Improvement and diversification of Somali livestock trade and marketing: Towards a formalized grading system for export quality livestock in Somalia
Improvement and diversification of Somali livestock trade and marketing: Towards a formalized grading system for export quality livestock in Somalia

Lawrence Mugunieri,1 Riccardo Costagli,1 Mohamed Hassan Abdulle,1 Ibrahim Omer Osman1 and Amos Omore2

1. Terra Nuova Eastern Africa, Nairobi Kenya, Box 74916, 00200 Nairobi
2. International Livestock Research Institute, Nairobi Kenya
Contents

Tables iv
Figures v
Acknowledgements vi
Executive summary vii
1 Introduction 1
  1.1 Defining grades 1
  1.2 Why do we need grading in the Somali export livestock sector? 2
  1.3 Institutions that can support formalized livestock grading and standards system in Somalia 2
  1.4 Objectives of study 2
2 Methodology 3
  2.1 Study design 3
3 Results and discussion 9
  3.1 Characteristics considered in Somali markets in grading livestock for export 9
  3.2 Interaction of characteristics in composition of livestock grades 17
  3.3 Testing of the grades in a real market operations—the Livestock Marketing Information System (LMIS) 21
4 Conclusion and recommendations 24
References 26
Annex 1 Checklist of questions guiding brokers’ discussions to identify attributes delineating livestock grades in Somali markets 28
Annex 2 Checklist of questions used in focus group discussions held with agents of Somali traders in Al Makha to identify the grading system for somali livestock 32
Annex 3 A pictorial guide of export quality livestock from different regions of Somalia (click the link to access annex 3)
Tables

Table 1. Markets selected for study in the identification of the important characteristics for export quality livestock in Somalia 7
Table 2. Markets selected in Kenya 8
Table 3. Markets selected in Yemen 8
Table 4. Results of non-parametric Kruskal-Wallis and Mann-Whitney tests of relative importance rankings for animal quality traits 9
Table 5. Export quality cattle characteristics considered in surveyed Somali markets 11
Table 6. Traits used in grading export quality sheep and goats in Somali markets 12
Table 7. Traits used in grading export quality camels in Somali market 12
Table 8. Grades within the bulls exported to the Gulf 17
Table 9. Grades within shoats (mature and immature) exported to the Gulf 17
Table 10. Grades within cattle exported to Kenya for fattening, draught and breeding 18
Table 11. Grades within slaughter cattle in Nairobi markets 18
Table 12. Use and destination of the different grades 20
Table 13. Grade categories for export quality camels from Somalia 20
Figures

Figure 1. Identification of important characteristics of export quality livestock in Somalia: Study markets 8
Figure 2. Distribution of cattle of Somali origin into Kenya 19
Figure 3. Mean weekly price variation for the three grades of cattle in Tog Wajaale market, Somalia (October 2007 to July 2009) 22
Figure 4. Mean weekly price variation for the three grades of shoats in Hargeisa market, Somalia (October 2007 to July 2009) 22
Figure 5. Mean weekly price variation for the three grades of shoats in Burao market, Somalia (October 2007 to July 2009) 22
Acknowledgements

This report is one of a series arising from the collaborative project between the International Livestock Research Institute (ILRI) and Terra Nuova. The effort of various Somali institutions and individuals who made this survey possible under difficult conditions is appreciated. Special thanks go to all the live animal market players in Somalia, Kenya and Yemen (including brokers, butchers and distributors) who volunteered useful information that ensured success of this study.

We acknowledge and are grateful to the European Union and Danish Government for funding this study.

This report has been produced with the financial assistance of the European Union and Danish Government. The contents of this report are the sole responsibility of Terra Nuova and can under no circumstances be regarded as reflecting the position of the European Union and Danish Government.
Executive summary

Livestock are the largest export commodity from Somalia. Livestock are either shipped to various countries in the Gulf, or trekked and trucked to markets in Kenya and Djibouti.

This export trade has continued to be undertaken without a formal grading system. Available literatures reveal that presence of a formalized grading system confers benefits to markets actors (producers, traders, consumers). Such benefits include reduction in screening costs involved in market transactions; fostering of long-distance transaction; facilitating the dissemination of market information, enforcing market contracts and rewarding quality. This implies that the absence of a formal grading system exposes Somali traders to significant price discounts and incessant price fluctuation when engaging in international livestock trade. This study analysed the grading approach for export quality livestock practised by market actors in Somalia and buyers of Somali livestock in importing countries, for all categories of livestock—cattle, sheep, goats and camels.

Workshops were held with different categories of key informants in major markets located along the principal marketing chains within Somalia, Kenya and Yemen. Kenya and Yemen were selected as they served as destination markets for Somali livestock. The informants included brokers in Somalia and Kenya and butchers, Somali agents and wholesalers in Kenya and Yemen. The workshops discussed and drew a list of the key traits considered in the selection of export quality livestock within Somalia and also identified the characteristics considered in selecting livestock of Somali origin by buyers in the Kenyan and Yemeni markets. For each characteristic, the key informants were required to rank it in order of importance and list the different levels inherent within it.

Sex; age; body condition and conformation were identified as the four main traits used in grading of Somali livestock destined for export. These traits were similar to those identified in an earlier formal survey among traders of export quality livestock from Somalia. Body condition emerged as the most important trait in grading of livestock. Others, in order of importance were conformation and age. Whereas male livestock were reported as preferred export quality prerequisite for livestock shipped to the Gulf, this was not the case for the animals trekked to markets in Kenya where livestock of both sexes were exported. The main reason lies in the inability to enforce the policy of protecting the export of the breeding stock (female animals) along the porous border between Kenya and Somalia. On the contrary, this policy was easily enforced at the exit ports while loading livestock on ships/dhows in Somali. For this reason informants consistently considered this trait the least important. The relative ranking of these traits was also in agreement with that done with traders of export quality livestock.

The levels within these traits were: sex (male/female); age (years or categorized as either immature or mature), body condition (Excellent, Good, Fair) and conformation (Excellent, Good, Fair). The interactions of the alternative levels of these traits gave rise to three commercial grades for export quality livestock, classified in decreasing order of quality as grades I, II, III. These grades were observed to vary depending on destination of export and use of the animals. This information on matching of grading system in Somalia and importing countries was mostly known to exporters and their agents, and less to the local traders within the Somali livestock market chain. Although the levels for two traits (body condition and conformation) were rather qualitative, there was very limited variability among the market actors’ outcomes while classifying body condition levels, unlike the case for conformation. However, conformation played
a lesser role in determining the overall grade of an animal. Validation of these grades was done by setting up a pilot livestock marketing information system, in three Somali markets (Burao, Tog Wajaale and Hargeisa), where market data on volumes and prices was collected based on the identified grades.

Breed was not one of the traits considered in grading since most of the Key Informants were familiar only with the breed traded in their markets of operation. However, in markets where more than one breed was traded, breed played a minor role in assigning of grades ostensibly due to the high variability within breeds arising from multi-goal selection in breeding that is undertaken by livestock keepers in Somalia. However, information from Kenya and Yemen indicated that carcass yield and other properties like leanness of meat were an important factor in selecting cattle for slaughter, and that this varied from one breed to another. Based on this criterion, butchers (in importing countries) ranked the Somali cattle breeds in order of preference from most to least preferred as: Boran, Surco, Dauara and Gasara.

The ascribed livestock body condition was found not to be static but varied depending on seasons mainly due to variation in body condition in response to feed availability. This grading system shows a shift in trait boundaries while allocating grade scores. This feature is common in markets of many products and its principal aim is to assign grades that will maximize return to sellers, a feature that is exploited by exporters of livestock from Somalia.

By formalizing and publicizing this grading system, interventions will be required in two areas to increase benefits to market actors. The first is short-term in nature and entails investing in interventions aimed at enhancing livestock body condition. This can be attained through improved nutrition (i.e. increasing availability and quality of feed) throughout the long market chain since animals' lose weight during the long journey between the initial purchase point and the slaughter point. Evidence that some traders are exploiting such an opportunity to obtain premium prices was recorded during this study. The second intervention is rather long-term, and would entail investments in breeding programs to enhance 'conformation trait'. This will need targeted breeding and selection programs geared towards enhancing desirable conformation features. This will however need to be accompanied by research into how breeding and selection towards enhanced conformation may influence other adaptive traits.
1 Introduction

1.1 Defining grades

Grades are the defined parameters that segregate similar products into homogenous groups and clearly describe them using consistent terminology that can be commonly understood and applied by market participants (Farina and Reardon. 2000; Giovannucci and Reardon 2000). They are the specific systems of classifications that uniformly and consistently identify both the quantifiable and qualifiable attributes of a product (Jones and Hill 1994). These attributes (or traits) are more often than not indicators of product quality.

Grades not only convey valuable information about the products, but also facilitate price determination thereby assisting in defining contracts for delivery. The system improves the efficiency of markets and helps make them more transparent. Grading also serves to differentiate and segment the market into niches, providing a valuable impetus to the development of quality. It also contributes to the development of domestic markets by distinguishing superior quality levels and rewarding them with higher prices (Friend et al. 2000; Giovannucci and Reardon 2000).

There are specific distinctions in grading that are important to explain as they apply to this paper. Grades can refer to either outcomes or processes. Outcomes are the characteristics that the product is expected to have when it reaches a certain point in the food chain (e.g. the optimal body condition an animal is expected to have when presented for sale). Processes on the other hand refer to the procedures in the food chain (production of the product, processing into intermediate or final goods, marketing approach etc.) to enable the product comply with set industry requirements. That is, they specify the characteristics that the procedures of production are expected to have, to generate certain outcomes. This study was concerned with the ‘outcome’ component of grades. Therefore, further segmentation within outcome based grades can be made on the basis of the differences in the processes of production or marketing. This can provide a basis for product branding, e.g. organic vs. inorganic products, but more often than not is associated with product differentiation.

Second, grading can pertain to various characteristics of a product, i.e.: (i) quality (e.g. appearance, cleanliness, taste); (ii) safety (e.g. pesticide or artificial hormone residue, microbial presence etc.); and (iii) ‘authenticity’ (guarantee of geographical origin or use of a traditional process of production). In this perspective, this study focused on the quality component of grading, with safety and authenticity being assumed as a given. Third, the process of grading is guided by the standards ‘institutions’ which can be formed and enforced in various ways. The institution can be de jure, specified as a rule by a government or industry association or it can be de facto arising merely from many non-coordinated, albeit important micro decisions in transactions.

