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Contribution of Livestock Sector in Ethiopian Economy: A Review

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Abstract
In Ethiopia, the agricultural sector is a corner stone of the economic and social life of the people. Livestock is an integral part of the agriculture and the contribution of live animals and their products to the agricultural economy accounts for 40%, excluding the values of draught power, manure and transport of people and products. The Livestock economic and social importance both at the household and national levels, and have in the past provided significant export earnings. Ethiopia has the largest livestock population in Africa, but the contribution for the economic aspect of the country is still lowest amount. Therefore it needs continuous commitment to reduce the different constraints and to boost the economic contribution of livestock sector.
Keywords: Contribution, economy, livestock and sector

1. INTRODUCTION

In Ethiopia, the agricultural sector is a corner stone of the economic and social life of the people. The sector employs 80-85 percent of the population and contributes 40 percent to the total GDP (Zinash and Alemu, 2001). The Ethiopian economy is highly dependent on agriculture. Despite being more subsistence, agricultural production plays an important role in the economy. The sector share of agriculture, for instance in 1996, was 52% to the Gross Domestic Product, 90% of the foreign exchange and 75% source of raw material (MOA, 1997). Agriculture in Ethiopia is a non-monetized and highly traditional sector, production based on small scale fragmented pieces of land oriented to satisfy daily needs. Large scale and market oriented production is of recent development and is receiving more attention with the enhancement of the proclamations for investment and privatization and other comprehensive legislation. Livestock production, as one component of agriculture, covers 40 percent of agricultural output and it also plays an important role in the national economy as it contributes 13-16 percent of the total GDP (Abassa, 1995; Seifu, 2000). The diverse agro ecology and agronomic practice prevailing in the country together with the huge population of livestock.

Livestock is an integral part of the agriculture and the contribution of live animals and their products to the agricultural economy accounts for 40%, excluding the values of draught power, manure and transport of people and products (Winrock International, 1992). Livestock serve for Ethiopian economy as sources of food traction, manure, raw materials, investment, cash income, security, foreign exchange earnings and social and cultural identity. Ethiopia holds the largest livestock population in Africa estimated at about 43.1 million heads of cattle, 23.6 million sheep, 18.6 million goats, 4.5 million donkeys, 1.7 million horses, 0.33 million mules, 34.2 million chicken and 4.9 million beehives (CSA, 1996). The livestock sector is estimated to account for10% of the GDP and provides employment to over 30% of the agricultural labor force. The activity in the sector has picked up since the government ended its monopoly on livestock trading in 1999, thereby encouraging local and foreign private investments in ranches, meat processing companies and abattoirs. Livestock and livestock by products generate export income. The sale of leather and leather products increased from US$43.6 million in 2003/04 to US$75 million in 2005/06, while exports of meat and live animals rose even faster, from US$ 9.6 million to US$46 million over the same period (NBE, 2006). Despite some improvement in recent years especially in terms of aggressive policy and strategy on export of livestock and livestock products, however, the sector still remains underexploited.

Despite its large population size (83 million grazing animals, equivalent of 35.4 million TLU), the contribution of livestock production to agriculture and the overall economy of the country is low. However, it contributes 18% to the national economy with respective share of 40% to the agricultural sector and an estimated 31% of the total agricultural employment. Generally the performance of the livestock sector over the past years, as in other Sub Saharan African Countries, in particular is below expectations and it is further deteriorating (ILRI, 1995). Available data show that all functions of the sector have a declined trend of development. Low production level of the sector is attributed to inefficient productivity of the livestock as a result of the traditional method of production, poor feeding, inferior health care, poor breeds and services, and low capital investment in human and fixed assets.

Along the various factors constraining livestock development (including inadequate resources, lack of

suitable institutions and technological problems), inappropriate development policies are becoming major factors of the poor performance of the sector. Commonwealth Secretariat (1991) reported that there is no clear policy on livestock development in general in the country. Various initiatives were made in the preparation of livestock development related policies. However, none of these were finalized for proper enactment by the government. The contribution of lack of policy and inappropriate development policies developed so far in the country on agriculture, livestock and other related activities to the decline in production and slow rate of progress could not be quantified. However, the paces in increasing production from livestock in general indicate the realities that these had hindered the smooth progress expected of the sector. The objective of this paper is to review the contribution of livestock sector in Ethiopian Economy.

2. LIVESTOCK PRODUCTION

2.1. Livestock population

2.1.1. Cattle

The official estimate by the CSA shows that there were about 43 million cattle in 2006/07 (CSA, 2006/07). While 99.4 percent of the total cattle in the country are local breeds, the proportion of hybrid and exotic breeds is small, only 0.58% and 0.07%, respectively. Among cattle aged between 3 and 10 years, one out of four is used for draught purposes while the percentage share of beef cattle (i.e. cattle reared exclusively for meat) is about 0.72%. On the other hand, dairy cows (cow that is primarily kept for milk production) are estimated to be around 6.31 million or about 14.6% of the total cattle population.

