

POLICY BRIEF



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The Contribution of Livestock to the National Economy of Eritrea

This policy brief is pegged on the outcome of the VETGOV programme conducted jointly by AU-IBAR and IGAD on the contribution of livestock to Eritrea's 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 the national account. The study deviates from the previous commodity flow approach applied by the Eritrea Statistics Office for calculating GDP to a production approach as adopted in similar studies in Kenya, Uganda, Ethiopia and Sudan. The production approach relies on estimates of the amount of physical product generated on average by a given number of animals while putting monetary contribution in terms of draft power, household food security, manure and on-farm savings bank.

The official estimates using the commodity flow system puts livestock contribution at USD 0.157 billion, equivalent to 39% of the overall agricultural sector GDP and 4.6% of the national GDP in 2013 (see Table 1). This figure differs from that derived from a production approach. The later approach 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, which included direct benefits generated by livestock.

Table 1: *Eritrea's GDP trends (2010-2013)*

	2010	2011	2012	2013
Eritrean National GDP (US\$ in billions)	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 (Agriculture & Livestock) (US\$)	395,705,160	396,723,540	403,091,120	402,348,320
% Contribution of Primary Sector to National GDP	18.7%	15.2%	13.0%	11.7%
% Contribution of Agriculture to National GDP	11.2%	9.3%	8.0%	7.1%

% Contribution of Livestock to National GDP	7.5%	5.9%	5.0%	4.6%
% Contribution of Agriculture to Primary Sector GDP	59.9%	61.0%	61.3%	61.0%
% Contribution of Livestock to Primary Sector GDP	40.1%	39.0%	38.7%	39.0%

The Estimation of Agricultural GDP in Eritrea

The Eritrean statistics department employs the commodity flow approach in calculating GDP. This approach is based on the value of total expenditure on goods and services (excluding intermediate goods and services) produced in the domestic economy during a given period. In using the production approach, the estimates include non-marketed produce but discounts inputs for the production. This approach was used in the study on the contribution of livestock to agricultural GDP. It entailed

- An estimation of the national livestock populations
- Application of production coefficients to the livestock population estimates to generate total output of goods (sale value of livestock, and generated meat, milk, butter, dung for fuel and manure)
- Data based on market surveys, a monetary value expressed in Nakfa (ERN) as the gross value of output – was ascribed to the total output of each kind of livestock product
- Discounting of input costs (vaccines, medicines, veterinary services, transportation etc) from the gross value of output to derive value added, the measure of GDP.

Hence the production approach seemed useful in capturing herds' produce for home consumption (or for informal local exchange and consumption/ subsistence production) that is often omitted in official marketing statistics. In view of this, the production approach for estimating GDP is suitable for Eritrea where livestock rearing is at a subsistence level.

The accuracy of production approach for estimation of contribution of livestock to GDP depends on accurate livestock numbers. Unfortunately, no livestock census has been carried out in Eritrea since 1978, and the current livestock figures are based on estimates. In this study, the researchers depended primarily on Ministry of Agriculture data. Published data was limited to World Bank, IMF, FAOSTAT and some of the NGOs. This was further compounded by lack of recent national livestock commodity surveys to inform the process. Hence most of the information was based on estimates as shown in Table 2 below.

Table 2: Livestock Population Trends, Eritrea

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
Poultry	1,233,890	1,743,342	1,056,429	1,448,603	1,330,891

Source: Eritrea's Ministry of Agriculture, 2015

Recognizing the frequency of droughts in the last two decades and tremendous variations in numbers found by Uganda (2008) and Kenya (2009) after livestock census, it is important for Eritrea to seriously consider undertaking a livestock census to inform policy decisions. For example, the official figures show significant variances from the FAO (2014) data as shown on Table 3 below. The huge differences in figures estimated for the numbers of goats and poultry are difficult to explain. Further, one of the veterinarians cited a situation whereby the institute budgeted for a vaccination campaign in a specific area depending on their records but when the vaccination took place, they were able to immunize only half of the livestock population due to discrepancy between figures in their records and the livestock numbers on the ground.

Table 3: Comparison of Eritrean Ministry of Agriculture and FAO livestock populations Estimates for the year 2013

Livestock	Ministry of Agriculture Estimates	FAO Statistical Data
Cattle	2,260,095	2,080,000
Sheep	2,496,354	2,300,000
Goats	5,466,310	1,800,000
Camels	373,952	370,000
Chicken	1,448,603	1,400

The Contribution of Livestock to the Domestic Economy

Livestock contribution to the economy of Eritrea is imbedded in the agriculture sector, which is highly dependant on rain. Unfortunately, the sector’s contribution to GDP has been moderate and declining due to recurrent droughts and the use of rudimentary farming methods. A breakdown of this sector from 2010 to 2013 is shown in Table 1 above clearly indicates the progressive decline of livestock contribution from 7.5% in 2010 to 4.6% in 2013.

