PASTORALISM IN ETHIOPIA: ITS TOTAL ECONOMIC VALUES AND DEVELOPMENT CHALLENGES

A knowledge management study implemented by SOS SAHEL ETHIOPIA

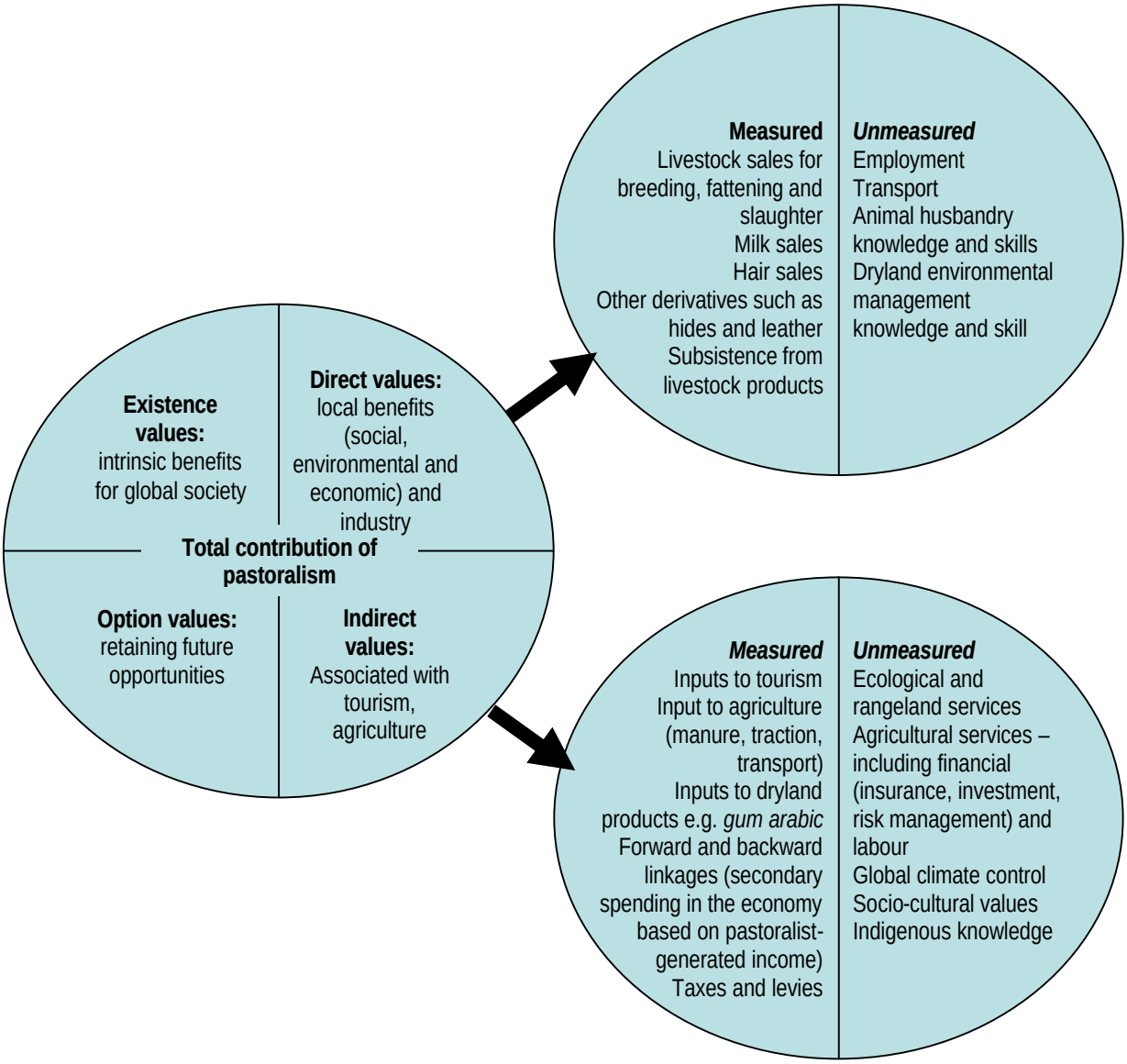
Acknowledgement

The SOS-Sahel Ethiopia would like to appreciate and value the contributions of different personalities, agencies and institutions in realizing this highly valuable and timely study that is expected to contribute towards the betterment of Pastoralism and the livelihood of pastoral communities. We would like to thank the IUCN and WISP for the generous financial support and initiation of this noble idea of studying the Total Economic Value of Pastoralism. We appreciate their contributions in the name of millions of pastoralists in Ethiopia who are the subject of this study. Dr. Jonathan and his team at IUCN in Nairobi have done a commendable job for which we are thankful. The felid staff and offices of the SOS- Sahel in Yabello (Borana) and the Gudina Tumssa Foundation (GTF) in Karayu pastoral community areas have provided a valuable support during field work for this study. We kindly thank them for their time and contribution to the data collection and discussions with the communities. Mr. Jonse Bane at the Addis Ababa University has helped the research team in compilation of the survey data. We appreciate his contributions.

Finally, we would like to also thank the pastoral communities for taking their precious time and willingness to share with us their wisdom, participating in interviews and discussions. We hope that this study will contribute to the knowledge base that would help their voices heard, advancement of their cause, and betterment of their livelihood.

market and trade data from trade and industry offices (federal, regional as well as local), livestock marketing and trade cooperatives and agencies, abattoirs, previous research documents, experiments and studies' reports, development project reports, database of the International Organizations (like FAO) are assembled to help the analysis.