The predominant Cattle breed found in Ethiopia is Zebu. The main cattle "breeds"/populations identified and characterized so far include the Boran, Fogera, Horo, Sheko (Gimira), Abigar (Nuer), and the Afar. These main cattle breeds are indigenous to the specific regions of Ethiopia. The Fogera and Horo, well known for their milk production, are reared around Lake Tana and Eastern Wellega regions, respectively. The Boran, a renowned beef breed, is found in the southern and eastern part of the country, while the Gimira and Abigar breeds, which are considered to have tolerance to high tsetse fly caused diseases, are found in the south-west. European breeds, especially Friesian and Jersey, have been imported for many years and cross-bred with the indigenous breeds (Azage *et al*, 2006).

2.1.2. Sheep and goats

Ethiopia also has a large number of sheep and goats. There are 23.6 million sheep and 18.6 million goats. With respect to the type of breed, almost all of the sheep and goats are indigenous (CSA, 2006/07). So far, some seven sheep and about twelve goat breeds /populations have been identified in Ethiopia. However, only few of these have been studied and characterized to some extent. These include the sheep breeds of Horro, Menz, Afar, Arsi and Black-Head Ogaden, and the Afar, Long and short eared Somali and the Hararghe Highland goats (Azage *et al.*, 2006). About 72% of the agricultural holdings have no sheep or goats, while about 17% and 7% of the holdings were reported to have one to four and five to nine sheep or goats, respectively (CSA, 2006/07).

2.1.3. Poultry

Data on poultry population indicate that the country has about 34 million poultry of different varieties, including cocks, cockerels, pullets, laying hens, non-laying hens and chicks. About 95 percent of the poultry are known to be indigenous, while the remaining 4% and 1% are hybrid and exotic, respectively (CSA, 2006/07).

2.2. Livestock extension and management

The national survey conducted by the (CSA, 2006/07) indicates that only two percent of the total holders (196,000 holders) utilized livestock extension packages. More than half of those farmers who involved in livestock extension program packages participated in beef and poultry. About a quarter of them were engaged in dairy development packages whereas 12% have practiced honey and wax. Moreover, about 8% of the holders participated at least in two types of packages concurrently. A study by the Ethiopian Economic Association (EEA/EEPRI, 2006) shows that of the 4600 farm households surveyed in 2004, about 48% participated in extension packages on crops. The number of farmers who enrolled in livestock technology, natural resources management, post harvest technology and farm implements programs was 12%, 3%, 0.4% and 0.1%, respectively.

As the agricultural extension package programs have been largely focusing on crop production, low participation of farmers in the livestock sub-sector packages shows a serious problem of policy biases against the livestock production and the income generate from this subsector. This undermines the potential economic gain that would have been obtained from the sector. In the arid and semi-arid areas in the Eastern, Western and Southern lowlands, cattle, sheep, goats, and camels are managed in pastoral production systems. In the highlands, livestock are kept under settled or transhumant systems utilizing common pastures, many of which have high clover content, and crop residues. Such livestock includes some 9.3 million oxen providing draught power for the mixed farming system that prevail (FAO/WFP, 2007).

2.3. Livestock products, production and productivity

Although there is a difficulty to estimate livestock production from millions of small farmers, Central Statistical Authority estimates annual milk, egg and honey production by conducting an annual agricultural sample survey. However, this does not include meat production. Details on the survey methodology and result are provided in (CSA, 2006/07). It was estimated that 2.63 billion liters of cow milk and 114.18 liters of camel milk were produced from rural sedentary and resettlement areas of the country in 2006/07. The average lactation period per cow and camel was estimated to be about six and ten months, respectively, and average milk yield per cow and per camel a day was 1.44 and 3.40 liters, respectively.

Annual egg production was estimated to be 81.7 million. The average number of egg-laying period per hen per year is about four, six and one for the local, hybrid and exotic breeds, respectively. The average length of a single egg-laying period per hen was estimated to be about 20, 46 and 139 days. The average number of eggs laid per hen per egg-laying period is 12, 41 and 146 eggs, respectively. Estimates also show that 51 million kilograms of honey was produced in the 2006/07 from 4.9 million beehives (CSA, 2006/07). Despite the huge livestock resource and the important role expected of livestock, the livestock sub-sector of the country is, however, characterized by low productivity and production. Average yields per slaughtered cattle, and goats are estimated to be 105kg of beef and 10kg of mutton, respectively. Similarly, milk yield per cow is 213kg. Egg production from indigenous poultry is between 40 to 60 with an average egg weight of 45g (Azage *et al,* 2006).

2.4. Consumption of livestock products

Livestock production and growth rates are very low and lag behind the human population growth. The result is a decline in per capita consumption of livestock products. A report by Azage *et al*, (2006) show that the per capita consumption of milk, meat, egg, fish and honey is estimated at 19liters, 8kg, 1.23, 0.25kg and 0.29kg, respectively, putting Ethiopia as the least even compared to its neighboring countries. The annual per capita consumption of meat is 43% below the African average of 14kg. To reach this standard, it needs additional output of 378,000 tons which increases the present annual requirement to 508,778tons. Furthermore additional annual increment of 3% (15,263 tons) is expected to meet the demand of the growing population. Ethiopia's milk deficit is even worse than meat. Ethiopia's domestic meat consumption for 2006/07 is estimated at 2.4kg/capita/year for beef, and 0.7 and 0.4kg/capita/year for sheep and goat meat, respectively. Total meat consumption was close to 276 MT in 2006/07, of which beef and mutton account for 68 and 21 percent, respectively. Pronounced differences have been identified between rural and urban patterns of meat consumption, particularly for beef (1.7 kg/capita/year versus 7.0 kg/capita/year respectively) and mutton (CSA, 2005/06).