Currently, there is no formal standardization system in the livestock industry in Somalia. However, livestock grading exists in a non-documented (informal) de facto state (Negassa et al. 2008) that needs to be formalized, perhaps by the regulation of the industry association. Formalization of the grading process would be an important step towards creation of a comprehensive standardization system addressing issues in both quality and safety.
1.2 Why do we need grading in the Somali export-livestock sector?

The importance of a unified system of categorizing livestock in facilitating production, marketing and distribution of livestock and livestock products cannot be overemphasized. This has long been enforced by the major international traders in livestock and livestock products in a bid to expand and stabilize their markets. For example, in the United States, there exists the US Standards for Grades of Slaughter Cattle that were initiated in 1916 (USDA 1996), the US Standards for Grades of Feeder Cattle (USDA 2000) among others. Australia has the Meat Standards Australia (MSA) which graded 645,134 cattle in 2005 (MSA 2006), whereas, New Zealand established the New Zealand meat standard grading system for both cattle and sheep (NMCA 2003a, b). However, in Somalia, which is the largest exporter of live animals from Africa mainly produced from pastoral settings, such formal grading systems are lacking (FAO/World Bank/EU 2004). Therefore, a formalized standardization system is necessary to inform production and to segregate product prices based on the defined standards as well as to attract new markets while stabilizing the existing ones, since buyers will be sure of what the market offers.

1.3 Institutions that can support formalized livestock grading and standards system in Somalia

Somalia is one of the world’s poorest countries due to civil war that has been on for over a decade in most of southern and central parts of the country. This had led to extreme weakening of public sector organizations and service delivery. One may then ask—which institutions can support a robust grading system in absence of strong public agencies? Despite the absence of a strong and efficient public organization, surprisingly, the private sector has managed to grow impressively, particularly in the areas of trade, commerce, transport, remittance and infrastructure services and in the primary sectors, notably livestock, agriculture and fisheries. The vibrant private sector has played a vital role not only in enabling economic prosperity, but also in strengthening trade-related governance and supporting social services in a more stable setting (CIA 2008). A review of the specific institutions supporting livestock trade in Somalia has been provided by Mugunieri et al. (2008).

However, further growth of the economy in general and the livestock sector in particular has been constrained by a myriad of factors, key among them being lack of formal regulatory systems and frameworks to enforce services that are considered to be public goods. An example of such services include a standardization system (of which grading is part) to enforce quality control for purposes of stabilizing and expanding international livestock trade. The lack of a formalized standardization system in general and grading system in particular has been a huge drawback to the livestock sector. It has exposed the sector to instability within the international markets and has limited opportunities to exploit new markets.

1.4 Objectives of study

The broad objective of this study was therefore to assess and document grading related information for export quality Somali livestock (cattle, sheep, goats and camels) as a step towards formalizing the existing informal grading system used in the country. This was achieved through the following specific objectives:

1. Identifying the grading system in use for the four types of export quality Somali livestock (cattle, sheep, goats and camels) in selected markets based on brokers and traders local knowledge;
2. Analysing and documenting the rationale behind the identified grading system;
3. Evaluating the relationship between the grading system and price;
4. Ascertain the validity of the grading system in real market environment.
2 Methodology

2.1 Study design

In Somalia, the grading process for livestock destined for export is implemented by three agents, namely, the producers, the sorters (brokers and traders) and the consumers, who undertake an *ex post* confirmation of inherent quality of livestock presented by the producers. In this paper, we document an approach used by these market agents to delineate the features driving the grading process that defines the quality of livestock exported from Somalia. The framework used is consistent with arguments of Bowbrick (1992) concerning the foundation of quality.

A producer presents a live cattle, goat or sheep, with a given quality, which though difficult to concretely define, is observable to both the producer and broker (sorter) as an outcome of the production process. Bowbrick (1992) defined this type of quality as ‘self-evident quality’, i.e. that which you cannot sufficiently define but you know it when you see it. The quality presented could have been enhanced further had the producer been able to apply more effort subject to other environmental factors. The broker’s role is to verify whether the quality of the producer’s product, has surpassed the minimum required for it to be classified as export grade (i.e. such livestock is graded as both export and non-export quality).

This categorization of quality into export and non-export grades is based on a set of traits/characteristics. These traits exist in different levels. The number of traits to be considered and their inherent levels are determined by brokers in their bid to effectively address the quality requirements of consumers in export markets at any given time. Combination of different levels of different traits will bestow a specific grade to an animal, and this grade confers inherent quality.

In charting the direction towards the formalization of grading approach for export quality livestock, two guiding principles were considered. First, the grading system had to lead to a uniform and accurate and readily reproducible classification procedure. Secondly, non-destructive measuring techniques were envisaged. This is more advantageous than methods requiring sampling of the product. Therefore, based on the guidelines, a suitable grading approach that would effectively address the requirements of traders was developed and implemented through the following steps:

1. Defining grades in terms of traits that would be easy to measure;
2. Developing consistent methods of testing, which are cheap, non-destructive, and easy to obtain;
3. Evaluating price spreads based on the grades developed;
4. Eventual testing of marketing of livestock based on the proposed grade categories.

Several methodological tools were used in implementing these steps. They included:
a. Delineating the traits defining quality—Workshop sessions with experienced key informants

Workshops were held with different categories of purposively sampled key informants in major markets located in the principal marketing chains within Somalia. Similarly, key informant workshops (Jabbar and Admassu, 2010) were also undertaken in main markets handling livestock of Somali origin in Kenya and Yemen. The workshops: (i) discussed and drew a list of the key traits/characteristics considered in the selection of export quality livestock targeting the key export markets in Kenya and the Middle East; and, (ii) identified the traits considered in selecting livestock of Somali origin by buyers in the Kenyan and Yemeni markets. For each of the traits identified, the key informants were required to tease-out the different levels inherent within this trait.

Four groups of key informants were selected. The first group comprised of brokers, who are key in facilitating livestock trade in Somali markets, and in some markets in Kenya that handle livestock originating from Somalia. The second group comprised of butchers, who are buyers of livestock originating from Somalia for slaughter and sale as meat in Kenyan and Yemeni urban centres. The third group of key informants was a special group of brokers who facilitated transaction in livestock originating from Somalia either for draught power among the Kamba people in upper eastern Kenya, for fattening in some selected ranches in eastern and coastal Kenya, or for breeding among the Maasai in the Rift Valley. The fourth group was comprised of actors facilitating trade of livestock of Somali origin in Yemen, i.e. the Somali agents and wholesalers.

(i) Brokers in Somali markets

Brokers, also known as the ‘Dilaal’ or ‘Dallaal’ were used as key informants in the identification of traits used in trade since they are a central feature of livestock marketing in Somalia (Little 1992; 2003; Stockbridge 2004). Brokers are based in main markets and play pivotal roles in all transactions that are concluded in these markets. They facilitate exchange between other traders. More often than not, there is a broker in every transaction in the market. Price is determined through series of bargains (i.e. offers and counter-offers) between a buyer and seller, the process being facilitated by at least one broker. Besides facilitating exchange, brokers also play the important role of guaranteeing that the livestock being traded are not stolen. Suitable brokers were identified and selected jointly with the participation of offices of the Municipalities in which the markets were situated based on the following criteria:

1. Possession of basic literacy skills (reading and writing in Somali);
2. Working experience as a broker in the selected market;
3. Representative of communities actively involved in livestock production and trade in the area;
4. Dealing with export quality livestock either for the Gulf or Kenyan export markets.

In the Kenyan markets, brokers facilitate bilateral negotiation between buyer and seller. They operate informally under limited regulations by central or local government and their fee is paid by the buyer. The amount is negotiated between the broker and the buyer. In addition brokers have other specific roles that include:

1. Credit recovery;
2. Payment collection;
3. Taking charge of animals belonging to the sellers until they are sold, organizing grazing and watering;
4. Reporting to the police cases of stolen animals.

---

1. Kenya and Yemen were purposively selected as the export markets for Somali livestock.
This core group of key informants deliberated and by consensus arrived at the important traits being used in grading livestock, and also on the interaction of these traits to give different grades. Annex 1 gives the checklist of questions that guided the group discussions among brokers.

(ii) Butchers in selected Kenyan and Yemeni markets

Workshops were held with butchers so as to obtain a detailed description of the meat marketing chain to the level of retailers in Nairobi and Mombasa in Kenya, and Sanaa in Yemen. These workshops shed some light on the grading system for carcasses in Nairobi, Mombasa and Sanaa. The overriding objective of this task was to provide information that would enable establishment of the correlation between animals of different grade with the quality attributes sought for in different meat grades in these markets. Towards this end, butchers were categorized into meat wholesalers (wholesale butchers) and retail butchers. Key features of these two groups are summarized below:

(a) Wholesalers:

- **Large wholesale butchers**: those who traded up to 15 and 25 carcasses per day in Mombasa and Njiru (near Nairobi) markets, respectively. In Mombasa, they formed around 15% of the wholesale traders, whereas in Njiru, their proportion was about 30%. In Yemen, they handled 5–6 cattle carcasses and about 20 for small ruminants.

- **Medium wholesale butchers**: those who traded up to 5 and 12 carcasses per day in Mombasa and Njiru respectively. In Yemen, they handled 1–2 cattle carcasses and about six for small ruminants.

- **Small wholesale butchers**: those who sold only one carcass per day in Mombasa and three carcasses in Njiru.

In Kenya, medium- and small-scale wholesale butchers collectively accounted for about 85% of the wholesalers in Mombasa, whereas in Njiru, they comprised of about 60 and 10% of the wholesalers respectively.

(b) Retailers

- **Large retail butchers**: those who purchased up to four carcasses per day in both countries.

- **Medium retail butchers**: those who traded up to two carcasses per day.

- **Small butchers**: those who purchased only half to one whole carcass per day.

Butchers (both wholesalers and retailers) required to be licensed by the respective municipalities.