Figure 1 – Conceptual representation of the contribution of Pastoralism (Hatfield and Davies, 2006)



Attendance of national meetings/workshops of key actors working in pastoral areas was made to get in-depth insights about the functioning of the pastoral system. Several key informants interviews and focus group discussions were conducted[2] about the socio-economic situation and rangelands management of the Pastoralism in Ethiopia.

1.5. Scope and limitations

In this study the extent and scope of the valuation process has been much dependent on availability of data and information. The major challenge has been the lack of accurate and sufficient national data on multiple benefits of Pastoralism. Since pastoralists are mobile, generating a reliable and complete primary data has been a difficult task although attempt was made. One of the challenges is to locate where relevant secondary data are available for this purpose. Previous study documents, project reports (like the first, second, and third livestock development projects which focused on pastoral areas) are misplaced. Inconsistency of data on same issue but obtained from different sources is another major challenge In

[2] The author also engaged in another study on land tenure and land use systems in pastoral areas of Ethiopia during the same period when this study was conducted.

general terms, accurate data on specific pastoral system issues are not easily available. There are some aggregate data on livestock population by types of animals, some livestock marketing and trade, estimates of cross-boarder ('illegal") livestock trades are available, althoug

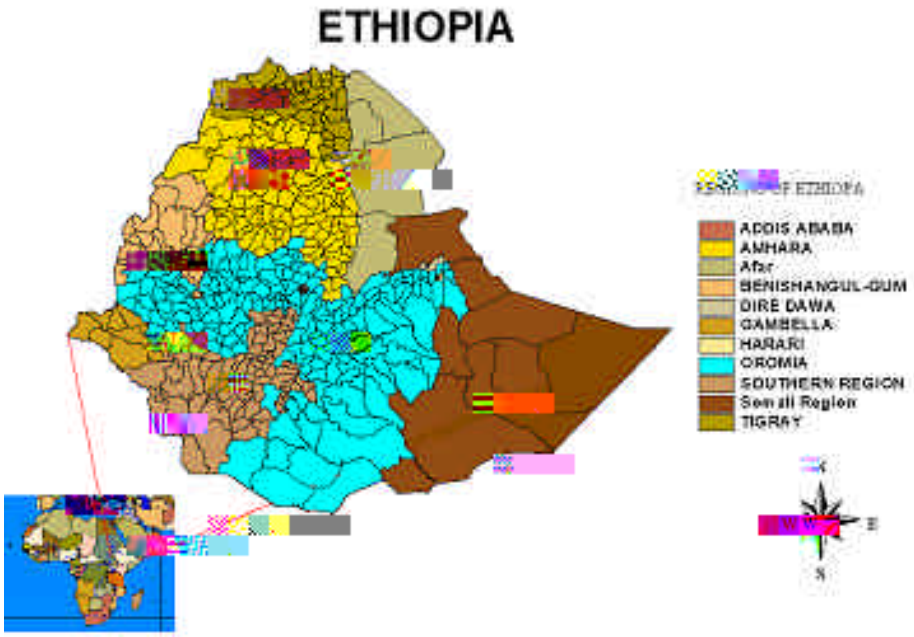


Figure 2.1: Regions and locations of pastoral and agro-pastoral systems in Ethiopia.

Pastoralists are found distributed over 122 districts of the country. More than half of the country's landmass belongs to pastoralists. Besides the mainly known pastoral regions, others like the Gambella and Benishangul-Gumuz regional states have pastoral communities although these regions at the western end of the country have predominantly a shifting cultivation agricultural system. Over 97% of the pastoral population lives in Somali, Oromia, Afar and Southern Region States (Table 2.2).

It is estimated that in a country of close to 80 million people about 9.8 million people in Ethiopia are pastoralists. The data shows that out of the total 37.9 million TLU of livestock the country owns, 9.9 million TLU of livestock are found in the Pastoral areas. It shows that the share of pastoralism in the national livestock wealth is 26%. According to this data, on per capita basis livestock ownership in pastoral areas is only 1.01 TLU. The size of the livestock and human population and the ecological significance of the pastoral areas of Ethiopia signify the importance to be given to the system itself.

Table 2.2: The Location and size of pastoral areas in Ethiopia

Region

Ayele et. al. 2003). The latest data of 2005 shows that the number of cattle was over 38 million, shoats 26.6 million, equines 5.3 million and camels 470 thousand (Table 2.3). Although there is a general impression that the livestock feed resource availability is being under heavy pressure the data presented in this table shows that the livestock number has been growing through time. Although there is no data over long period of time that could show the situation of livestock number in pastoral areas, discussions with pastoral communities show that the livestock number has been increasing leading to some pressure on range resources[4]. A study by Behnke (2006) quoting Aklilu (2002) reports that 'Livestock population figures are based on estimates and Ethiopia has been using a constant figure for nearly thirty years before allowing annual marginal adjustments in the last 10 years following which the cattle population officially increased by 5 million head'..

This large livestock resource, however, is not adequately productive. Database of FAO indicates that an annual figure of beef and veal production did not exceed 336 thousand metric tones, while meat/mutton from shoats total at 85 thousand metric tones only (Table 2.4).