The annual per capita consumption of 20 liters is 49% below the African average. To at least reach this average level of consumption and also to meet the demand of the increasing population, Ethiopia needs an incremental output of 1,216,546 tons per year. A report by the FAO/WFP (2007) shows that throughout the country, grain and livestock prices remain firm or rising, boosted by a combination of economic growth and effective demand, formal and informal trade, local purchases by cooperatives and relief agencies, and expectations of further price rise. Some more factors that are cited for the increase in livestock prices are the food-security based credit program that are designed to encourage the purchase of fattening stock, dairy stock, draught animals and chickens; and the safety–net programs that increase family incomes in marginal areas; increased daily labour rates throughout Tigray and northern Amhara; and increased exports to the Middle East via the five export abattoirs with a current capacity to export 2.4 million sheep/goats per year and through cross border trade to other countries.

3. CONTRIBUTIONS OF LIVESTOCK SECTOR IN ETHIOPIAN ECONOMY

The Livestock economic and social importance both at the household and national levels, and have in the past provided significant export earnings. Livestock contribute 15 to17 percent of GDP and 35 to 49 percent of agricultural GDP, and 37 to 87 percent of the household incomes (Ayele *et al*., 2003). Livestock have multiple uses aside from income generation, including cash storage for those beyond the reach of the banking system, draught and pack services, milk and meat for household consumption, and manure for fuel and fertilizer. In addition to these non-market values, a thriving informal export trade in live animals further emphasizes the significance, albeit unrecognized by official statistics, of livestock and particularly cattle in the Ethiopian economy. This importance is pronounced in pastoral regions, and women's crucial role is widely acknowledged: both directly in primary production, and indirectly through the contribution of livestock to household assets and food security.

In 2008, livestock accounted for approximately US$150 million in formal export earnings, making up 10 percent of formal exports (DeHaan, 2002). Roughly half of this value comes from live animal and meat exports, the remainder being from hides and skins. Formal live animal exports are predominantly cattle about 70 percent, meat exports are almost entirely from sheep and goats, and hides and skins are primarily from cattle. Trends over the last 10-20 years show meat and live animals becoming increasingly important to livestock

exports relative to hides and skins beyond formal sector trade, there is significant informal cross border trade in live animals, which substantially increases livestock's export importance (CSA, 2005/06). Estimates of informal trade volume vary widely between 250,000 and 500,000 head of cattle per year (Hailemariam and Dawit, 2009), but appear to dwarf formal exports 84,000 head in 2008 (Fadiga and Amare, 2009). This study estimates the value of informal livestock exports at US$150-300 million per year (Jean-Germain Gros, 1995). The Middle East has been, and remains, the traditional destination for Ethiopia's export of live animals and meat. This applies equally to formal trade, as to informal trade, and many exported cattle transit Djibouti. About two-thirds of informal exports move from Eastern Ethiopia to Somalia, and other destinations include northeast Kenya and Sudan.

The output of the livestock sub-sector accounts for about 30% of the agricultural GDP and only about 16% of the national GDP in Ethiopia. However, the contribution of milk and milk products to the gross value of livestock production is not strictly known (Winrock International, 1992). The share of each of the livestock population out of the total functions of livestock varies according to the production system in the country. For instance 46% of the livestock function in the highlands is used as input to crop production whereas it is less than 1% for the pastoral system. Similarly 61% of the livestock function in the pastoral system is for food while this figure is only 26% in the highland system (ILRI, 1995).The contribution of livestock sector in the Ethiopian economy context can generally be categorized in terms of food production, supplier of inputs and services for crop production, raw material for industry, cash income and export earning, saving and investment, social functions and generator of employment these are qualified as follows.

3.1. Food Security

3.1.1. Suppliers of food

Major outputs of livestock as food are production of meat, milk, eggs, fish, honey, etc. From the 45 food items identified as important for human consumption in the world, milk ranks second to rice while beef is fourth, egg ninth, poultry meat twentieth and mutton and goat meat twenty-first. Hence, given the importance attributed and the comparatively high contribution in terms of readily available protein source increased livestock production may add to food security and should be the focus of attention. Many poor smallholders will have direct access to food of livestock origin. Increased production will keep livestock products down and allow low-income groups to have access to such food. Since livestock products are both price and income elastic lower prices would increase demand, total production and farm revenue and producers would gain in the face of lower prices. Increased production will reduce imports and save foreign exchange, which can then be diverted to be used on productive investment and indirectly contribute to food security. Total food production lags behind the population growth in Ethiopia. It is more pronounced in the per capita supply of food of animal origin and the calories and protein obtained from this which is below the requirements and the average supply in Africa and the World.