(iii) Brokers involved in trade of livestock destined for direct slaughter, breeding, fattening and draught power in upper eastern and Maasai regions, Kenya

A workshop was organized with selected brokers to investigate the quality parameters used in Kenya’s Eastern province markets for cattle meant for direct slaughter, for breeding, for draught power and also for fattening in ranches in eastern Kenya. Specifically, the workshop participants comprised brokers working in selected markets, namely, Zombe, Kissasi, Kavisuni, Muthomo, and Kabati within Kitui district. Suitable participants were identified with the assistance of District Veterinary Department in Kitui based on the following criteria:

1. Significant working experience.
2. Past experiences (i.e. dealings with cattle for breeding, fattening and draught power traded in the area).
This core group of brokers deliberated on, and by consensus identified the grading system for such categories of cattle based on parameters used in the respective area’s livestock markets.

**iv) Somali agents based in Yemen**

These are agents of Somali exporters based in Yemen. More often than not, those dealing in animals that are exported through Somali port of Berbera are based in Al Makha port of Yemen whereas those handling livestock from Somali Bossaso port are based in Al Mukalla. The role of these agents is restricted to transacting animals on behalf of export traders based in Somalia. They act as a link with the Yemeni distributors/wholesalers that are responsible for moving the imported livestock further down the market chain in Yemen. Usually one agent represents more than one Somali exporter. In this study, focus group discussions were held with agents from Al Makha using a checklist of questions to identify the grading system for Somali livestock (Annex 2).

**(v) Yemeni distributors of Somali livestock**

The distributors are those actors who take title of imported livestock (from agents) and supply them to wholesale butchers, tourist hotels and restaurants. They may also sell them to individual customers. These distributors can be categorized based on their size of operation. The distributors normally deal in both local and imported livestock, but with imports being more important. There are instances where some of the stock they handle (particularly sheep) is further shipped/sold to Saudi Arabia. Cross border trade in cattle is curtailed by harsh environment of the eastern part of the country. Focus group discussions were held with these actors using a checklist of questions so as to identify the grading system for Somali livestock based on parameters used in the area livestock markets.

b Development of uniform and cheap method of testing—The pictorial representations of livestock grades through consensus fieldwork sessions with brokers

Key informant’s workshop sessions were followed by field activities, during which the key informants fitted livestock brought to the market for sale in the various grades and their photographs taken (see Plates 1 and 2). A series of digital pictures capturing several combinations of different levels of the important grade traits were taken. For every livestock photographed, a rear and a side view picture was taken. For example, the photograph in Plate 1 represents a side view of a nine year old Dauara cattle breed, Grade 1, while photograph in Plate 2 represents a side view of eight years old Gasara cattle breed, Grade 1. All the animals selected for the pictorial guide were identified and agreed on by the key informants through a consensus process to ensure that they were a true reflection of the specified traits combination. The digital pictures were then presented to the participants for final round of vetting and adoption. A pictorial guide of the different grades for the main four species is shown in Annex 3.

Sampling procedure for the identification of the important characteristics for export quality livestock

(i) Sampling of markets and respondents

Nine Somali markets transacting in livestock destined for export either to the Gulf or Kenya were purposively selected for data collection. A varying number of brokers were also purposively sampled from each market and workshops organized on diverse dates between March 2004 and April 2008. Details regarding the sampled markets, sampled respondents and livestock traded are given in Table 1.
Improvement and diversification of Somali livestock trade and marketing

Plate 1: Dauara breed, male, 9 years old, Grade 1

Plate 2: Gasara breed, male, 8 years old, Grade 1

Table 1. Markets selected for study in the identification of the important characteristics for export quality livestock in Somalia

<table>
<thead>
<tr>
<th>Market selected</th>
<th>Brokers sampled</th>
<th>Livestock species traded</th>
<th>Destination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jowhar</td>
<td>7</td>
<td>Cattle</td>
<td>Gulf/Kenya</td>
</tr>
<tr>
<td>Afmadow</td>
<td>8</td>
<td>Cattle</td>
<td>Gulf/Kenya</td>
</tr>
<tr>
<td>Afgoye</td>
<td>15</td>
<td>Cattle</td>
<td>Gulf/Kenya</td>
</tr>
<tr>
<td>Hargeisa/Burao</td>
<td>18</td>
<td>Sheep and goats</td>
<td>Gulf</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Camels</td>
<td>Gulf</td>
</tr>
<tr>
<td>Tog Wajaale</td>
<td>14</td>
<td>Cattle</td>
<td>Gulf</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Camels</td>
<td>Gulf/Kenya</td>
</tr>
<tr>
<td>Baidoa</td>
<td>10</td>
<td>Sheep and goats</td>
<td>Gulf</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Camels</td>
<td>Gulf/Kenya</td>
</tr>
<tr>
<td>Belet Weyn</td>
<td>20</td>
<td>Sheep and goats</td>
<td>Gulf</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cattle</td>
<td>Gulf/Kenya</td>
</tr>
<tr>
<td>Bardheere</td>
<td>10</td>
<td>Cattle</td>
<td>Kenya</td>
</tr>
</tbody>
</table>

These markets were selected due to the important role they play in handling livestock destined for the export markets. Similarly, several markets were purposively selected in destination markets in two of the importing countries, Kenya and Yemen. Markets in importing countries were selected based on their importance in handling livestock originating from Somalia. Information about these markets is given in Tables 2 and 3.
Table 2. Markets selected in Kenya

<table>
<thead>
<tr>
<th>Market</th>
<th>Informants sampled</th>
<th>Informant sample size</th>
<th>Comments on the market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garissa</td>
<td>Brokers</td>
<td>15</td>
<td>Livestock from this market goes through four channels: (i) for slaughter (Nairobi, Mombasa, and Thika); (ii) for draught power in the Akamba farms; (iii) for fattening in the cooperative ranches of Eastern province and, (iv) for breeding (Maasai channel)</td>
</tr>
<tr>
<td>Mombasa</td>
<td>Brokers (animals destined for slaughter)</td>
<td>16</td>
<td>Facilitate in trade in cattle destined for slaughter in four slaughterhouses for supply of beef in the City of Mombasa</td>
</tr>
<tr>
<td></td>
<td>Butchers (carcasses destined for sale)</td>
<td>16</td>
<td>Included both wholesale and retail butchers dealing in carcasses for eventual sale to different consumers in Mombasa</td>
</tr>
<tr>
<td>Njiru</td>
<td>Brokers (animals destined for slaughter)</td>
<td>15</td>
<td>Facilitate in trade in cattle destined for slaughter in two slaughterhouses (Dandora and Kayole) for supply of beef in the City of Nairobi</td>
</tr>
<tr>
<td></td>
<td>Butchers (carcasses destined for sale)</td>
<td>14</td>
<td>Included only wholesale butchers dealing in carcasses for eventual sale to different consumers in Nairobi</td>
</tr>
<tr>
<td>Kitui</td>
<td>Traders</td>
<td>11</td>
<td>Cattle destined for fattening, breeding, and draught power in upper eastern Kenya and Maasai areas</td>
</tr>
</tbody>
</table>

Table 3. Markets selected in Yemen

<table>
<thead>
<tr>
<th>Market</th>
<th>Informants sampled</th>
<th>Comments on the market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Makha</td>
<td>Somali agents</td>
<td>8 Only those handling livestock from Berbera port</td>
</tr>
<tr>
<td></td>
<td>Distributors</td>
<td>3 Their activities ranged from supplying wholesale butchers, supermarkets, hospitals etc.</td>
</tr>
<tr>
<td>Sanaa</td>
<td>Butchers</td>
<td>6 Included both wholesaler and retailer butchers</td>
</tr>
</tbody>
</table>

c. Verification of marketing of products based on the proposed grade categories

Verification of the identified grades was done by setting up of a pilot Livestock Marketing Information System (LMIS), in three Somali markets: Burao, Tog Wajaale and Hargeisa where market data (volumes and prices) is collected based on the identified grades.

Figure 1. Identification of important characteristics of export quality livestock in Somalia: Study markets
3 Results and discussion

3.1 Characteristics considered in Somali markets in grading livestock for export

During the consensus workshops, the most important traits that were identified by the brokers as influencing selection of export quality livestock in Somali markets were similar to those mentioned by other actors in the importing countries. The traits ranked in relative order of importance were:

1. body condition;
2. conformation;
3. age;
4. sex.

The traits listed and their ranking closely agree with those identified by export and small-scale traders of livestock along three market chains in a previous survey undertaken by ILRI in Somalia (Negassa et al. 2008). In this survey, the traits considered by export and small-scale traders were identified as: (i) nutritional status (body condition); (ii) size (conformation); (iii) age; (iv) weight; (v) sex; and (vi) breed types. A pair-wise multiple comparisons of relative importance rankings of these traits were also made using a non-parametric Mann-Whitney test. The results indicated that the nutritional status was first and breed type last (Table 4). The results also showed absence of overlapping of the relative importance rankings such that all relative importance rankings of each quality attribute was distinct from each other.

Table 4. Results of non-parametric Kruskal-Wallis and Mann-Whitney tests of relative importance rankings for animal quality traits

<table>
<thead>
<tr>
<th>Live animal quality traits</th>
<th>Kruskal-Wallis mean ranks of the trait</th>
<th>Mann-Whitney procedure for pair-wise comparison of quality rankings</th>
<th>Importance ordering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutritional status</td>
<td>1319.6</td>
<td>A</td>
<td>1</td>
</tr>
<tr>
<td>Size</td>
<td>1037.3</td>
<td>B</td>
<td>2</td>
</tr>
<tr>
<td>Age</td>
<td>839.0</td>
<td>C</td>
<td>3</td>
</tr>
<tr>
<td>Weight</td>
<td>721.6</td>
<td>D</td>
<td>4</td>
</tr>
<tr>
<td>Sex</td>
<td>461.4</td>
<td>E</td>
<td>5</td>
</tr>
<tr>
<td>Breed</td>
<td>376.1</td>
<td>F</td>
<td>6</td>
</tr>
</tbody>
</table>

Notes: 1. The null hypothesis that the relative importance rankings of six selected quality traits were rejected at probability of less than 1%. 2. The different letters suggest that there is a statistically significant difference between quality trait attributes. 3. The numbers show the order of importance for the quality traits based on multiple pair-wise non-parametric comparison.