Table 2.3. Number of livestock in the Country (1996-2005)

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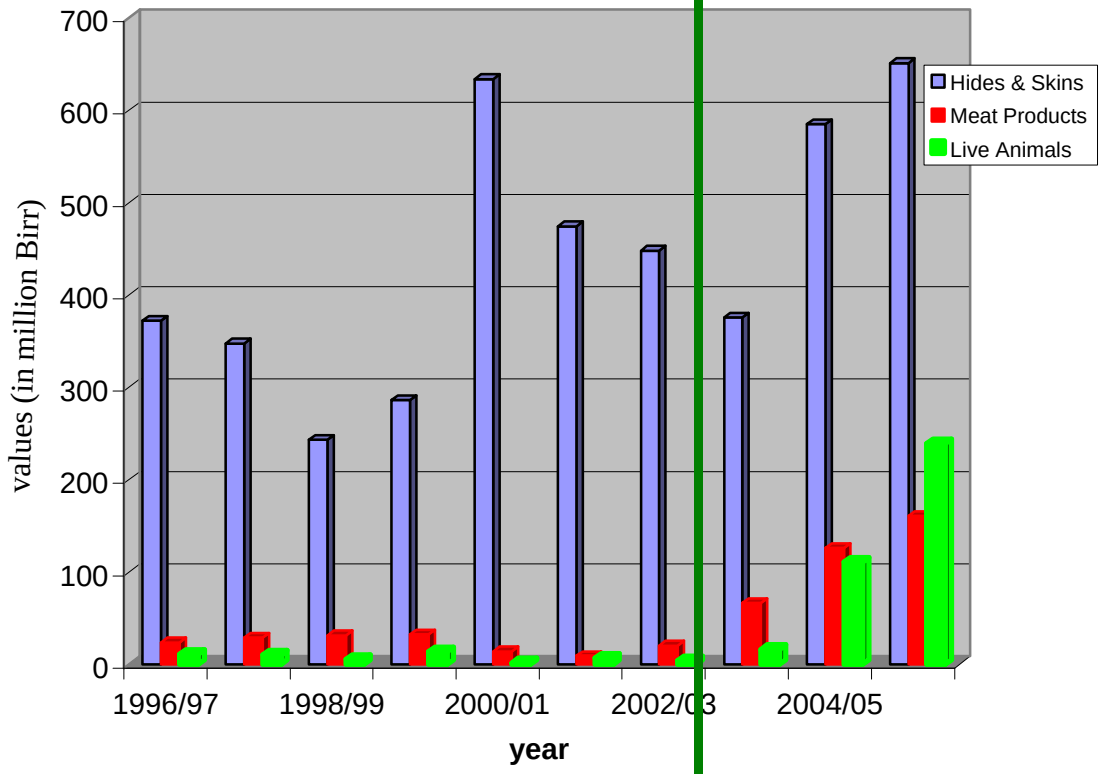
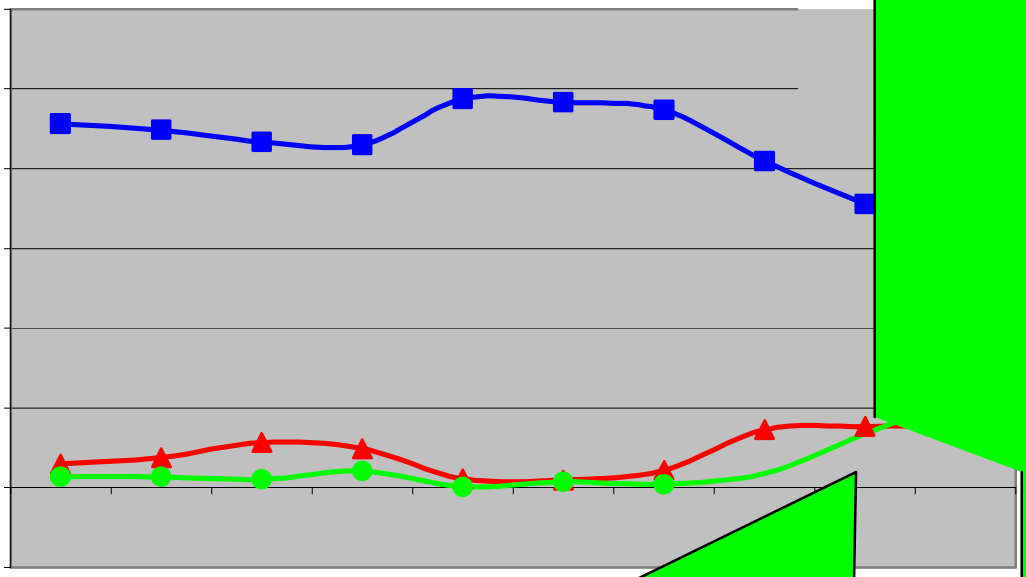
Fig 2.4: Export Values of Livestock and Livestock Products



Source: Computed from the National Bank of Ethiopia database

Until 2004, the export value



3. Total Economic Values of Pastoralism in Ethiopia

3.1 Valuation and the Ethiopian Context

Following the framework provided in the project design as discussed in section1.4.1, attempt has been made to assess/value Tw (Fovided i0Tw

Besides the efforts made to quantify some of the direct and indirect benefits/ economic values of Pastoralism in the Ethiopian context, the attributes of Pastoralism briefly discussed above are highly acknowledge and meant to qualitatively add to the total value of Pastoralism in the country.

