,800,000.

Table 9: Red meat and offal available for consumption, 2013

Product	Total meat and offal off-take for consumption	Total off-take for meat and offal in kg for domestic consumption	Consumption per Caput(kg)
Total beef & offal, heads	287,216	43,082,400	4.0
Small ruminant meat & offal	6,138,010	46,035,075	4.3
Camel meat & offal	555,452	138,863,000	12.9
Total meats and offal		227,980,475	21.2

Source: Estimated slaughter weights for meat and offal are taken from Ministry of Planning estimates 2013

From Table 9 above, based on carcass yields of 150kgs for cattle, 250kgs for camels, 7.5 kg for goats, on average, 4.0³kgs of beef, 4.3kgs of small ruminant meat and 12.9kgs of camel meat is consumed per person in Somalia. The red meat consumption per capita in 2013 was 21.2kgs per person.

The milk production estimates given in this report are indicated in Table 10 below:

Table 10: Milk available for consumption, 2013

Product	Amounts (litres)	% of national total	Total off-take for consumption	Consumption per Caput(litres)
Total cattle milk	586,141,110	16.49%	586,141,110	54.2
Total camel milk	2,415,057,650	67.94%	2,415,057,650	223.6
Total sheep and goat milk	553,330,274	15.57%	553,330,274	51.2
Total milk	3,554,529,034	100.00%	3,554,529,034	329.0

Source: Study findings, 2015

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>.

Based on the estimated 2013 country population figures of 10,800,000 per capita liquid milk consumption from domestic supply was 329 litres per person per year.

3.3 Livestock Products as Inputs in other sectors

Without any reliable data, this study was unable to quantify the livestock based products that are destined and used as inputs in other sectors in Somalia. The values of the livestock based products entering other sectors were also difficult to discern.

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

Live animals form the core of Somalia's livestock-based exports. Hides and skins, leather and leather products are also important although there is no disintegrated data to aid economic analysis. In Table 11 below, the livestock export throughput volumes and values are estimated, based on official 2015 Ministry of Planning and National Development reports. A significant amount of cattle are exported from Sool, Sanaag and Togdheer regions through the Berbera Port into Saudi Arabia, Yemen and rest of Egypt and Oman. The FAO estimates cattle export in 2013 at 61,540 herds (FAO 2013). The Ministry of Planning and National Development also estimates 2,353,000 heads of sheep and goats exported in 2010. Assuming exports grew apace with the sheep and goat flock (2.4% for goats and 1.7% for sheep annually), the estimated number of sheep and goats exported in 2013 was 2,499,634 (Assuming an average growth rate of 2.05% per annum between 2010 and 2013).

Overall, in 2013, the value of livestock-related exports was **155.75 Million USDs**, equivalent to **7.5% of agricultural GDP in 2013**. The study did not find any reliable data on the values of export of hides and skins and products such as leather and footwear

Table 11: Livestock and livestock products Exports, 2014

Livestock & livestock products	Numbers	Value (Million USD)	% of agro-GDP
Cattle	61,540	30.77	1.5%
Small ruminants	2,499,634	124.98	6%
Camels	75,490	36.16	1.8%
Pigs	0	0	0
Poultry	0	0	0
Hides and skins	No data available	-	-
Footwear	0	-	-
Sub Total		191.91	9.3%

Source: Study findings, 2015

3.5 Summary of Part III

The estimates of availability of red meat are low and similar to other neighbouring countries but are lower than the WHO recommended thresholds⁴ on meat. However, the domestic availability of milk is higher than the WHO recommended threshold. It was however not possible to make comparisons with national estimates since no household food economic surveys data was available.

In terms of contribution to agricultural GDP, while milk is Somalia's most economically important livestock products, with a value of **6,583.8 Billion USD** in 2013, equivalent to 81% of the total gross value of livestock's contribution to the agricultural sector, goats are the country's most economically important livestock, with a value of **358.7 Billion USDs** in 2013, equivalent to 4.4% of the total gross value of livestock's contribution to the agricultural sector. While milk is about six times important than meat, camels are twice as important than cattle but two and half time less important than small ruminants in GDP contribution. Hides and skins make a dismal contribution of **13.113 Billion USD** only, equivalent to 0.16% of livestock's contribution to GDP contribution.