The performance of production of food of animal origin was poor during the past three decades. Total production has increased between 1974 and 1997 by 83.7%, 46.2%, 32.9%, 6.9% and 62.0% production respectively for meat, milk, butter, egg and honey while the population growth rate to be 100.8% (Berhanu, 1999). This shows that annual increase for the respective animal products is below the increase in human population making the deficit higher with the advancing years. Increase in milk production much less than meat (32.9% as compared to 46.2% for meat). The per capita supply of animal products is not only below the African and world figures; it has also decreased substantially during the last ten years. Milk and meat per capita supply decreased by 23.8% and 9.9% respectively.

Table 1: Estimated Gross Value of Ruminant Livestock Production 2008/09, billion Ethiopian birr (ETHB)

Product or Service	MOFED ESTIMATE	REVISED ESTIMATE
Cattle off take	6.302	8.103
Sheep off take	1.643	2.254
Goat off take	1.563	2.255
Camel off take	0.145	0.145
Total estimated off take	**9.653**	**12.757**
MOFED total off take	**9.653**	
Cattle milk	8.483	10.899
Cattle milk for butter	4.533	5.824
Goat milk	1.352	6.436
Camel milk	1.978	3.346
Butter residue	3.125	4.015
Total estimated milk products	**19.471**	**30.520**
MOFED total	19.634	
Sheep wool	0.003	0.005
Dung for fuel	1.966	3.429
Change in stocks	1.384	1.384
TOTAL RUMINANT PRODUCT OUTPUT	**32.64**	**48.095**
Percentage change		47%
Animal draught power	0	21.500
TOTAL RUMINANT PRODUCTION		69.595
Percentage change		113%

Source: (MoFED, 2008).

3.1.2. Supplier of inputs and services for crop production

As supplier of inputs and services for crop production livestock provide draught power, serve in weed control, involve in nutrient recycling, and supply manure for enhancing crop production. Livestock play an important role in this respect. If services and inputs can be accounted in financial terms in production of crop their value would have been by far higher than what in these days' people advocate for utilization of fertilizers, machinery and human power. Oxen provide virtually the only tractive power for cultivation for the annually 6.4 million hectares of land used for production of 8 million ton of grain. In the highlands the existence of cattle herd revolves around the maintenance of the working oxen population. There is positive correlation between draught power and cereal crop production (Gryseels, 1988) in that there is the tendency to increase the number of livestock, specially working oxen and replacement, with expansion of cropping land. Apart from the oxen raised on the highland the lowland cattle provided 20% of the draft animals particularly to the eastern part of the country (Coppock, 1994). A pair of draught oxen works for 600 hours a year with 120 days of cultivation and 5 hours per day. If the total services rendered by the available oxen to cultivate and transport the grain in the country is considered and converted to mechanized power the contribution would be much higher than qualitatively known.

Control of weed specially the involvement of sheep, as they are heavy grazers, in the farming practice helps the farmer to minimize the load of weed by grazing these species on strategic time during the growth of plants. Nutrient recycling is essential in the integration of livestock and crop production. This allows for efficient use of crop residue and by-products as animal feeds and for animal wastes to be used as crop fertilizer (manure as feed, slaughter product as feed). Taking into consideration the magnitude of stock ownership and the diverse species owned by each farmer, dung and pellets provide manure estimated at 24 million tons annually. Manure plays an important role in the provision of organic fertilizer in the farming system as compared to commercial supply in terms of cost and innate availability. Dung providing 8kg of nitrogen, 4kg of phosphorous and 16kg of potassium per ton DM (Sansoucy and Jabbar, 1998). Dung production from cattle (milking cow) is estimated at 40kg per 500kg live weight per day. In addition to its use as fertilizer it serves as source of fuel in homesteads. By using bio digesters the efficiency and type of dung utilization can be improved. One m^3 of gas can be produced from 25kg of fresh cattle dung in which the gas can be used as fuel, which reduces the working load of women by eliminating wood collection, and fuel purchase and the supernatant as fertilizer.

About 80% of Ethiopian farmers use animal traction to plough their fields. Both the mean area cultivated by a farm household and their yields per hectare are positively correlated with cattle ownership and ploughing, in comparison to hand cultivation. Despite these contributions to agricultural output, no attempt is currently made by MOFED to impute the monetary value of animal traction for Ethiopian agriculture. Based on the average cost of renting ploughing services, the value of the animal draught power input into arable

production is about a quarter (26.4%) of the value of annual crop production. Nearly a third (31%) of the total gross value of livestock output is represented by the value of animal draught power as an input into crop cultivation, an estimated 21.500 billion EB in 2008-09 (Table1).