3.2. Approaches and assumptions adopted in valuation

One major challenge in this research has been the lack of a national data disaggregated by the type of framing systems in the livestock sub-sector i. e the highland mixed crop-livestock farming system and the low land pastoral and agro-pastoral farming system. Nevertheless, a very careful and the necessary effort was made to base the estimations on the available secondary data, relevant literature, pervious studies, and experts guesses. An extensive review of and reference to various reports and studie

sheep, 45% of the goats, and 100% of the camels. Bruck (2004) reported that a recent livestock population estimates obtained from the pastoral areas raise these figures to 49% of the cattle, 47.5% of the sheep, 51.5% of the goats, 100% of the camels and 12.9 % of the equines. The estimate of the pastoralist population provided by the MOARD (2004) is **9,813,600** while other reports commonly indicate 12-15 million (Alemayheu, 2006). Here a multiplier of 1.22 to 1.53 is implied. Referring to Bruck (2004), the share of Pastoralism in total cattle and shoats populations is larger i. e 49.50%,

Table 3.2: Milk utilization in pastoral areas of Ethiopia

Pastoral Areas	Amount home consumed (%)	Amount Sold (%)	Others including in-kind wage (%)	Home consumed butter (%)
Afar	83.34	10.12	6.53	74.6
Somaile	67	28		50
Borana	59	13	21.21	
South Omo	84	7.08	9.16	
average	73.34	14.55	12.3	
This study (sample survey)	77	16		

Source: CSA data sample enumeration, 2001/02: reported 2003

Milk produced in the pastoral areas of Ethiopia is largely consumed by the producer households themselves. This is because of many reasons. First of all, milk is the major source of household food in pastoral areas. Consumption of grain and other purchased foo

on the herd structure in the pastoral communities and this varies from place to place depending on the importance of the different livestock types, cattle, small ruminants or camel.

The number of milk camels was 160246, a 100% of these being in the pastoral areas. The total number of camels reported is 447,872 while those aged 4 years and above used for all purposes (meat, milk, transportation, draught and other) are 326,150. The data shows that only 49% are used for milk production.

The estimation of milk production from pastoral areas is, therefore, based on the national secondary data of milking cows compiled from the pastoral regions and zones. The FAO statistics (2006) for the Ethiopia national milk production shows a total cow milk production of 1,450,000 MT for the year 2001 and 1,679,000 MT for the year 2004 and of 1,500,000 MT for the year 2005. On the other hand, the National Agricultural Sample Enumeration data of 2001/2002 gives a total milk production of 2,591,187 MT.

Table 3.3. Number of milking Cows and Camels Reported (National Agricultural Sample Enumeration of 2001/02)

Pastoral regions and areas	Number of Dairy cows[12]
Afar	82,708
Somalie	131,694
SNNPR, total	3,751,933
SNNPR, pastoral areas	239,322
Oromia, total	5,979,929
Sub-total, Oromia pastoral +agro-pastoral areas	1,196,277
Total milking cows in pastoral areas	1,650,001
Total number of milking cows, national	9,307,582
Total number of dairy cows, national	8,310,427
Share of pastoral areas (%)	20%
Total number of milk camels (No)	160,246

Source: own computation based on the national statistics.

For the same year 2001/2002, there is a discrepancy of 1,141,187 MT. One can imagine the difficulty of basing estimations on the national statistics that involves significant inconsistency reported by different statistical agencies. Nevertheless, the estimation in this study is not in a position to avoid such data weaknesses as there is no other option at hand. Hence, valuations are made bearing in mind this difficult database conditions.

A total of 974 million liters of cow milk is produced in pastoral areas. To this, 114 million liters of camel milk and 11.9 million liters of goat milk is added. This makes the total volume of milk production in pastoral areas 1.1 billion liters. In the Borana zone of Oromia alone 131,139,565 liters of cow milk was produced according the Agricultural Sample Enumeration (2001/02) survey data.

Taking the national milk production of 2.7 billion liters, Pastoralism contributes 41% of the national milk production (Table 3.4). A pervious a study by Jahnke (1982) provides a general indication that in the tropical African countries 63% of the ruminant milk production (cattle, goats and sheep) comes from the arid and semi-arid areas which are predominantly the pastoral areas.

It is necessary to isolate the livestock products for subsistence (home use) form the sales/market value. About 807 million liters of milk is consumed by the pastoralists at home. Considering a pastoralist population of 9,813,600 **(**MoARD, 2004**),** this amounts to over 2.2 million liters a day and 0.23 liters per capita per day. This may appear to be low for the pastoralist households whose major source of food is milk. On the other hand, there is a fact that these days there is large variation in the milk production and productivity of the pastoralist communities in the country. In some places like Karayu communities in the upper and middle Awash River valley areas, the resource shrinkage has lead to severe resource/pasture constraint for the livestock production.

Pastoralists themselves admit that their milk production has much declined compared to the 'old and good days' as a result of many factors that affected the productivity of range land resources – pasture and water. At the national average price of milk the subsistence value of milk is 1.94 billion Birr (215,330,249 USD) per annum. The price used for valuation of total milk is 2.40 Birr per liter, compiled for the pastoral areas. During the year 2004-2005, the national average milk price was 2.45 Birr/liter.

[12] The Central Statistical Authority survey defines 'milking cows' as cows actually milked during the reference (survey) period while ' dairy cows' are type of cows use to give milk previously and/or provide milk currently or have never given milk before and pregnant now. The later does not include heifers.