Recalculation of the contribution of livestock to GDP using a productive approach moved the value of livestock from 0.157 billion USD to 1.650 billion USD. The major variation is due to inclusion of un-marketed products consumed at household level. Additionally, livestock values were included for traction. Livestock credit and livestock self-insurance were also added. This raised the livestock contribution to 50.2% of national GDP.

The direct use benefits of livestock to the Eritrean Economy

There are several economic benefits derived from livestock. These include livestock products and services. In terms of products, both marketed and non-marketed products have been given a monetary value, making the total production of livestock of greater value than what has been recorded before. These are shown in Table 4 below. Putting a value on the portion of products consumed at the household level gives the right economic value to livestock contribution. For example most of the milk produced by camels, sheep and goats is consumed in the homesteads leaving approximately a quarter for sale. The concept of direct use also includes a broad range of livelihood benefits that livestock owners depend upon in practice, but were normally omitted from the national accounts. In view of this, the production approach to estimation of national economy provides a more balanced mechanism for accounting the contribution of livestock to economy of the pastoralists.

Table 4: 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

In terms of financial services, the livestock owners derive a range of financial benefits. The livestock can be sold to generate household income or used as a financial security as well as provision of insurance, and as a means of sharing risk. The credit benefits of livestock derive from the ability of livestock owners to 'cash in' their animals as need arises. This flexibility gives livestock owners access to money without the need to borrow, and confers financial benefit beyond the sale, slaughter or transfer value of their livestock. The money saved through avoidance of bank loans that attract interest payment by livestock owners is considered as a benefit. Further, there is additional financial value if asset-based insurance was calculated as the annual cost that herd owners would need to pay to purchase insurance coverage equal to the capital value of their herds. These financial benefits were valued at 0.3081 billion USD (Table 5).

Table 5: Direct use benefits derived from livestock, 2013 (Billion USD)

Benefit type	Value of agriculture 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

Milk Consumption

In 2013, the milk yield was 365,764,461 litres, valued at 0.609 billion USD (Table 6). Approximately 75% of this milk is consumed by the livestock owners themselves, thus enhancing nutritional value of household diet.

Table 6: 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	365,764,461	100%	365,764,461	58.1

Source: Study findings, 2015

Meat Consumption

Livestock are slaughtered both at home and at designated slaughter slabs/butcheries. The meat is primarily for local consumption inclusive of that derived from poultry. In the current study the generated meat was estimated in terms of meat consumption per caput using the Ministry of Agriculture's estimate of national population (6.3m persons in 2013) and the results from red meat, pork and chicken meat production offtakes for 2013 are shown in Table 7 below. In summary, the red meat consumption per capita in 2013 was 12.55 kg while that of white meat was 0.05 kg per person.

Table 7: 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

In addition to meat and milk, households also consume eggs from indigenous chickens while the few commercial eggs are sold in towns and these contribute to household nutrition.

Livestock Services Not Captured in Conventional National Accounts

There are a number of services that are often left out when calculating GDP. These include oxen ploughing/animal traction, transportation, manure, social services and financial benefits discussed earlier. Ninety per cent of Eritreans plough their land (468,000 ha) using oxen. Those who do not have oxen rent at an average of ERN 1,200 (USD 80)

per hectare ploughed. In the absence of oxen, many families are unable to grow sufficient food crops to meet their domestic use. Further, only a handful of Eritreans use fertilizer in their farms. When livestock manure is used it has been recorded that crop-yield improves by approximately 50%. This, in effect, means that in the absence of manure as fertilizer the national crop production may reduce by 33%. Hence, it is worth recognizing the enhancement on crop production as a contribution of livestock to the national economy. According to estimates done in this study, animal traction contributes about 0.038 Billion USD, equivalent to 2% of the value of livestock contribution to agricultural GDP in Eritrea.



Fig 1: A donkey ferrying hay to the market

Transportation is another neglected area. Farmers who send their produce to markets often use equines to transport them. In the picture below, a farmer is using a donkey to transport hay to the nearest market (Figure 1). In Asmara, equines are used to ferry all kinds of farm produce. Unfortunately, it is difficult to quantify this type of service. In case of pastoral communities, camels are their major mode of transport during relocation from one area to another as they are strong enough to carry household material. According to the

internationally agreed conventions, national accounts do not separately itemize the value of transport services producers' supply for themselves locking out many rural Eritreans who employ their livestock to meet their transport and haulage needs.

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 and national statistics staff should be offered training on the use of the production approach in estimating the economic value of the livestock sector. Currently, there are some technical limitations in this area despite the obvious advantages of the method 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 of 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 reliable data is available in this regard, yet it is common knowledge that some livestock found in Eritrea enter through its borders, especially with Sudan.