Source: Negassa et al. (2008).
It is important to point out that nutritional status as reported in the survey by Negassa et al. (2008) is synonymous with body condition as reported in this paper. Similarly, body size was similar to conformation. One additional trait, breed, was noted to be less significant by the brokers since breeds were location or market specific and more importantly in a few markets where more than one breed was traded, there was high intra-breed variability ostensibly due to indiscriminate crossbreeding. Weight was also argued to be an attribute derived from other traits, namely nutritional status, age and conformation. For example, an animal of good body condition, good conformation and advanced age would most likely be heavier than otherwise.

This list of traits is not entirely new as a number of them have been mentioned in several past studies. For example, Scarpa et al. (2003) reported sex, age, body condition, estimated weight and breed as some of the key traits influencing purchase of livestock in local markets in Kajiado district of Kenya. Akinleye et al. (2005) detailed the importance of age and estimated weight as important traits in marketing of shoats in Nigeria. However, some studies (e.g. Ouma et al. 2004; 2007) that focused on livestock production within African pastoral systems have laid emphasis on adaptive traits like resistance to diseases and ability to walk long distances. Noting that the Somali livestock industry is predominantly export oriented, and since data was collected only for animals destined for export, the specific traits valued by traders were assumed to be geared towards satisfying the consumers in the importing countries.

For each quality trait, brokers were requested to identify the levels inherent within the trait. This was repeated in all markets. The results are presented in Tables 5, 6 and 7 for cattle, sheep and goats and camels respectively. The important traits identified in Somali marketing chains were similar in all sampled markets, with differences being reported for levels within the ‘age’ trait.

**Sex of the animals as an export trait**

**Cattle:** Only male cattle are exported to the Gulf from Somalia. As a policy, export of females is restricted to protect the breeding stock from undue exploitation. However, both male and female livestock were exported to Kenya because of the difficulty in controlling animals crossing the porous border into Kenya.

**Sheep and goats:** Just like cattle, only males are exported to the Gulf. Most sheep (about 85%) and goats (75%) are castrates. Castration is usually done earlier in sheep than in goats. Goats are castrated at about 3 years of age, compared to 1.5–2 years for sheep. This was because early castration was noted to more negatively affect growth and development in goats. In addition, sheep were reported to reach sexual maturity much earlier.

**Camels:** Only males are exported. More often than not, the immature are generally entire whereas about 50% of matures are castrates.
Table 5. Export quality cattle characteristics considered in surveyed Somali markets

<table>
<thead>
<tr>
<th>Market</th>
<th>Sex</th>
<th>Age (years)</th>
<th>Body condition</th>
<th>Breed</th>
<th>Conformation¹</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jowhar</td>
<td>Male</td>
<td>2–7</td>
<td>Excellent, good, fair</td>
<td>Dauara</td>
<td>–</td>
<td>At time of low demand for the Garissa market bulls of 8 years of age, I and III grade only, may also be sent via Bossaso to the Gulf</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>5–10</td>
<td>Excellent, good, fair</td>
<td>Dauara</td>
<td>–</td>
<td>Males within this age range are exported to the Gulf from Ceel Macaan. However, bulls of five years of age include only those of excellent body condition</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>4–7</td>
<td>Excellent, good, fair</td>
<td>Dauara</td>
<td>–</td>
<td>Exported to Kenya. However, females of 4 years of age are also exceptionally traded, but only for excellent body condition</td>
</tr>
<tr>
<td>Afmadow</td>
<td>Male</td>
<td>2–8</td>
<td>Excellent, good, fair</td>
<td>Boran</td>
<td>–</td>
<td>Exported to Kenya</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>4–8</td>
<td>Excellent, good, fair</td>
<td>Boran</td>
<td>–</td>
<td>Exported to Kenya</td>
</tr>
<tr>
<td>Afgoye</td>
<td>Male</td>
<td>2–8</td>
<td>Excellent, good, fair</td>
<td>Dauara, Gasara, Surco</td>
<td>–</td>
<td>Exported to the Gulf through Bossaso</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>5–8</td>
<td>Excellent, good, fair</td>
<td>Dauara, Gasara, Surco</td>
<td>–</td>
<td>Exported to Kenya</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>4–8</td>
<td>Excellent, good, fair</td>
<td>Dauara, Gasara, Surco</td>
<td>–</td>
<td>Exported to Kenya</td>
</tr>
<tr>
<td>Tog Wajaale</td>
<td>Male</td>
<td>6–8</td>
<td>Excellent</td>
<td>North Somali Zebu</td>
<td>Excellent</td>
<td>Exported to the Gulf through Berbera</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>5–8</td>
<td>Good</td>
<td>North Somali Zebu</td>
<td>Good</td>
<td>Exported to the Gulf through Berbera</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>5–7</td>
<td>Fair</td>
<td>North Somali Zebu</td>
<td>Fair</td>
<td>Exported to the Gulf through Berbera</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>3–4</td>
<td>Excellent, good</td>
<td>North Somali Zebu</td>
<td>Excellent, good</td>
<td>Exported to the Gulf through Berbera</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>2–9</td>
<td>Excellent, good, fair</td>
<td>Surco, Gasara</td>
<td>Excellent, good, fair</td>
<td>Exported to the Gulf. Surco is less demanded due to long horns that impede feeding during shipment</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>4–10</td>
<td>Excellent, good, fair</td>
<td>Surco, Gasara</td>
<td>Excellent, good, fair</td>
<td>Exported to Kenya. Surco more preferred due to high carcass yield (80% Surco, 20% Gasara)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>4–15</td>
<td>Excellent, good, fair</td>
<td>Surco, Gasara</td>
<td>Excellent, good, fair</td>
<td>Exported to Kenya. (80% Surco, 20% Gasara)</td>
</tr>
<tr>
<td>Belet Weyn</td>
<td>Male</td>
<td>1–2</td>
<td>Excellent</td>
<td>Improved breeds</td>
<td>Excellent</td>
<td>Exported to the Gulf through Bossaso. These are culls from dairy herds</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>3–8</td>
<td>Excellent, good, fair</td>
<td>Surco, Dauara, Gasara</td>
<td>Excellent, good</td>
<td>Exported to Kenya and the Gulf through Bossaso</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>5–9</td>
<td>Excellent, good, fair</td>
<td>Surco, Dauara</td>
<td>Excellent, good</td>
<td>Exported to Kenya</td>
</tr>
<tr>
<td>Bardheere</td>
<td>Male</td>
<td>5–8</td>
<td>Excellent, good, fair</td>
<td>Surco, Dauara, Gasara</td>
<td>Excellent, good, fair</td>
<td>Exported to the Gulf through Bossaso</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>2–8</td>
<td>Excellent, good, fair</td>
<td>Surco, Gasara</td>
<td>Excellent, good, fair</td>
<td>Exported to Kenya</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>4–15</td>
<td>Excellent, good, fair</td>
<td>Surco, Gasara</td>
<td>Excellent, good, fair</td>
<td>Exported to Kenya</td>
</tr>
</tbody>
</table>

¹ Data on conformation as a trait was not collected in some markets during the earlier stages of the survey due to deficiencies in design of data collection instruments in the workshop sessions.
Table 6. Traits used in grading export quality sheep and goats in Somali markets

<table>
<thead>
<tr>
<th>Markets</th>
<th>Sheep</th>
<th>Age (years)</th>
<th>Body condition</th>
<th>Conformation*</th>
<th>Goats</th>
<th>Age (years)</th>
<th>Body condition</th>
<th>Conformation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hargeisa</td>
<td></td>
<td>3–4</td>
<td>Fat, normal</td>
<td>Excellent, good</td>
<td>4–5</td>
<td>Fat, normal</td>
<td>Excellent, good</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 months–1 year</td>
<td>Fat only</td>
<td>–</td>
<td>8 months–1 year</td>
<td>Fat only</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Belet Weyn</td>
<td></td>
<td>1–2</td>
<td>Fat, normal</td>
<td>–</td>
<td>3 (S-type or Affar dhegood)</td>
<td>Fat, normal</td>
<td>Excellent, good</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 months–1 year</td>
<td>Fat only</td>
<td>–</td>
<td>4–6 (Jar)</td>
<td>Fat, normal</td>
<td>Excellent, good</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: Sheep aged below 2 years are not classified based on conformation due to their incomplete growth. Lambs and kids between 8 months and 1 year (Hargeisa market) include animals exported to the Yemeni market (Jiqiiq) and those for the chilled meat export trade. Young sheep and male goats between 1 and 2 years (Belet Weyn market) are termed Wangar and are for the chilled meat export trade.

Table 7. Traits used in grading export quality camels in Somali market

<table>
<thead>
<tr>
<th>Market</th>
<th>Sex</th>
<th>Age (years)</th>
<th>Traits</th>
<th>Body condition</th>
<th>Conformation</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hargeisa/Burao/Tog Wajaale</td>
<td>Male</td>
<td>3–6 (Qaalimo)</td>
<td>Excellent, good</td>
<td>Excellent, good</td>
<td>Make up about 90% of traded camels and are preferred in UAE, KSA, Qatar, Yemen and Bahrain</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7–15 (Waaweyn)</td>
<td>Excellent, good</td>
<td>Excellent, good</td>
<td>Comprise less than 10% of traded camels and are preferred in Libya and Egypt</td>
<td></td>
</tr>
</tbody>
</table>

The levels within each of these traits and how they are measured is discussed next.

The ‘age’ characteristic

(a) Cattle destined for the Gulf market

Age of slaughter beef cattle is strongly related to tenderness, meat colour and level and type of fat deposition (Wythes and Shorthose 1991). The age of exported males ranged between 3 and 10 years. Age was estimated through three methods, ranked in order of importance as: (i) body size; (ii) horn rings; and (iii) dentition. Two distinct categories were identified, the mature and immature. The mature bulls, collectively called Waaweyn (meaning big) ranged from 5–10 years. On the other hand, the immature, locally referred to as the Cujuul or Yaryar were aged below five years (but often more than three years). The 3–10 year age category was not exclusive, since in certain exceptional circumstances, younger bulls (about 2.5 years) were at times exported. Information from brokers indicated that such younger bulls were exported to some non-traditional niche markets in the Gulf. Bulls in the age category of 5 to 8 years were the majority.

(b) Cattle for the Kenyan market

Cattle of both sexes are exported to Kenya.