Table: 3.4. Milk production of the pastoral regions and areas of Ethiopia (2001/02 survey)[13]

Items	Quantity
Afar Region, milk production (liters)	42,200,000
Somali Region, milk production (liters)	47,700,000
Oromia pastoral areas, milk production (liters)	217,275,591
SNNP pastoral areas, milk production (liters)	667120048

exclusion for lack of appropriate data. The national average per capita consumption of beef and mutton is 4.6 kg and 2.8 kg per annum. For the estimated total population of pastoral areas (**9813600 people**) this gives an annual consumption of 72,261 MT of meat (does not include chicken as its consumption is not common in many pastoral communities). At the current price of 30,000 birr/MT of meat this amount of subsistence meat is valued at 2,178,619,200 birr (242,068,800 USD).

However, for this purpose of economic valuation the annual off-take (no) of 644,000 cattle 9,000,000 shoats and 100,000 camels from pastoral areas was used. The national off-take value data do not, however, allow for the subsistence economy and the consumption and exchange of livestock within the pastoral community. Marketed off-take is only part of the total herd off-take and it undermines the importance of livestock consumed in the subsistence economy, whether slaughtered for home consumption or religious ceremonies, or exchanged within the community.

Studies show that the annual off-take of cattle is 7%, goats 7%, sheep 7% and camels 4.5% (Belachew, 2004 and others). A national data by MOFED (2005/6) provides that the national livestock off- take value was 2.7 billion Birr; value of milk and products being 3.8 billion Birr.

56% of the cattle, 46% of the sheep, 22% of the goats and 70% of the camel off take from pastoral areas is for the domestic market while the rest goes to the official export and unofficial cross-border trade.

Table 3.5. Value of livestock off-take from pastoral areas of Ethiopia

Type of livestock	Number of herd (mill.)	Asset value (mil. Birr)	Off-take (%)	Off-take value, meat (mil. Birr)[16]	Value of subsistence milk (mil. Birr)	Value of sold milk (mil. Birr)	Value of subsistence meat (mill. Birr)	Off-take, hides & skin (mil. Birr)	Total value (mil. Birr)
Cattle	9.2	18400	7	1288					
Sheep	12.5	2500	34	850					
Goats	14.1	2820	34	958.8					
Camels	2.3	4140	4.35	180.					
Total	38.1	27,860		3276.89	2,263.7	384.5	2,178.6	390.64	8,494.3
Total (mill. USD)									

Table 3.6. Estimates of total direct values from Pastoralism in Ethiopia (adjusted by both the population and livestock factor/multiplier of 1.3)

Item		Value in US Dollar
Estimated total pastoral population (No)	12757680	
Total direct values (billion Birr)	11.04	1.23 Billion
Per capita per annum (Birr)	866	96
Total grazing and browse area under Pastoralism (ha)[18]	55440000	
Direct value per hectare (Birr)	199	22

Source: own computation

Considering the multiplier factor for human population (1.3) will increase the population to 12.5 million (which falls within the range quoted by others as 12-15 million)[19]. Considering the multiplier factor for livestock (1.3) will increase the estimated direct value to 11.04 billion Birr (1.23 billion USD) or 866 Birr (96 USD) per capita per annum.

The direct economic value of Pastoralism is also related to the area of land under pastoral system in the country. On average the land under grazing and browsing in pastoral areas is estimated to be 55,440,000 hectares. If the estimated direct economic value is divided by this area, it gives a value of 199 Birr (22 USD) per hectare per annum.

3.4 Assessing the I

A factor of the livestock population may also be applied to the number of draft oxen supplied to the highland areas from the pastoral low land areas. As the demand for draft power and cattle fatting is in the highland areas is increasing, it is more likely that the supply of young animals for breeding stock and draft power will increase from the lowland pastoral areas. In this case the value of draft power can be estimated to reach 744,510,000 Birr

Tourism industry

Although the lowlands and rift valley region of Ethiopia support the large share of the tourism economy in Ethiopia, there is no well organized database that shows the role of these areas. In fact, out of the 9 national parks, only 2 are not in the dry lands areas of Ethiopia. The total area under the national parks and games which are found in the low land areas is estimated at 466,640 hectares (Bruck, 2004). See annex table 2.

As shown in figure 2, the national parks, game reserves, and sanctuaries are predominantly in the rift valley arid and semi-arid pastoral areas of the country.

In the absence of data that shows the share of pastoral in the tourist economy (in spite of parks and games being in pastoral areas), a rough assumption of 50% of the total earning from tourism comes from the low land areas is considered in this study

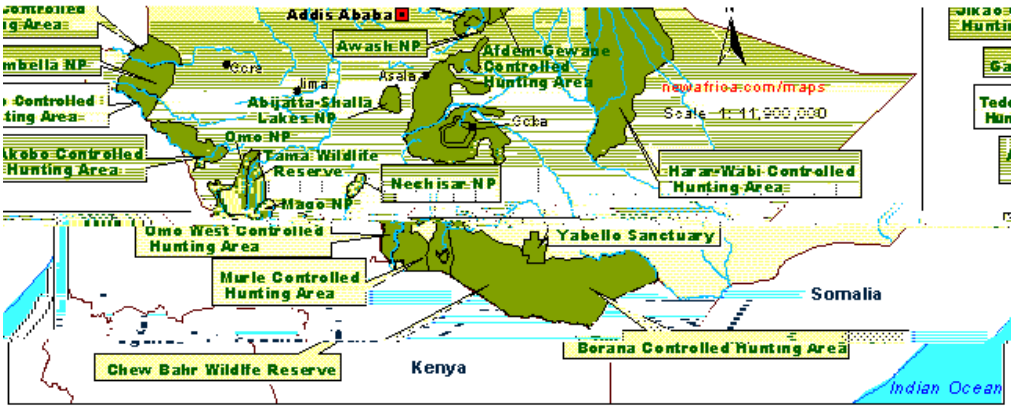


Figure 2: Map of Ethiopia: parks, game reserves and wild life sanctuaries in the pastoral areas

There are cultural and historical tourist sites in the northern parts of the country which also attract lots of tourist. Taking the GDP contribution of the tourism sector, the value share of pastoral areas will be 3.06 billion Birr (340 million USD) per annum. The tourism industry is reported to contribute 4.5 % to the national GDP.