Somalia is largely a net livestock importer than exporter with 1.5% of cattle, 6% of small ruminant population and 1.8% of camel respectively exported in 2013. No export data was available for value added products like leather and shoes and hides and skins.

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

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

The use of an alternative method to estimate the contribution of livestock to the economy of Somalia yielded different results from the official estimates. The government bases its estimates on information on marketed livestock output, while this study uses livestock population data and outputs from each livestock enterprise. Even though the methodology is advantageous in many ways, the study relied on very narrow data base, with limited field studies on the livestock sector in Somalia. No recent surveys have been conducted in Somalia undermining the reliability of the data based on projections.

The use of the production based approach to estimate the contribution of livestock to economy of Somalia yielded an estimate of **8.152 Billion USD** in 2013. The total estimated value of goods and services provided by livestock i.e. direct use value of livestock to economy was **8.162 Billion USDs**, including 93.6% derived from conventional goods common in agricultural GDP and 6.4% from financial services provided by livestock.

Using a production based approach, milk is Somalia's most economically important livestock product, with a value of **6.5838 Billion USDs** in 2013, equivalent to 81% of livestock contribution to economy. From this approach also, the contribution of livestock to agricultural GDP (i.e. livestock gross value added) was **8.1523 Billion USDs** in 2013.

About 6.4% 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.

Camel are Somalia's most important source of red meat, supplying 52% of meat needs and contributing **266.1 Million USDs**, equivalent to 3.3% of the livestock contribution to the economy. Milk is about six times important than meat, camels are twice as important as cattle but two and half time less important than small ruminants in GDP contribution. Somalia is a net livestock exporter of livestock with the main destinations being Saudi Arabia and Yemen. Approximately **191.91 Million USD** is derived from exports of live animals, equivalent to 2.3% of livestock contribution to economy in 2013.

The production of meat and milk for domestic consumption in Somalia averages 4.0kg of beef, 4.3kg of small ruminant meat and 12.9 kg of camel meat per person in 2013. The overall red meat consumption per capita in 2013 averaged 21.2⁵ kg per person in 2013 while milk consumption averaged 329 litres per person in 2013. The meat availability is higher than the 15 kg of meat per person in Kenya, but lower than an

⁵ 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>.

estimated 41 kg of meat per person in Sudan. The domestic availability of milk per person is however much higher than the 26 litres and 198 litres of milk per person in Sudan and Kenya respectively.

Milk and dairy production

Most of Somalia's milk outputs flow through informal systems. From estimates, milk production contributes **6.5(3 Billion USD**, equivalent to 81% of the value of livestock's contribution to agricultural GDP and camel milk contributes 67% of total milk output with cattle and small ruminants each contributing about 16% of total milk output. Milk prices vary by season, locality, livestock species, and marketing channel.

Animal power

There is limited data on animal power in Somalia however the Ministry of Planning and National Development officials estimate that about 20% of households in Somalia use livestock for traction power. This study estimates the contribution of animal traction power to the economy of Somalia at **12.65 Million USDs**, equivalent to 0.16% of livestock GDP.

Other Observations

- a) The contribution of livestock to the agricultural sector of Somalia is significant.
- b) This study relied to a great extent to both FAO estimates and official statistics, with findings showing variances with official estimates, largely due to the different methods adopted in computing the estimates.
- c) While not as large as its domestic contribution, livestock's share of exports is considerable

4.2 Recommendations

- a) The government of Somalia should update its livestock population by undertaking a rigorous livestock census in all its regions.
- b) The livestock sector and the national bureau of statistics staff should be trained on the procedure for gathering data and estimating the economic value of the livestock in the national economy using the production approach which has obvious advantages when compared to the commodity flow approach
- c) A cost benefit analysis should be undertaken for the pastoral livestock production systems taking into account the cost of pastures, water, animal health. At the moment, the government of Somalia seems to cover most other intermediary costs including animal health and at times feeds.

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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:

- i. At least 10 years' experience in livestock sector development in Africa
- ii. 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.