Although the proportional contribution of livestock and crops will fluctuate from year to year, if we include the value of ploughing services, livestock provided 45% of agricultural output in 2008-09 (Table 1). Previous MOFED estimates placed livestock's contribution at about 25% of total agricultural GDP. The gap between these two estimates suggests that the significance of livestock relative to crop production has been considerably misrepresented by past calculations of agricultural sector GDP. Even if technical considerations exclude ploughing services from GDP estimates, the quantification and expression of this value in monetary terms underlines the need to rethink the role and relative importance of crops and livestock in Ethiopian agriculture.

The problem of incorporating the value of oxen ploughing into estimates of agricultural GDP is symptomatic of a wider methodological obstacle to the full appreciation of the economic importance of livestock in developing economies. In principle, the 'production approach' employed by MOFED to calculate agricultural GDP can adequately capture the great bulk of material production in the form of goods from Ethiopian livestock, irrespective of whether this produce is sold or immediately consumed by rural households. But if Ethiopian farmers and herders provide for themselves with home produced goods, they also in large measure service themselves. The most important services provided by livestock include the supply of animal power for traction, transport and haulage, and livestock as a source of financial services (as providers of credit, as a form of self-insurance and as a means of sharing or pooling risk). According to international conventions, the value of this self-servicing is not separately itemized in national accounts and therefore cannot be identified as part of the economic benefits that livestock provide, which compromises the usefulness of these accounts for understanding the actual contribution of livestock to the economy. Table 2 provides an overview of the value of the different livestock services that are not attributed to livestock in GDP estimates.

The credit benefits of livestock derive from the ability of livestock owners to dispose of their animals for particular purposes at a time that they choose their ability to 'cash in' on the value of their animals as needed. This flexibility gives livestock owners ready access to money without the need to borrow, and confers an additional financial benefit beyond the sale, slaughter or transfer value of their livestock. This additional financial benefit can be estimated as the opportunity cost of rural credit what it would otherwise cost a livestock owner in rural areas to obtain funds comparable to those produced by liquidating a part of the herd. Employing this estimation, the additional finance value of a livestock holding is equivalent to the interest that the owners would be required to pay to obtain loans equal to the value of their livestock off take. Rural interest rates are highly variable, but if we assume that inflation adjusted interest rates on rural credit in Ethiopia are currently running at about 100% per annum, then the financial value of livestock off take is identical to the annual value of off take in 2008-09, for example, about a 12.8 billion EB. Financial benefit on top of 12.8 billion EB in direct off takes value.

Part of the insurance or security value of livestock comes from the ability of owners to liquidate their own herds in an emergency. In this instance, the level of security provided to a particular individual depends on the value of that individual's assets, so livestock ownership functions as a kind of self insurance. The value of this form of asset-based insurance can be calculated as the annual cost that herd owners would need to pay to purchase insurance coverage equal to the capital value of their herd. Insurance coverage in rural Ethiopia costs about 10% of the value of the cover provided. At this level of premium payments, the self-insurance value of Ethiopian livestock in 2008/09 was about 8.6 billion EB or 10% of the capital value of the national herd.

For pastoralists in Ethiopia, the insurance value of livestock derives not only from their ability to liquidate their individual herds, but also from their ability to call upon assistance from fellow pastoralists in time of need. These collective insurance schemes are based on the gifting and loaning of livestock within pastoral communities, with large herd owners donating some of their animals and less well-off pastoralists drawing support in the form of livestock received as gifts or on loan. Recent research suggests that about 10.5% of pastoral animals in Ethiopia are involved in livestock sharing networks of this kind. Assuming that the total capital value of pastoral livestock in Ethiopia is 34.779 billion EB, the collective insurance value of pastoral herds can be estimated as 10.5% of this value or 3.652 billion EB in 2008-09.

According to internationally agreed conventions, national accounts do not separately itemize the value of transport services that producers supply for themselves. Although many rural households in Ethiopia use their own working animals to meet their transport and haulage needs, conventional national accounting ignores much of the benefit that households derive from animal power. In Ethiopia national-level economic data on the use of animal power does not exist. If one recent field study is any indication of the national situation, equine power may have produced as much as EB 19 billion in value added to the national economy in 2010. Even if it incorporates a large degree of error, the scale of this estimate suggests the need for a national survey of the contribution of animal power to the Ethiopian economy.

Table 2: Livelihood benefits derived from ruminant and equine livestock, 2008/09 in billion EB

Type of Benefit	Agricultural GDP	Services not in current GDP estimates
Value added livestock products (meat, milk, etc)	MOFED: 32.232 re-estimated: 47.687	
Traction power for ploughing		21.500
Benefit from financing		12.800
Benefit from self insurance		8.600
Benefit from risk pooling/stock sharing		3.650
Transport and haulage by equines		18.959
Sub totals	47.687 65.590	
Total economic benefits		113.196

Source: (MoFED, 2008).

3.1.3. Saving and investment

Most stockowners tend to increase the herd and flock size of their holdings for safety purposes or improve quality of herds to invest and benefit more from its diversity.