Table 3.8. The estimated contribution of Pastoralism to Ethiopian Tourism industry

Item	Quantity
Tourism (GDP value), value (%)	4.5
Value of tourism industry (Birr)	6,133,600,000
Assumed share of the lowland pastoral areas (%)[20]	50
Estimated share of lowland pastoral areas (Birr)	3066800000

Source: own computation

[20] Out of Ethiopia's national wild life games and parks, only two are not in the lowland pastoral areas. While such areas are visited by mostly nature lovers, most of the tourists also visit the historical sites in the northern part of the country.

The Value of Manure Production

Although manure from livestock production in the pastoral areas is not commonly put for farmland fertilization it is also used for keeping the fertility of pasture lands or some limited cultivation is semi-pastoral areas. There are different approaches used to value livestock manure. Soil nutrients substitution, value of crop production, market price, soil fertility, using manure are among the options. However, the valuation also needs a complex and careful procedure as the nutrient content of manure depends on the type of livestock considered including type of feed they fed on, and nutrient release and wastage largely depends on the management of manure in its liquid or dry form.

As manure in pastoral system is not applied to crop production, except limited use in agro-pastoral areas which could even be constrained by moisture availability, in this study the valuation through value of crop production is not possible. Valuation of soil nutrient aspects of manure is not convenient either as the quality and amount of nutrient depends on manure management, whose information is not readily available. Although the pastoral land fertilization of manure is evident, there is no experimental data that provides the pasture land yield due to manure utilization/application.

Hence, due to these very reasons the only option is to take the value of manure provided in the national account. Referring to Jahnke (1982), a TLU of livestock produces 3000 kg of DM manure. The 9.9 million TLU of livestock in pastoral areas produces **about 30 million** MT DM of manure. The national account of 2005/6 reported by (MOFED) shows that that the value of manure/animal dungs production was 902,182,000 Birr. Taking a share of Pastoralism in the national livestock size (265) and assuming no difference in the amount and quality of animal manure produced in the low land and highlands gives share of Pastoralism that equals to 237,966,570 Birr. If the factor for livestock size (1.3) is also applied here the value of manure will increase to 309,356,542 birr ($34,372,950).

Production of incense and gums

The dry land areas have also another important value generating resource which is incense and gums. The pastoral communities protect these trees partly as a feed for browsers and also since these trees generate income for households by producing gums and incense. Although there is a large potential of benefiting from **incense and gums** resources in the lowland areas, the country generates a limited amount of income, 3,457,000 Birr per annum, from this resource. A 100% of this can be attributed to the drylands. Proper technical support and training on the production, quality maintenance and marketing for the pastoral communities and other agencies would increase the benefits that that can be earned form this resource.

Table 3.9. Summary of indirect measurable values of Pastoralism in Ethiopia

Item	Amount
Value of manure production (Birr)	309,356,542
Incense and gums production (Birr)	3,457,000
Draft power contribution to agriculture (Birr)	744,510,000
Tourism value (Birr)	3066800000
Total (Birr)	4,124,123,542
Total ($)	458,235,949

Source: own computation

The total sum of measured indirect values of Pastoralism including values form draft power, manure production, tourism and incense and gum equals 4.12 bih Tw (4.12) Tj 15.84 0 TDae,356 32.96 0 TD -0.033 Tc 0 Tw (Birr) Tj 12.72 0 TD -w (4.12)r Tw (in

Table 3.10. Estimates of total direct and measurable indirect values from Pastoralism in Ethiopia

Item		Value in US Dollar
Total direct values (Birr)	11,042,590,000	1,226,940,000
Total measurable indirect values (Birr)	**4,124,123,542**	**458,235,949**
Total measurable values (Birr)	15,166,713,542	1,685,175,949
Total pastoral population (No)	12,757,680	
Per capita per annum (Birr)	1,189	132
National GDP (2005/06) (Birr)	93549095078	10394343898
Percentage of National GDP	16%	
Percentage of Agricultural GDP	38%	
Total grazing and browsing area under Pastoralism (ha)[21]	55440000	
Direct value per hectare (Birr)	274	30

Source: own computation

Other indirect values of Pastoralism not measured

There are other values of Pastoralism that could not be measured for lack of data. Investments in agro-industries like the export abattoirs using cattle, shoats and camel depend largely on the pastoral livestock supplies. There is a potential and up-coming investment in bio-fuel projects in the low land and warm areas of Ethiopia.