Males: The age range for bulls exported to Kenya was 2 to 9 years, with different age brackets serving different market segments. Those aged 2 years are exported for breeding purposes in eastern Kenya (especially in Mwingi and Kitui districts). The 3-year olds are exported for fattening in the same region. These young bulls are usually reared for one year for finishing and sold for slaughter. Besides breeding and fattening, bulls ranging between 4 and 8 years are exported for direct slaughter in Nairobi and Mombasa. Brokers observed that older bulls (about 8 years) are the most

2. Since traded livestock usually lack records, examination of body weight (proxied by body size) and the teeth serves as the best and most practical method of age determination (Wythes and Shorthose 1991). In such circumstances producers, veterinarians, and traders have relied on dentition to make general age determinations. The application of dentition requires experience as it will vary from herd-to-herd and animal-to-animal, because of the animal’s genetics, their diet, and the varied geographical locations in which they are raised. This practice has been applied even in developed economies like the US (USDA, http://www.fsis.usda.gov/OFO/TSC/bse_information.htm), the State of Queensland (Department of Primary Industries and Fisheries, http://www2.dpi.qld.gov.au/beef/3483.html) among others.
preferred even though they are rare within Somali herds. This preference is probably driven by their larger body size that is correlated to higher carcass yield.

Females: Age of exported cows range from 4 to 8 years. In local Somali dialect, cows for export are defined according to the number of times they have calved; *dadal* (first calving), *labadal* (second calving), *saddexdal* (third calving), *afardal* (fourth calving). A cow of 8 years of age is expected to have calved four times. Cows that are yet to calve (heifers) are called *Kalmo*, and they are rarely exported.

Cattle exported to Kenya which are less than four years of age are mainly for breeding and fattening, as opposed to immediate slaughter. These animals were reported to be sourced from markets closer to Garissa (Afmadow and Bardheere) since trekking was the main mode of transport and such (young) cattle are unable to walk longer distances. Young animals were reported to easily lose body condition or even die when subjected to prolonged stressful trekking. For cattle destined for slaughter, those exported to the Gulf included animals of much younger age than for Kenya (Table 4). The choice of more mature slaughter animals for the Kenyan market was reported to be driven mainly by their ability to walk longer distances.

(c) Sheep and goats for Gulf market

The most common age bracket for the exported sheep and goats was 3 to 4 and 4 to 5 years, respectively. In southern Somalia markets, the three year old goats are also referred to as S-type or **Affar Dhegood**, whereas the 4–6 year old ones are called *Jar*. Occasionally lambs aged one year and below (also called *jiqiq* or *Dhaylo* or *Wanqar* in Somali) were exported to Yemen. Alternatively, such stock is sold to slaughterhouses and exported as chilled meat. The Yemeni destination of such juvenile stock was feasible because of its proximity to Berbera where such stocks are able to withstand pre- and shipment stresses. Rarely are such young stock exported to distant markets like UAE and Oman. Age estimation was undertaken through four methods:

1. Visual appraisal of the body size (for both sheep and goats)
2. Dental examination (dentition) (for both species)
3. Visual appraisal of the wool in sheep

Appraisal of body size was reported as the most widely used approach. However, dentition was used as confirmatory tests, in cases of doubt, and finally wool in sheep and horn rings in goats were used in circumstances where the other two methods could not lead to conclusive estimates. For example, it was observed that the Somali Black head sheep shed wool coat at around two years of age. Over time the wool fibres become progressively thinner and at five years of age one can easily feel the skin underneath when the animal is touched.

In the case of the short-eared Somali goats, it was reported that horns sprout at age of six months, and thereafter develop two rings per year. However, from the age of three years apical rings start wearing out and are no longer conspicuous. Over time horns become also thicker. Routine use of horn-rings was reported to be constrained by castration, where the key informant observed that castration affected horn growth, that is, castrates’ horns grew much slower, so using horn rings could underestimate ages of castrates. However, it should be recalled that the males are generally castrated when they are about three years old, thus horn ringing would be less affected by castration.

(d) Camels for the Gulf market

Exported camels range from 3 to 15 years; however, the most frequently traded age bracket available is 3–11 years. Of these, immatures (4–6 years) account for most exports (about 90%). The three year olds and those above six years are rare. As in cattle, the mature males are collectively called *Waaweyn* (which literally means big, above 7 years) and the immature (4–6 years) *Qaadlimo* (which meaning calf the equivalent of *Cjuul* for cattle). The seven-year old can be included in the ‘mature’ category if fully grown and developed; otherwise they are classified as ‘immature’. For this
reason such age group is considered as ‘intermediate’ and called Dhexe in Somali. At times exclusive orders are placed from importing countries for seven year old animals according to the demand. Age estimation methods were ranked in order of importance as:

1. Body size
2. Dentition
3. Coat (at 3 years the coat changes and becomes bulkier)
4. Knees’ skin thickness

It was reported that when using the thickness of knees’ skin as an indicator of age, the rule of thumb was that the harder/thicker the skin, the older the animal.

The ‘body condition’

The term body condition refers to the fleshiness of an animal and is one way of assuring quality of meat. Several body condition scoring approaches exist, depending on the production system in question (Hutchison et al. 2003). As expected, the categories (levels) of body condition scores in use in classifying export livestock in Somalia varied from one species to another: Those in cattle included excellent, good, and fair; whereas in sheep and goats, these were fat (Shilis) normal, (Mac), and thin (Weyd). In camels, only two levels: excellent and good were used. The body score was assigned through visual appraisal of specific body parts. The extent to which specific skeletal body parts (like hips, hooks and pins, rump, shoulders, back [spinous processes of the thoracic vertebrae], ribs etc.) were either hidden or smoothed (by flesh/fat), the higher the score assigned to the animal (see Plates 3 and 4 for illustration of body condition score).

Plate 3: North Somali Zebu—excellent body condition
Plate 4: Boran breed—fair body condition

It was reported that while scoring the body condition of an animal, one undertakes a mental correlation with its live body weight to come up with a likely estimate of the carcass yield. Whereas this is not obvious to all, especially the producer, this correlation relationship has been perfected by the butcher, but less understood by producers.

The brokers reported that the body condition scores were not static throughout the year, but showed variations from one season to another (i.e. dry and wet). The average score was reported to be higher during the wet periods probably due to abundant pasture and water. As a result, what was considered as excellent in the dry season may correspond to a good during the wet season, but fetched prices similar to excellent of wet season. These shifts in boundaries while allocating qualities scores was first reported by Erdman (1950) who observed that the principal idea behind assigning quality was to maximize return to sellers. Erdman noted that boundaries for specifications for qualities were bound to change, depending on the proportion of product that ought to be placed in certain categories.
He argued that since return maximization is the driving force, this is done by dividing given products into ‘classes’ on the basis of attributes which buyers of different classes consider significant.

Standardizing classes at the determined levels and standardizing the names by which they are known merely facilitates bargaining once the terms come to be ‘common language’ among buyers and sellers at that point in time. Just where the boundaries between classes should be placed will depend upon the degree to which the various users will pay premium for certain qualities rather than substitute adjacent qualities within the ranges available (Erdman 1950: 17). This old cardinal rule appears still to be operational in Somali export livestock marketing.

Conformation

Conformation entails the visual features used in the selection of an animal, for specific uses. Barham et al. (2006) noted that the indicators of conformation include the frame size, muscle and body structure, predisposition to waste, feet and leg structure and adherence to breed character. Regarding the body structure, the neck of the animal should be moderately long, the loin and rump should be long, wide and level making the animal to present a long and strong top line. Extremely short-bodied and short-legged cattle are associated with excessive fat, lowering quality of meat and being predisposed to higher level of waste. Also, muscle/meat is anchored on bones, so the longer and wider the specific bones, the higher the cuts. The legs should be squarely set under the four corners and be reasonably straight. Animals that exhibit signs of being post-legged, knock-kneed, splay-footed, sickle hocked, bucked-kneed or with short straight patterns have shortfalls in conformation requirements. The issue of breed character is critical in conformation in the Somali system because selection for breeding is multifaceted partly because cattle perform multiple socio-economic and livelihood functions in their system. This leads to a scenario of high variability, not only between breeds, but also within breeds.

In the Somali markets, conformation was described to entail the symmetry, size and shape of the various body regions of an animal relative to each other or the general appearance of the animal according to what is considered a desirable appearance. Features of an animal that composed the ‘desirable appearance’ were described to include:

1. Big frame or skeletal size of the animal
2. Good muscling
3. Good appearance of feet and legs

In terms of frame the vast majority of brokers indicated height and length as crucial features. Top quality animals were described to be tall with large body frame. Thick and long muscling was reported desirable. In addition, other important features included: a long and straight (level) rump; long and broad loin; long and straight back; and well set and straight legs. Cattle exhibiting a large heart girth in relation to overall body size (height and length of body) were also defined desirable. Three levels of conformation encompassing all the identified features were noted to include:

1. Excellent: Animal of good height (tall), with large frame and long and straight rump, loin and back, large heart girth and straight legs.
2. Good: Animals of medium height (not as tall as the one with excellent conformation), with medium frame, shorter but straight rump, loin and back, medium heart girth and straight legs.
3. Fair: Animals showing some problems/defects such as being very short and small frame, a small heart girth in relation to the overall body size; features on the skeletal size such as lordosis or kyphosis, or feet and legs such as being post-legged, buck-kneed, splay-footed, sickle-hocked etc.).

These are illustrated in Plates 5 to 10 below for cattle, goats and sheep.
More often than not, for camels and shoats, animals of fair conformation were not traded for export. In cattle, while choosing animals for draught power, a large frame was emphasised as a valuable feature, particularly a large chest-girth and strong neck which were said to confer strength. For breeding animals, large frame was noted to be a priority for the target market (the Maasai). The appearance of legs and hooves were also an important feature in stud bull for effective servicing. Conformation was noted to be assessed by visual appraisal from different angles.
3.2 Interaction of characteristics in composition of livestock grades

The interactions (combinations) of the alternative levels of the key characteristics/traits (sex, age, body condition, and conformation) gives rise to the three grades of export quality livestock. In this scheme, difference between some grades may be minimal. However, depending on destination of export and use of the animals, several grades appeared prominent which are described below.