3.1.4. Raw material for industry

In satisfying the requirement of human needs accordingly in terms of quality food of animal origin and supply of raw material for the manufacture of goods needed in the day to day activity, animal products play an important role as suppliers of inputs to processing and manufacturing industry. Whole fresh milk is used as raw material for the production of high quality milk and milk products with long duration of shelf life products such as UHT milk, butter, gee, cheese and other products. Meat, in the same token, is processed to improve its handling capacity for proper utilization and in the equity supply of the product to the different locations. Other products such as honey, wax, skin and hides, wool, etc. are used for the production of different materials of human benefit other than food items.

3.1.5. Cash income and export earning

Cash can be generated from sales of livestock products regularly (milk, egg) or sporadically (live animal, meat) or from services (draught, transport). Livestock are important source of income for small holder farmers and pastoralist population. They provide direct cash income through sales of animals or animal products for purchase of food, input and other needs. Nationwide export of livestock and livestock products assist in earning foreign exchange and import substitution. Without considering the illegal exports which accounts with large flow of income from about 150,000 cattle and 300,000 small ruminant exports per annum, live animal and hides and skin export earns the country with large amount of foreign exchange.

From the total merchandized goods worth 1,720 million and 7,383 million USD respectively for 1970 and 1981 livestock contribute 21 million and 160 million for the respective years. This share of livestock to agriculture and to the total economy had increased from 12.5% to 19.1% and 1.2% to 2.2% respectively between the years 1970 and 1981 which is low as compared to other African countries. The bulk of Ethiopian livestock's contribution to the economy is not identified in conventional national accounts as coming from livestock. These distortions are particularly acute for highland livestock production systems in which animal energy for transport and dung for fuel are under estimated but nonetheless as important as conventional milk and meat production. Ethiopian pastoralists are, on the other hand, specialized producers of meat, milk and live animals for sale. Provided their animals get into the computations at all, it might be hoped that the output of pastoral herds would be adequately represented in national accounts. Pastoral output underpins almost all of Ethiopia's live animal and meat exports. Combined with hides, skins and leather exports (which are sourced primarily from highland animals) live animal and meat exports probably constitute about a fifth of all of Ethiopia's exports. Approximately half of these livestock sector exports are not recorded and not recognized by the National Bank of Ethiopia because they are produced by the cross border trade in live animals, which the government deems to be illegal and does not recognize.

Some studies by Gryseels (1988) and the International Livestock Research Institute (ILRI, 1995) show that livestock alone accounts for 37-87 percent of the total cash income of agro pastoralists/pastoralists in Ethiopia. (FAO, 2006) indicate that livestock in Ethiopia, especially in arid/semi-arid areas, livestock provides almost 100 percent of household income (90.0 percent from cattle; 5.3 percent from milk, butter and hides/skins; 1.2 percent from small ruminants, 0.9 percent from camels and their products and 1.7 percent from other sources, whereas income from crops is practically zero. According to Adugna *et al*.(2011), Ethiopia's share of livestock income at community level falls into three brackets, namely less than 25 percent, between 26-75 percent, and more than 76 percent, considered as highly, moderately and less diversified households in terms of income source. This suggests that livestock remains the single most important source of livelihoods in Ethiopia and other

countries in the Horn of Africa/East Africa. The sizeable contribution of livestock to household income in Ethiopia has important implications.

Studies by ILRI (2008) showed that food secure households were associated with high livestock asset ownership, indicating that increased cash incomes primarily came from livestock, through the sale of live animals, milk, meat, hides and skins. For example, milk constituted 80 percent of the diet in the rainy season among the pastoralists, whereas sheep and goats were a major source of meat (FAO, 2006). The income accrued from sale of livestock and livestock products/by products (hides and skins) was judiciously used to finance the purchase of household commodities such as grains, salt, coffee, tea, salt, cooking oil, sugar, etc. (Guido and Frank, 1983) as well as meeting health expenses (ILRI, 2008). The value of official livestock and meat exports has fluctuated widely over the decades, while official exports of hides, skins and leather have been both more stable and more valuable. For example, in the twenty one year period from 1984 to 2004, hides and skins provided on average 90% of official livestock sector exports, livestock provided 6% and meat 4%. For a time in the 1990s, hides, skins and leather were Ethiopia's second largest export earner after coffee. The current situation is depicted in Table 3 which gives the US dollar value and percentage export share of Ethiopia's major exports from 2002-03 to 2008-09.

Table 3: National Bank of Ethiopia estimates of the value in million US dollars and percentage of export share for major exports from livestock, 2002-2009.

Commodity	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
Leather, hides and skins	52.22 10.8%	43.59 7.3%	63.73 8.0%	75.0 7.5%	89.6 7.6%	99.2 6.8%	75.3 5.2%
Meat	2.42 0.5%	7.66 1.3%	14.59 1.7%	18.5 1.9%	15.5 1.3%	20.9 1.4%	26.6 1.8%
Live animals	0.481 0.1%	1.91 0.3%	12.82 1.5%	27.6 2.8%	36.8 3.1%	40.9 2.8%	52.7 3.6%
Total	**11.4%**	**8.9%**	**11.2%**	**12.2%**	**12.0%**	**11.0%**	**10.6%**

Source: (MoFED, 2002/09).