Other inputs from Pastoralism to agriculture include the young animals (for breeding) supplied to the highland areas. There are some important indigenous breeds of livestock with remarkable features; the lowland breed of cattle (e.g. Boran) and Sheep (e.g. Somali black headed) are often regarded as superior in terms of size, durability, and productivity and/or consumer preferences. (Alemayehu, 1984d ?). Example, the Borana breed in Ethiopia is used in cross breeding activities in livestock development. Hence, the increase in meat and milk production from the cross-bred animals is highly valued. It is possible to consider the number of cross-bred animals with Borana breed, the incremental milk and meat valued at average price. However, such disaggregated data could not be easily found. The livestock genetic resource pool of the lowland pastoral areas of Ethiopia is well recognized (see Annex table 1).

Forward and backward linkages to the economy

The multiplier effects of Pastoralism in the entire economy are obviously acknowledged. Based on the result of this valuation and using the standard multiplier of 1.8, it is estimated that the direct value of Pastoralism (12% of GDP) with forward and backward linkages to the wider economy is 21%. .

The Environmental Importance of Pastoralism

The very existence of Pastoralism adds a lot of values to the environment. Although these values may be difficult to measure given the current scope of technical knowledge and methods, the existence of such benefits to the environment can be appreciated. The maintenance of the range lands surely contributes to the ecological balance. Among other environmental roles of Pastoralism is the maintenance of bio-diversity. Animal feces during mobility help to transmit plant seeds and multiplication.

If the current land use changes, the vegetation, the biodiversity and the water cycle system will be disrupted and destroyed. The pastoral communities are very careful in maintaining the existence of the diverse plant and animal species in their territory. They co-existed with their ecology because they need the natural environment for their livelihood (grass, water, firewood, medicinal plants, etc).

Livestock husbandry has contributed to the important effect of soil nutrient recycling through feeding on plant species and inputting the residues/manure to the range lands. The vegetation in pastoral areas also plays an important role in capturing carbon, one of the environmental roles. If the grassland and vegetation disappears due to other land uses, such important ecological and environmental value of Pastoralism will not be there. The effect will be serious consequences for humanity including the expansion of desertification.

The drylands areas are also known for their immense bio-diversity wealth. The rangelands are areas of large wildlife diversity of mammals and birds which are potentially resources for tourist attractions.. As discussed above, most of the Ethiopian national parks, wildlife hunting areas and game reserves are located in the pastoral areas the testifying the importance of the nature of the environment in relation to wiled life diversity and potential tourist activities.

Pastoralism is praised for maintaining the livestock wealth under environmental conditions of risk and uncertainty using traditional adaptation and management strategies. By doing so the system adds important value by using the resources effectively.

Socio-cultural values of Pastoralism

Pastoral communities are quite appreciated for their indigenous institutions and their management. Before they were weakened by external interventions, they use to serve the purpose of planning, enforcing and managing the rules of resource and land use, mobility and settlement patterns, disaster and risk mitigation, conflict management and resolution. These

[21] Ethiopia's grazing and browsing lands under Pastoralism is estimated to be 53680000 to 57200000 hectare.

indigenous institutions and their knowledge bases is valued for its contribution to the very survival of the pastoral system, adaptation, resilience, under difficult ecology and environment conditions. Pastoralists have, over generations, developed a good natural resources and livestock management systems. These practices are governed by complex and interesting local institutions which develop laws and rules to abide by. The knowledge and skill acquired pass to generations through such local institutions. For instance the deep-well water resources management and grass lands conservation, wet and dry season grazing and settlement rules and the institutions in Borana pastoralists in Ethiopia are commonly appreciated, documented and acknowledged (see Bassi, 2005).

Values of mobility

Mobility is the prime feature that characterizes Pastoralism in Ethiopia, as also elsewhere. Mobility is the art of rangelands management, and adaptation to temporal and spatial resource dynamics in the system. By moving from place to place between seasons pastoralists effectively utilize resources and maximize the productivity. By moving from place to place searching for water and feed, pastoralists make it possible for year round livestock supply to market while the highland livestock production systems largely constrained by feed shortages during dry seasons. It is also a way of coping with the risk[22] and variability in resource bases due to weather variations in space. The value-add of mobility of pastoralists may be captured by looking at their contribution to the livestock and product supply during the different months of the year as compared to the relatively immobile highlands livestock agricultural system. For instance, Pastoralism should be recognized for supplying livestock for export markets as well as the domestic beef industry during the year. Unfortunately, there is no adequate database that provides the seasonal/monthno y loj 330aeD -0.041n2.8 0 Te0u0dalists By t0.3try duoyze ine37lssiboF1 122.4

Under the second (improved) scenario, respondents were asked whether they are willing to pay for the improvement of pasturelands resources and the maximum amount they are willing to pay for the improvement in terms of quality and reliability of these resources keeping size of pasturelands constant. The detailed scenarios were presented to the respondents about what to improve, how to improve and the level of improvement (see the survey questionnaires). With regard to the 'pastureland improvement scenario, the possible intervention practices were explained in the questionnaire. F

Table 3.11: Total and Average WTP in Money and Labor input

Summary Measures	Contribution in Money (Birr/year)	Contribution in Labor (in labor day/year)
Scenario I: maintenance		
Average	148	52
Total	10221	9594
Scenario II: Improvement		
Average	133	53
Total	9070	10812

Source: sample survey

In this WTP survey study, the objective is basically to indicate one aspect of the values of pastoralism and, hence, it does not represent the total value of pastoralism. The average and total maximum amount of money that the pastoral households are willing to pay per annum is Birr 133 and 9,070, respectively, to improve the existing pasturelands. Given the total pastoral households (about 1.9 million), the total amount of money pastoral households are willing to pay for the improvement of the existing pasturelands is **253 million birr** (**28.1** million USD) per annum. Aggregation was made based on the sample. Since the percent of protest- existing pasturela-48-0.03oralism and Tf 008atio68 2521.28 TD -fac48in-0.033ex himamount oive is T0.4