Grades within cattle (bulls) exported to the Gulf

Two categories of cattle, the mature (Waaweyn) and young (Cujuul/Yaryar) were reported to be exported to the Gulf. Grades within these categories are given in Table 8 as reported by brokers:

Table 8. Grades within the bulls exported to the Gulf

<table>
<thead>
<tr>
<th>Category</th>
<th>Grade</th>
<th>Sex</th>
<th>Age (years)</th>
<th>Body condition</th>
<th>Conformation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mature (Waaweyn)</td>
<td>I</td>
<td>Male</td>
<td>5–10</td>
<td>Excellent</td>
<td>Excellent/good</td>
</tr>
<tr>
<td></td>
<td>II</td>
<td>Male</td>
<td>5–10</td>
<td>Good</td>
<td>Good/fair</td>
</tr>
<tr>
<td></td>
<td>III*</td>
<td>Male</td>
<td>5–8</td>
<td>Fair</td>
<td>Fair</td>
</tr>
<tr>
<td>Immature (Cujuul/Yaryar)</td>
<td>I</td>
<td>Male</td>
<td>2.5–4</td>
<td>Excellent</td>
<td>Excellent/good</td>
</tr>
<tr>
<td></td>
<td>II</td>
<td>Male</td>
<td>3–4</td>
<td>Good</td>
<td>Good/fair</td>
</tr>
</tbody>
</table>

* This grade is not applicable in Yemen. Cattle bought as Grade III in Somalia and sold as Grade II in Yemen.

The brokers reported that the proportion of five year-old bull for matures and 2.5 years for immatures falling in Grade I is small, as very few were found to meet the required criteria. Similarly, for all grades, the proportion of 9–10 years old is also small since such bulls are difficult to find in the Somali production system. These were said to be reproductive bulls at the end of their useful life, a point at which, most would have been disposed off. It is however important to note that in Yemen, the grading of cattle, be they mature or immature is restricted to two grades, I and II. What is paid for as Grade III in Somalia is sold as Grade II in Yemen. This grading system favours exporters who are likely to get a premium price for Grade III Somali cattle when they land in Yemen (i.e. they are categorized as Grade II).

Grades within sheep and goats exported to the Gulf

Two categories of shoats were noted to be exported to the Gulf, the mature and immature. These are summarized in Table 9. Sex is not a variable in this case, since only males are exported.

Table 9. Grades within shoats (mature and immature) exported to the Gulf

<table>
<thead>
<tr>
<th>Grade</th>
<th>Age (years)</th>
<th>Body condition</th>
<th>Conformation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheep</td>
<td>Goats</td>
<td>Sheep</td>
<td>Goats</td>
</tr>
<tr>
<td>I</td>
<td>2–5</td>
<td>For all ages FAT</td>
<td>For all ages FAT</td>
</tr>
<tr>
<td>II</td>
<td>2–4</td>
<td>2 years FAT</td>
<td>3 years FAT</td>
</tr>
<tr>
<td>III*</td>
<td>2</td>
<td>3 years NORMAL</td>
<td>4 years NORMAL</td>
</tr>
<tr>
<td>Yemeni market</td>
<td>I</td>
<td>8 months to 1 year</td>
<td>8 months to 1 year</td>
</tr>
<tr>
<td>Chilled meat export trade</td>
<td>I, II, III**</td>
<td>8 months to 2 years</td>
<td>8 months to 2 years</td>
</tr>
</tbody>
</table>

* This grade is not applicable in Yemen. Shoat bought as Grade III in Somalia and sold as Grade II in Yemen.
** II and III grades have been in Belet Weyn market.
It is important to point out that it is only under exceptional circumstances that 2-year old sheep and 3-year old goat are included in Grade I. At this age, these animals are not only less tolerant to stress during trekking and shipment, but they are yet to attain a developed body frame (conformation). Similarly, the proportion of 4 and 5-year old shoats with ‘Normal’ body condition score included in Grade II is limited. It was observed that such animals are traded only when the owner is forced to sell for pressing cash needs, otherwise these are finished up for a longer time to achieve Grade I. More often than not, the Jeeble would purchase such animals for finishing (for about a month) to exploit the price differential due to the improved body condition and grade.

**Grades within cattle exported to Kenya for fattening, draught and breeding**

Three categories of cattle of Somali origin are exported to Kenya, i.e. for fattening, draught power and breeding. Table 10 gives a summary of the different grades traded within these categories.

**Table 10. Grades within cattle exported to Kenya for fattening, draught and breeding**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Sex</th>
<th>Age (years)</th>
<th>Body condition</th>
<th>Conformation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fattening animals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Male</td>
<td>5–6</td>
<td>Excellent</td>
<td>Excellent/good</td>
</tr>
<tr>
<td>Female</td>
<td>5–6</td>
<td>Excellent</td>
<td>Excellent/good</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>Male</td>
<td>5–6</td>
<td>Good</td>
<td>Good/fair</td>
</tr>
<tr>
<td>Females</td>
<td>5–6</td>
<td>Good</td>
<td>Good/fair</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>Male</td>
<td>5–6</td>
<td>Fair</td>
<td>Fair</td>
</tr>
<tr>
<td>Females</td>
<td>5–6</td>
<td>Fair</td>
<td>Fair</td>
<td></td>
</tr>
<tr>
<td>Draught power animals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Male</td>
<td>3–4</td>
<td>Excellent</td>
<td>Excellent/good</td>
</tr>
<tr>
<td>II</td>
<td>Male</td>
<td>3–4</td>
<td>Good</td>
<td>Good/fair</td>
</tr>
<tr>
<td>III</td>
<td>Male</td>
<td>3–4</td>
<td>Fair</td>
<td>Fair</td>
</tr>
<tr>
<td>Breeding animals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Male</td>
<td>4–5</td>
<td>Excellent</td>
<td>Excellent/good</td>
</tr>
<tr>
<td>II</td>
<td>Male</td>
<td>4–5</td>
<td>Good</td>
<td>Good/fair</td>
</tr>
<tr>
<td>III</td>
<td>Male</td>
<td>5–7</td>
<td>Fair</td>
<td>Fair</td>
</tr>
</tbody>
</table>

**Grades within cattle exported to Kenya for slaughter**

The workshops with butchers in Njiru market in Nairobi revealed that there are four grades used in categorizing cattle destined for slaughter for supply of meat in Nairobi. The specific characteristics/traits making up these grades are summarized in Table 11.

**Table 11. Grades within slaughter cattle in Nairobi market**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Sex</th>
<th>Age range (years)</th>
<th>Body condition/fat cover</th>
<th>Conformation</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Female</td>
<td>5–9</td>
<td>Excellent</td>
<td>Good to excellent</td>
</tr>
<tr>
<td>Male</td>
<td>4–7</td>
<td>Excellent</td>
<td>Good to excellent</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>Female</td>
<td>5–9</td>
<td>Good</td>
<td>Fair to good</td>
</tr>
<tr>
<td>Male</td>
<td>4–7</td>
<td>Good</td>
<td>Fair to good</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>Female</td>
<td>4–12</td>
<td>Fair</td>
<td>Fair</td>
</tr>
<tr>
<td>Male</td>
<td>5–12</td>
<td>Fair</td>
<td>Fair</td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>Female</td>
<td>4–12</td>
<td>Poor</td>
<td>Poor</td>
</tr>
<tr>
<td>Male</td>
<td>5–12</td>
<td>Poor</td>
<td>Poor</td>
<td></td>
</tr>
</tbody>
</table>
It was noted that on average, grades II, III and IV contributed to about 20, 60 and 15% of the total number of cattle transacted at Njiru market respectively. More often than not, Grade I was reported to be in limited supply, as few animals qualify due to long trekking and trucking distances.

The distribution of cattle of Somali origin in Kenya is shown in Figure 2.

**Figure 2. Distribution of cattle of Somali origin into Kenya**
It is important to note that a four-category grading system is used in the Nairobi terminal market compared to the three-category system found in the markets upstream. This fact, together with the observation that a relatively small percentage of Grade I cattle are actually traded at Njiru could be a pointer to the loss of condition during trekking and trucking from the distant secondary markets in southern and central Somalia to Nairobi. However, this is one area that needs further investigation. The main markets for each of these grades are shown in Table 12.

**Table 12. Use and destination of the different grades**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Destination/market</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Purchased by traders supplying meat processors (Farmers’ Choice, Alfa Fine, Hurlingam group, KMC)</td>
</tr>
<tr>
<td>II</td>
<td>Purchased by traders supplying meat processors (Farmers’ Choice, Alfa Fine, Hurlingam group, KMC)</td>
</tr>
<tr>
<td></td>
<td>Purchased by meat wholesalers supplying hotels, restaurants, supermarkets and high standard butcheries</td>
</tr>
<tr>
<td>III</td>
<td>Purchased by traders supplying meat processors (Farmers’ Choice, Alfa Fine, Hurlingam group, KMC)</td>
</tr>
<tr>
<td></td>
<td>Purchased by meat wholesalers supplying hotels, restaurants, supermarkets and medium standard butcheries</td>
</tr>
<tr>
<td></td>
<td>Purchased by medium standard butcheries slaughtering directly at Dandora</td>
</tr>
<tr>
<td>IV</td>
<td>Purchased by operators at Burma market*</td>
</tr>
</tbody>
</table>
|       | Purchased by operators at Burma market%
|       | Purchased by medium and low (kiosk) standard butcheries and slaughtering directly at Dandora%

* Most of this meat is sold boneless.

**Grades within camels exported to the Gulf**

Grade categories for camels feature two age categories: mature and young, unlike in cattle where age is graded based on approximate number of years (Table 13). The young were about 3 to 7 years, while mature ranged from 7 to 15 years.

**Table 13. Grade categories for export quality camels from Somalia**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Sex</th>
<th>Body condition</th>
<th>Conformation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matures (Ważweyn)</td>
<td>I</td>
<td>Male</td>
<td>Excellent</td>
</tr>
<tr>
<td>II</td>
<td>Male</td>
<td>Good</td>
<td>Fair to good</td>
</tr>
<tr>
<td>Young (Qaalimo)</td>
<td>I</td>
<td>Male</td>
<td>Excellent</td>
</tr>
<tr>
<td>II</td>
<td>Male</td>
<td>Good</td>
<td>Fair to good</td>
</tr>
</tbody>
</table>

1. Seven year olds may be categorized as either mature or young depending on level of development of the animal.

It was observed that camels were more homogeneous than sheep and goats or cattle, and this was the reason behind the existence of only two grades for export compared to the three for the other two species.