Table 3 shows that the contribution of the livestock sector (live animals, meat and hides, skins and leather products) to exports has held steady at about 11% of the national total, with declines in the value of skins, hides and leather being offset by roughly comparable increases in live animal exports. By 2008/09 the position of hides, skins and leather exports had declined to the point where these constituted less than half of the livestock sector's contribution to official exports. From the perspective of the official figures in Table 3, livestock and their products make a regular but modest contribution to exports.

3.1.6. Social functions

The traditional Ethiopian culture, mostly in the agro-pastoral population, livestock serve as best asset for social functions. In the peripheral highlands, pastoral and agro-pastoral areas livestock are used for dowering price, pride, sacrifices for social events. Livestock production performs several functions primarily as source of household incomes, food and animal drought power for livestock producers in Ethiopia. Livestock is also an anchor for economic diversification and sustainable rural development, although most of the agricultural policies are biased towards crops for food-security purposes. Because of the low potential for crop production, including absence of/or limited irrigation technologies in Ethiopia and most countries in COMESA, livestock remains a major source of income and food for the majority of rural people in the traditional and agro-pastoral/pastoral farming systems. In this respect, livestock ownership, in terms of both quantity and quality, is an important asset because of its multiple social, economic and cultural uses.

3.5. Employment

Almost all the Ethiopian rural population are dependent on agriculture where most of the 85-87% directly involve with livestock for the production of food of animal origin, and the provision of services and inputs in crop production. In the lowlands livestock provide subsistence employment and investment opportunities. Generally, livestock plays an important role in the generation of employment in meat production, processing and marketing, hides and skins processing, leather industry, milk collection, processing and marketing and many but small sized industries in livestock and livestock products such as cattle fattening and marketing, live animal trade. About 21.6 million agro pastoralists/pastoralists in Ethiopia, and many more in the Horn of Africa, East Africa, central and Southern Africa depends on livestock as a major economic activity and for their livelihoods. The livestock sectors in these countries also support and sustain enterprises and interest groups which are linked and associated with the livestock value chains such as the livestock traders, transporters, slaughter facilities/processors, feed manufacturers, government (veterinary/animal husbandry departments), local authorities, veterinary drug suppliers, etc. who also generate employment opportunities. Livestock, therefore, is a major source of sustainable employment for the majority of people and supports rural development initiatives along the value chain. Table 4 shows that value added, especially meat processing, has a higher employment

factor. This strongly suggests that value added creates higher employment opportunities along the value chain than dealing in raw form.

Table 4: Employment multipliers for the livestock industry

Stage in the value chain	Employment multiplier
Meat products	11.7
Livestock feeds	10.0
Dairy products	8.24
Livestock (meat animals)	1.92
Milk	1.57
Poultry	1.48
Animal fiber	1.17

Source: (MoFED, 2008).

Meat processing has a multiplier effect of 11.7, suggesting that value added and processing of beef into assorted meat products creates more jobs, followed by livestock feeds and dairy products. Livestock farmers in the rural areas are currently operating at the bottom of the value chain where value added or processing initiatives are non-existent, as they are involved in selling raw materials. For example, in 2010, Ethiopia experienced illegal cross border trade of more than 6.8 million live animals (24.51 percent cattle, 31.93 percent sheep, 35.31 percent goats and 62.25 percent camels), 4,925,000 raw hides and 10,870.000 raw skins to neighboring countries (ACTESA/COMESA, 2011), a trend which still continues

4. CONSTRAINTS OF LIVESTOCK DEVELOPMENT SECTOR AND LOW ECONOMIC CONTRIBUTION FOR ETHIOPIAN ECONOMY

Generally, constraints mitigating successful animal production development revolve around the absence of clear livestock sector development policy and strategy. Specific constraints prone to the efficient development of the sector include lack of proper statistics or inadequate knowledge of the livestock resource, under and mal nutrition of the existing livestock, prevalence of animal diseases, poor market development and low genetic potential of indigenous animals for specific product. Less attention given to develop known local breeds of animals in the utilization of adaptive characteristics should also be considered important draw back. Negligence of the government the role of the private sector in development of the sub sector, absence of users participation in the designing and planning of livestock development projects and inability of the previous livestock sector development projects to be sustained after their completion (either by government fund or community participation). Brief characteristics of some of the constraints are as follows. The constraints that hinder livestock development can be broadly categorized into environmental, technical, infrastructure, institutional and policy. A study by Azage *et al* (2006) provides a detailed assessment of production constraints. According to this report, the major technical constraints are under nutrition and malnutrition, high prevalence of diseases, poor genetic resource management and poor market infrastructure.

4.1. Lack of proper statistics of the livestock population

There is no livestock census or proper nationwide survey carried out, to date, in the country to refer on reliable data source. All livestock population figures quoted in different documents is approximate estimates. The respective data referred by different institutions are quotations of previous reports or projections made from results of either spot on surveys carried out by different institutions (for own use as for base line data in socioeconomic studies and project preparation). In addition some surveys carried out on comprehensive one time (Provincial Livestock Surveys of the former Livestock and Meat Board), or independent projections and trend analysis made by international institutions (FAO and ILRI). Furthermore, or results of sample surveys conducted on small and sometimes not very representative samples like the survey being carried out by CSA on livestock sample survey which is part of the agricultural sample survey, which excludes the pastoral and urban areas. The variations in livestock data referred by the different institutions and the lack of distinct reliable data to base in development of genuine programmes and projects in the country is considered as major drawback.