4. The Development Challenges of Pastoralism in Ethiopia

4.1 Environmental Challenges

A lot of researches, reports, conferences and workshops have widely documented and discussed about the growing environmental challenges of pastoral system in Ethiopia. Among the major difficulties the system has been facing is the recurrent drought with its devastating effects on the rangelands, livestock, and the general livelihood of pastoralists. In some areas of the pastoralist communities, on the other had, floods have been disastrous. In fact, drought being a natural shock that have been occurring in the past, the aggravating factor for drought incidence in Ethiopia has been lack of proper management of the nat

With careful identification and analysis of the available data, information and knowledge this study estimates that the total economic value of Pastoralism in Ethiopia is in Billions of Birr. It is appropriately estimated, within the bounds of the available data, that the total direct economic value per years amounts to 11.04 billion Birr (1.2 billion USD) or 866 Birr (96 USD) per capita of the pastoral population per annum. To this, the indirect but measurable economic values of Pastoralism including values form draft power, manure production, tourism and incense and gum amounting to 4.12 billion Birr (458 million (USD) per annum is added. The total measurable direct and indirect values equal to **15 billion Birr (1.6 billion USD) per annum**. When this estimated value is related to the estimated total areas of land under Pastoralism, it shows a per hectare value of 274 Birr (or 30 USD).

This value amounts to 16% of the national GDP and 38% of the agricultural GDP of the year 2005/06. Based on the result of this valuation and using the standard multiplier of 1.8, it is estimated that the direct value of Pastoralism (12% of GDP) with forward and backward linkages to the wider economy is 21%. .

This is a significant value that Pastoralism is contributing to the national economy beyond supporting the life of pastoralists themselves. A more in-depth analysis based on more refined and systematic database can always be useful to value and understand the role of Pastoralism for the pastoral communities, the environment and the national economy at large.

5.2 Policy Implications

Based on the findings of this study, the following policy implications/way forward can be drawn:

1) The undervaluation/underestimation of the economic, social and environmental role of Pastoralism stems from the lack of appropriately collected, organized and assembled database. Hence, adequate attention should be given to the proper collection and compilation of the data and knowledge on Pastoralism.
2) A well integrated and holistic approach of the valuation of Pastoralism should be developed to capture the real economic value of Pastoralism (the direct and indirect values, as well as existence and option values in the national accounts.
3) Pastoral development policies and strategies (such as range resources management and development, development infrastructure and services provisions) should be based on a sound knowledge of the current and potential, quantified and appropriately acknowledged total economic values of Pastoralism. The result of this study clearly shows that there is a huge economic, social and environmental benefits that can be generated by sustainablly managing Pastoralism and its resource basis.
4) In order to benefits from the huge economic, social and environmental values of Pastoralism that are discussed in this study and documented many other studies done already, appropriate measures and support mechanism like proper rangelands use policy, rehabilitation of the pasture, water and vegetations, avoiding improper uses like crop cultivation, etc) must be in place to alleviate the real challenges that are threats to the very survival of Pastoralism.
5) Appreciating the livestock husbandry of the pastoral communities that has managed to adapt the system and livestock use to multiple purposes, it is recommended that Pastoralism should also be seen as a diary system, although current focus of development intervention seems to be entirely on marketing of animals for meat.
6) In order to maximize the livestock and rangelands productivity the culture and techniques of mobility should be protected and promoted (supported). There is ample indigenous knowledge of why and how to organize and manage mobility
7) At the center of Pastoralism are the indigenous institutions (structures, rules and regulations) that government and help to manage the range lands utilization. The traditional institutions have been eroded due to many interventions including the modern system of administrative rules and structures. For sustainable Pastoralism the positive aspects of traditional institutions and knowledge system need to be rehabilitated[24] and be supported in a way they will be harmonious with the modern system of governance system and structures.

[24]In a recent community Development intervention supported by the Oxfam International Group in Ethiopia, the target communities in Dirree district of Borana zone emphasized that they need to rehabilitate the traditional institutions and rules which are important for maintenance and sustainable use of the range lands resources and improvement of their livelihood. The communities noted that due to the disruption of such institutions, rules and regulations the range lands resources became vulnerable to the various degradation factors; and their livelihood is subjected to and disaster risks. The community based project, has thus supported the interventions like the rearrangement of settlement patterns, traditional community safetynet mechanism, community early earning systems, and maintenance of the deep water wells (*eellas*) (For detail refer to project evaluation report :Oxfam Canada, December 2007, Addis Ababa).

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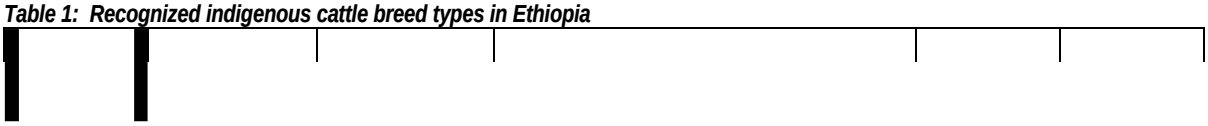
Annex

Table 1: Recognized indigenous cattle breed types in Ethiopia



Pastoralism in ethiopia::