**Seasonal variation in livestock grades**

Since the ascribed livestock body condition was not static, i.e. varied depending on seasons, the same applied to livestock grades. This is because body condition significantly influenced grade. For example, livestock that is Grade II in wet season may turn out to be Grade I in dry season (simply due to the change in variety of animals available for sale). It is also important to note that age was the only varying trait for cattle within the same grade, whereas in shoats, variations were noted in age and to a limited extent in body condition. This grading system that shows a shift in boundaries while allocating grade scores could find explanation in the argument by Erdman (1950) that the principal idea behind assigning grade was to maximize return to sellers. Since the dry season was associated with reduced feed and perhaps watering frequency, most animals lose body condition, which would otherwise be accompanied with reduced prices if flexibility and shifting of boundaries would not have been implemented.
The importance of breed in grading

It was reported that breed was not one of the traits considered in grading partly due to the fact that most of the key informants were familiar with the breed transacted in their markets of operation. That is to say, where only one breed was traded, grades referred to within breed grades and in markets where more than one breed was traded, breed did not play any role due to higher variability within breeds than between breeds because of indiscriminate crossbreeding among herds.

However, information from the demand markets (in Kenya and Yemen) indicated that carcass yield and other properties (like leanness) were a very important factor in selecting cattle for slaughter, and that this varied from one breed to another. Based on this criterion, butchers ranked the Somali cattle breeds in order of preference as shown below:

1. Boran
2. Surco
3. Dauara
4. Gasara

For cattle destined for breeding other important traits were reported to include milk yield and colour. Coat colour was noted to be particularly important for the Maasai livestock keepers who showed strong preference for the red coat colour. In this regard, the Somali breeds were ranked in order of preference as follows:

1. Dauara
2. Boran
3. Surco
4. Gasara

For camels, only one breed was reported to be reared in Somalia. Variation within this breed emanated from ecological factors called in Somali as Ogo and Guban. Camels from Guban (coastal areas) were described as characterized as being smaller sized compared to those from the Ogo (inland plateau). Some degree of variability was reported amongst these types, but such differences did not influence the market value.

### 3.3 Testing of the grades in a real market operations—
the Livestock Marketing Information System (LMIS)

A Livestock Market Information System was set up in October 2007 to collect, collate and disseminate livestock prices (for cattle and shotts) in three markets (Hargeisa, Burao and Tog Wajaale) based on the grading system set out in this paper. Market price data was collected on a weekly basis for each grade of cattle in Tog Wajaale and sheep and goats in Hargeisa and Burao. Figure 3 shows the mean weekly price variations between the three grades of cattle in Tog Wajaale over a period of two years, starting October 2007 to July 2009. The price variation for shotts in Hargeisa and Burao are shown in Figures 4 and 5, respectively.
Figure 3. Mean weekly price variation for the three grades of cattle in Tog Wajaale market, Somalia (October 2007 to July 2009)

Average weekly price (US$/head)

Figure 4. Mean weekly price variation for the three grades of sheeats in Hargeisa market, Somalia (October 2007 to July 2009)

Average weekly price (US$/Sheeat)

Figure 5. Mean weekly price variation for the three grades of shoats in Burao market, Somalia (October 2007 to July 2009)

Average weekly price (US$/Sheeat)
Negassa et al. (2008) analysed the effects of various live animal quality traits on cattle and shoats purchase and selling prices using hedonic price regression model. They established that purchase and selling prices of cattle and shoats increased with age and body condition. In addition, the price of males was also higher than that of female livestock. Information from the market information system set up following this survey also reveals consistently higher prices for Grade I livestock, followed by Grade II and then Grade III for all livestock species. Therefore, intuitively it can be concluded that, in absence of other grading system, the grading system proposed in this paper, would be appropriate for grading quality of export livestock in Somalia.
4 Conclusion and recommendations

This paper has provided evidence of the existence and use of a Somali grading system that categorizes livestock into export categories. The method used—a series of discussions and workshops with market actors—was the first application of this approach in Somalia, to the authors’ knowledge.

The grading system used in Somalia is defined in terms of traits that are easy to measure, viz. sex, age, body condition and conformation. Furthermore, the testing for the various levels of these traits satisfies the basic intuitive requirements of being cheap, non-destructive, and easy to implement. These traits interact to yield what is defined in the study as Grades I, II, and III. The grading in Somalia appears to be driven by exporters to increase their returns. This study has shown that the grading system is uniformly applied more or less in all Somali livestock markets. As expected, superior product grades attract premium prices, whereas those of lower grades are discounted.

Despite the evidence presented here that the grades in use are standardized spatially (the same from one market to another), the same may not be the case temporally (from one season to another). The most important factor making this difference is body condition. This is not a phenomenon unique to Somalia and is based on the argument that grades and standards are supposed to communicate quality, while at the same time maximizing market participants’ incomes. Similar trends have been observed in markets for some agricultural products even in developed economies. The same applies to Yemen where grading is more stringent in periods of low demand and is relaxed during peak demand.

Two issues need to be illuminated regarding the benefits that can be derived from using the grading system. Investing in endeavours that would lead to enhancing the body condition and the conformation of livestock would lead to significant increase in benefits accruing to market participants by reducing seasonal variation in body condition and grades. For example, a 5-year old bull can be shifted from Grade III (fetching about USD 250) to Grade I (about USD 350) by shifting both the body condition and conformation from fair to excellent. Body condition can be improved through investments that can lead to increased access to feed resources (pasture production). This is a short-term intervention. Evidence that some traders are exploiting such an opportunity to obtain premium prices was recorded during this study.

On the other hand, transformation of conformation traits will need targeted breeding and selection programs geared towards enhancing desirable conformation features. This will however need to be accompanied by research into how breeding and selection towards enhanced conformation may influence other traits. But realizing that livestock of excellent conformation thrive in the pastoral environment just as those of fair conformation do, then, there appears to be no apparent risk in breeding aimed at enhancing conformation.

Since the grading system is likely to enhance incomes to producers and traders if its potential is effectively utilized, it would be prudent to implement steps towards its formalization and international recognition. First, responsibility needs to be bestowed to a specific agency (like the Chambers of Commerce) that will be officially tasked with:

- Developing a regulatory framework that will facilitate formalization and publicizing of the grading system to the international trading partners;
• Linking and developing an indicative relationship between the developed grades and the ultimate carcass quality. This will be beneficial to importers who buy livestock directly for slaughter; and

• Creating a central awareness of quality in the marketplace in a way that will foster free movement of products and goods both internally and internationally.
References


Annex 1 Checklist of questions guiding brokers’ discussions to identify attributes delineating livestock grades in Somali markets

Brokers workshop checklist

1. Terra Nuova and ILRI

2. Name of the program: improvement and diversification of Somali livestock trade and marketing

3. Workshop objectives:
   - To explain the grading system in use for export quality cattle for the Middle East and Kenya market
   - To explain the criteria to assign an animal to a particular grade
   - Marketing practices in this livestock market

4. Time table

5. Logistic: class work and field work (photos)

6. Introducing ourselves:
   - Name
   - Age
   - Education
   - Working experience as broker
   - Species you deal with as a broker
   - Do you deal with cattle/small ruminants/camels for the export market of Kenya and/or the Middle East?

7. Which types of transaction mechanisms are in place in this market?
   - Negotiation between buyer and seller
   - Auction
   - Mixed

8. How many brokers presently operate in this market?

9. How many of them deal with cattle/small ruminants for export?

10. How many animals during the peak time in a good market day are transacted at the market?
11. Peak and low time in this market (which months of the year) for the Kenya and Gulf market.

12. Do brokers need a licence or any authorization to work at this market?

13. If yes by whom?

14. How much does it cost?

15. How often do you have to renew it?

16. Who are the sellers with whom brokers negotiate at this market?

17. Who are the buyers with whom brokers negotiate at this market?

18. How many export traders operate in this market? (Please divide between livestock exporters, if any and agents of exporters).

19. How many brokers are involved in negotiating the transaction? (1 or 2, or more)

20. Who pays the broker fee, buyer or seller?

21. How much is the charge for cattle/small ruminants/camels?

22. What is the role of the broker in this market? (Please list all the tasks that the brokers perform).

23. Factors determining quality of cattle/small ruminants/camels for the export market:
   - Sex (males only, females only, both [remember to specify for the Kenya and the Gulf market since sex is different for the two destinations])
   - Age (remember to consider age ranges for the Kenya and the Gulf market separately, and for the Kenya market remember that you have both males and females with their own particular age range)

24. Age range for the Gulf (only males)

25. From the younger age to the older age (e.g. from 3 to 10 years of age)

26. The most frequent or easily available age classes

27. The less frequent or rarely available age classes (e.g. bulls of 9 or 10 years of age)

28. The reason why certain age classes are less easily available/frequent than other age classes.
   - Age range for the Kenya market (both males and females)
   - From the younger to the older age
   - The less frequent or rarely available age classes
   - The reason why certain classes are less easily available than other age classes.

29. Do you classify animals according to the age in specific groups/clusters? (Please list the names in Somali with their meaning in English).

30. Do these different groups have a different market for meat in the importing countries? Do they have different destination in Kenya (e.g. Cujuul for fattening and Waaweyn for direct slaughtering)?

31. How do you estimate the age of cattle? (Please rank the methods in order of importance).

32. Body condition: How do you define body condition? (Remember proportion of meat and other edible parts over bones).
• Which categories of body condition do you identify?
• How do you score body condition? (Remember visually and through palpation).
• Which body areas/anatomical parts do you consider for body condition scoring through visual appraisal and palpation? (Please list the two separately and report the name in Somali after the name in English. Draw the table with all the parts with names in English and Somali and with the columns on visual appraisal and palpation (is the same type of table that you have in the reports).
• When scoring body condition do you correlate it to the animal live body weight?

32. Conformation: how do you define conformation?
• Which conformation aspects do they consider in an animal? Make a list of the aspects that brokers report.
• Which categories of conformation do you identify?
• How do you estimate conformation? (Please rank methods in order of importance).