4.2. Feeds and nutrition

Inadequate supply of feed for the existing livestock population and poor quality of the available feed resources are the two main factors that contribute to the low production and productivity of livestock in the country.

4.3. Animal health

The widespread prevalence of a wide range of diseases and parasites in all agro ecological zones of the country causes direct economic losses through high mortality of animals and contributes to the poor productive and reproductive performance of the animals. The annual mortality of livestock is estimated at 8-10%, 14-16% and 11-13%, for cattle, sheep and goat respectively. Animal health problems that contribute to the low productive

and reproductive performance of livestock include: absence of proper disease control measure, absence of proper livestock movement control, inadequate veterinary service, budgetary constraints and absence of full cost recovery.

4.4. Animal breeding

Although the country owns the largest livestock population the contribution to the overall production has shown low productivity as compared to their potential. This may be to their low genetic potential for specific product or enough knowledge is not available on the indigenous breeds. Basically there are no characterized breeds of animals in the country. Conditions that contribute to this include: Lack of institution to improve the genetic makeup of indigenous animals, Animal breeding and development research not adequate to satisfy the need of improved animals in the country, traditional livestock keeping and breeding system (characterized by uncontrolled grazing and breeding system where different classes of livestock are allowed to graze together), breeding is carried out in the same field without selection or controlled breeding and lack of record keeping which is the basis of livestock breeding and improvement.

4.5. Marketing

Livestock and livestock product markets are not developed and organized. These are characterized by: Live animal export highly affected by the prevalence of different diseases, infrastructures like market place, weighing scale, watering point, stock routes etc. are not well developed, shortage of specialized transport system for both live animals and animal products, absence of market information, inadequate facilities to handle and process animal products, shortage of appropriate technology for the production and processing and marketing of animal products in the rural areas and lack of institution to organized producers and facilitate market.

4.6. Absence of livestock development policy

There is no livestock breeding and dairy development policy and strategy in the country, except the draft policy incorporated in the general agricultural policy and the draft cattle breeding policy of 1986 not finalized since then. This has greatly affected the development of livestock as there is no direction on the breeding, and breed development aspects for improved production and productivity.

4.7. Improper input allocation

There is shortage of inputs in terms of technology and services required for the development of livestock. The introduction of appropriate technology will not yield satisfactory results unless it is augmented with inputs which include shortage of improved animals, concentrate and ingredients for balanced feeds, forage seeds, veterinary drugs and equipment.

4.8. Shortage of trained manpower

There is a chronic shortage of trained manpower in the field of animal sciences. With few exceptions all disciplines in the proper livestock development are not treated with proper training requirement and are not adequately staffed and lack updated knowledge in disseminating appropriate technology. There is also frequent movement of staff due to restructuring and looking for better job opportunity. Hence, this has created a negative impact on the development of livestock.

5. Implication for livestock development policy and strategy

Ethiopia has a large number of livestock with considerable potential to contribute to the national economy if adequate attention is given to the development of the sector. It needs a change in attitude of policy makers and development practitioners that livestock development programs are relatively expensive require continuous commitment. Generation of better technologies for application in the livestock management and production, efficient and effective input supply system, better management of livestock, allocation of adequate capital, etc, are required on the supply side. In addition, the development of suitable market infrastructure and availability of efficient market institutions is very important to exploit the potentials of livestock for development. The development of the livestock export and the benefit the country earns face a number of challenges that include the sector's vulnerability to drought and effect on export supply, a high level of 'illegal' cross border trade in live animals, periodic import bans imposed on health grounds by key Middle Eastern buyers, unreliable supplies because of weak links between buyers and pastoralist producers, a scarcity of bank credit and poor infrastructures, and low world price for animal products (Azage *et al*.,2006).

There are recent attempts made to encourage private sector involvement in export of livestock products (live animals, meat, leather products and skin and hides). However, it needs more work and attention to be given to strategies and measures that enhance and enable active participation of the private sector in the production of livestock (both for domestic and export markets), livestock input supply, marketing and service provisions.

These require policy and institutional interventions that also consider alternative modalities for specific production systems in highland and lowland parts of the country.

6. SUMMERY AND CONCLUSIONS

Ethiopia has the largest livestock population in Africa, but the contribution for the economic aspect of the country is still lowest amount. Therefore it needs continuous commitment to reduce the different constraints and to boost the economic contribution of livestock sector.

7. RECOMMENDATIONS

To increase the contribution of livestock sector for Ethiopian economy the following recommendations recommended.

- Use cross breeding
- Adopt and efficiently implement modern livestock technology
- Livestock professional involve issues related livestock during policy making
- In the high land sell oxen during idle time
- Apply effect control mechanism for illegal market through boarder area of the country
- Employed veterinarian throughout the country to alleviate disease problem

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