33. Live body weight: is LBW in this market considered a factor determining quality of animals for export?
• Are you able to estimate LBW in transacted animals? (yes, no)
• If yes, how do you estimate LBW in transacted animals? (Visually, with scale, or how else?) (Please remember that for small ruminants due to the limited weight of the animals brokers may weight them lifting the animal up manually.
• Breed: Are cattle breed considered a factor determining quality of animals for export? Is there any breed preference for export either for the Kenya or for the Gulf markets? (This factor may only be relevant in this market if different breeds are traded; otherwise if there is a single breed this factor may well not be relevant).
• If yes make them list the different breeds in order of importance.
• Make them list breeds in order of importance and ask reasons for preference. Please ask if breed in this case affects price.

34. What is the grading system applied to export animals at this market? (Please make them name and list the number of categories: I, II and III or what else they call or number them).

35. List again all factors they reported to consider in grading.

36. You consider now Waaweyn and Cujuul clusters and the two export markets (Kenya and Gulf market separately) to define accurately Grade I animals by identifying their characteristics. Remember that you may have Waaweyn and Cujuul so you should do this process for both, grades in Waaweyne and grades in Cujuul. You start with sex putting if male or females or both; after that comes age and you write down the age range for males and females differentiated for the Kenya and Gulf markets; after that you write down body condition with the relative class of body condition for animals in this grade (such as: excellent, good and fair), after that comes conformation; after that comes LBW and here you should write down the LBW range from how many kg to how many kg for animals within this grade; after that comes breed and you should specify if only one breed can be considered in the grade or all the breeds having the parameters you specified above can reach this grade.

37. You repeat this process for all the grades composing the system used in the market for Waaweyn and Cujuul. At the end we will have for each grade in each cluster and for each export market all the key characteristics of the different grades used.
38. Grade–price correlation: is the last topic of the workshop for what concerns the class work. It consists linking quality to price to understand how quality impact on price for the different grades identified. Remember that prices should refer to a well-defined point on time, and to the specific export market (Kenya and Gulf). For the time you should take prices for two periods: a) peak time before the ban imposed last January in the Gulf, and before the closure of the Garissa market in December 2006 for the Rift Valley fever outbreak, b) the present time that is the time of the workshop.

39. You start with the Gulf market and you look possibly at Waaweyn and Cujuul. You start from Grade I reporting the range age (e.g. from 5 to 10 years) and you enter the price range starting from the minimum (the price for the 5 years old animal) going to the maximum 9 to 10 years old animal). You do it for all the grades and for the two periods of time so that you will end up with two price ranges.

40. You repeat this for the Kenya market considering Waaweyn and Cujuul starting from Grade I up to the last.
Annex 2 Checklist of questions used in focus group discussions held with agents of Somali traders in Al Makha to identify the grading system for Somali livestock

Checklist for Somali agents of export traders in Al Makha

Date: 
Location: 
Section 1: Marketing chain features

1) Steps at Al Makha port (offloading, inspection, quarantine station etc.). Describe all the steps in the port.

1. From which countries Yemen import livestock? For each mentioned country highlight the species.
2. Which species are imported from Somalia?
3. Any import of chilled meat? If yes from which countries? Which species?
4. How long the animals remain on the vessel before being offloaded?
5. What are the procedures for offloading?
6. Any inspection by the Yemeni Veterinary Services on board of the vessel?
7. For how long the animals remain in the quarantine station at the port?
8. What are the charges per day in the quarantine? Please detail according to species.
9. Where animals go from the quarantine station after all the sanitary procedures are completed?

2) Transactions: from the Somali livestock trader/agent to the Yemeni wholesaler/distributor and to the final retailer (private business, institutions etc.).

1. What are the species more demanded in Yemen according to the number of animals imported? Please rank in order of importance. Why?
2. What is the peak/lean season for small ruminants, cattle and camels in Yemen?
3. How many Somali livestock traders/agents resident in Al Makha do operate at the port?
4. How many Yemeni wholesalers do operate in Al Makha?
5. Are wholesale/distribution operations completely in the hands of Yemeni operators? If not, mention the nationality of the others and the proportions?
6. In which area of the country are the final retailers located?
7. Who are the final retailers for small ruminants (butchers, supermarkets, restaurants etc.)?
9. Who are the final consumers for small ruminants (private consumers, institutions etc.)?
10. Who are the final retailers for cattle (butchers, supermarkets, restaurants etc.)?
11. Who are the final consumers for cattle (private consumers, institutions etc.)?
12. Who are the final retailers for camels (butchers, supermarkets, restaurants etc.)?
13. Who are the final consumers for camels (private consumers, institutions etc.)?
14. Are animals from Al Makha re-exported to any other Middle East country? If yes mention which countries.

3) Contractual arrangements between Somali livestock traders and wholesalers/distributors
1. What are the payment modalities applied to the Somali traders (cash, kind, both)?
2. If both cash and kind are used please specify the proportion.
3. If in kind which goods are exchanged for livestock? Please specify.
4. If in cash which currency is used?
5. In how long the payment is finalized? Does the time of payment change according to the peak or lean season?
6. Do Somali traders deal always with the same wholesalers/distributors? Is it a matter of trust?
7. How payment disputes are solved? Who/which institution come to play in these cases?
8. Are brokers involved in transactions between Somali traders/agents and wholesalers/distributors?
9. Who pay the fees, buyer or seller?
10. How much according to the species?

Section 2: Health requirements
1. Which documents are required by the Yemeni authorities for imported livestock at the arrival?
2. Any vaccination for specific disease required? Please mention that according to species and countries of origin. Why?
3. Are the animals inspected on the vessel?
4. What sanitary measures are implemented in the port quarantine? Please give details of diagnostic tests, treatment, vaccination or else.
5. For how long the animals remain in the quarantine station?
6. In case the animals do not meet the required sanitary standards which measures are taken by the authority?
Section 3: Grading system for the different species

Small ruminants

1. List the quality characteristics considered by the buyers (sex, age, body condition, conformation, weight and breed).

Sex

1. Males only.
2. Males and females.

Age

1. Any age group classification (immature, mature etc.)? Please explain the exact terminology in Arabic.
2. List the age brackets for the different categories.
3. How is age assessed?

Body condition

1. Classification of body condition.
2. How is body condition assessed?

Weight

1. Are animals weighed at the time of the transaction?
2. Is weight estimated at the time of the transaction by traders? How is it estimated?

Conformation

1. Classification of the different conformation.
2. How is conformation assessed?

Breed

1. Is breed a factor in grading?
2. If yes which are the preferred breeds? Please rank them in order of preference.
**Grading system** (Please compile that table for each grade according to the quality characteristics provided in the answers)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Sex</th>
<th>Age</th>
<th>Body condition</th>
<th>Weight</th>
<th>Conformation</th>
<th>Breed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goats</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheep</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes/remarks on grading

**Use and destination of the different grades (if known)**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Destination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goats</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheep</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Grade and price correlation (please compile the table with grades and prices)**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Characteristics (sex, age, body condition, weight, conformation, breed)</th>
<th>Current price range (USD)</th>
<th>Peak season price range (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goats</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheep</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Notes on grade–price correlation

Cattle
1. List the quality characteristics considered by the buyers (sex, age, body condition, conformation, weight and breed).

Sex
1. Males only.
2. Males and females.

Age
1. Any age group classification (immature, mature etc.)? Please explain the exact terminology in Arabic.
2. List the age brackets for the different categories.
3. How age is assessed?

Body condition
1. Classification of body condition.
2. How body condition is assessed?

Weight
1. Are animals weighed at the time of the transaction?
2. Is weight estimated at the time of the transaction by traders? How is it estimated?

Conformation
1. Classification of the different conformation.
2. How conformation is assessed?

Breed
1. Is breed a factor in grading?
2. If yes which are the preferred breeds? Please rank them in order of preference.
Grading system (Please compile that table for each grade according to the quality characteristics provided in the answers)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Sex</th>
<th>Age</th>
<th>Body condition</th>
<th>Weight</th>
<th>Conformation</th>
<th>Breed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes on grading

Use and destination of the different grades (if known)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Destination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td></td>
</tr>
</tbody>
</table>

Grade and price correlation (please compile the table with grades and prices)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Characteristics (sex, age, body condition, weight, conformation, breed)</th>
<th>Current price range (USD)</th>
<th>Peak season price range (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes on grade–price correlation
Camels

1. List the quality characteristics considered by the buyers (sex, age, body condition, conformation, weight and breed).

Sex

1. Males only.
2. Males and females.

Age

1. Any age group classification (immature, mature etc.)? Please explain the exact terminology in Arabic.
2. List the age brackets for the different categories.
3. How is age assessed?

Body condition

1. Classification of body condition.
2. How is body condition assessed?

Weight

1. Are animals weighed at the time of the transaction?
2. Is weight estimated at the time of the transaction by traders? How is it estimated?

Conformation

1. Classification of the different conformation.
2. How is conformation assessed?

Breed

1. Is breed a factor in grading?
2. If yes which are the preferred breeds? Please rank them in order of preference.

**Grading system** (Please compile the table for each grade according to the quality characteristics provided in the answers)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Sex</th>
<th>Age</th>
<th>Body condition</th>
<th>Weight</th>
<th>Conformation</th>
<th>Breed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camels</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Notes on grading

### Use and destination of the different grades (if known)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Destination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camels</td>
<td></td>
</tr>
</tbody>
</table>

### Grade and price correlation (please compile the table with grades and prices)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Characteristics (sex, age, body condition, weight, conformation, breed)</th>
<th>Current price range (USD)</th>
<th>Peak season price range (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camels</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes on grade–price correlation
CGIAR is a global agricultural research partnership for a food-secure future. Its science is carried out by 15 research centres that are members of the CGIAR Consortium in collaboration with hundreds of partner organizations. cgiar.org

The International Livestock Research Institute (ILRI) works to improve food security and reduce poverty in developing countries through research for better and more sustainable use of livestock. ILRI is a member of the CGIAR Consortium, a global research partnership of 15 centres working with many partners for a food-secure future. ILRI has two main campuses in East Africa and other hubs in East, West and southern Africa and South, Southeast and East Asia. ilri.org

ISBN 92–9146–286–1