



**Improving the Livelihoods of Poor Livestock-keepers in  
Africa through Community-Based Management of  
Indigenous Farm Animal Genetic Resources**

2004/05 Progress Report

Kenya Research Team  
University of Hohenheim  
Kenya Agricultural Research Institute  
GEF/GTZ Marsabit Indigenous Vegetation Project  
Egerton University

compiled by

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## TECHNICAL REPORT

**Reporting Period:** 15. September 2004 – 30. September 2005

**Lead Institution:** International Livestock Research Institute (ILRI)

### **ILRI Project Coordinator (Lead Scientist) and Project Scientists**

Dr. Adam G. Drucker (Lead Scientist) <sup>\*1</sup>  
 Dr. Workneh Ayalew  
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### **Collaborating Institutions and Team members including NARS and German Partners for Kenya**

- Kenya Agricultural Research Institute (KARI)
- GEF/GTZ Indigenous Vegetation Project Marsabit (IVP)
- Egerton University (EGU)
- University of Hohenheim (UHOH)

Team members – affiliation	Function
Dr. Alexander Kahi – EGU	NPO, Senior Scientist
Mr. Guyo Haro (M.Sc.) – IVP	SNR, Senior Scientist
Dr. Brigitte Kaufmann – UHOH	Team leader, Senior Scientist
Dr. Christian Hülsebusch – UHOH	Senior Scientist
Prof. Anne Valle Zárate – UHOH	Responsible Senior Scientist
Mr. Harun Warui (M.Sc.) (Topic: Characterisation of AnGR in a production systems context)	PhD Fellow
Dr. Henry Cheruiyot - KARI	Senior Management
Dr. David M. Miano - KARI	Senior Management
Dr. Isaac S. Kosgey - EGU	Senior Scientist
Prof. Abdillahi Aboud - EGU	Senior Scientist
Mr. Samuel Mbuku (B.Sc.) – EGU/UHOH (Topic: Characterisation of the breeding practices of sheep and goat keepers; supervised by Dr. A. Kahi and Dr. I. Kosgey)	M.Sc. Student
Mr. Isacko Tura (B.Sc.) – EGU/UHOH (Topic: Herds history and social networks – Breeds as result of socio-cultural practices; supervised by Prof. Abdillahi Aboud)	M.Sc. Student
Mr. Edward Lentoror (Dipl. Range Management) - IVP	Research Support Staff
Mr. Mamo Sora (B.Sc.) – Ministry of Livestock and Fisheries Development/IVP	Research Support Staff
Mr. Rafael Gudere – Rendille Community	Research Assistant
Mr. John Galgallo - Gabra Community	Research Assistant

### List of activities (chronological) carried out by the Kenya research team

Activity	Time
Preparatory meeting with stakeholders in Marsabit	Jun. 2004
Preparatory meetings with target groups in Marsabit	var. 2004
LoA formulation between ILRI and Hohenheim	Sep. 2004
PhD fellow for Kenyan site selected	Sep. 2004
Developing PhD proposal 01 Harun Warui	Sep. – Nov. 2004
Project stakeholder meeting held at Hohenheim	01. Oct. 2004
Attendance of annual project meeting in Benin Developing Kenya Country Workplan	Oct. 2004
Stakeholder meetings held at KARI and IVP	Dec. 2004.
LoA formulation between KARI and Hohenheim	Dec. 2004 – ong.
LoA formulation between IVP and Hohenheim	Dec. 2004 – ong.
Initial survey and selection of research sites	Dec. 2004
Target communities introduced to the project concept	Dec. 2004
Egerton/Hohenheim graduate student (MSc 01) selected	Dec. 2004
Egerton/Hohenheim graduate student (MSc 02) selected	Dec. 2004
Developing M.Sc. proposal 01 Samuel Mbuku	Jan. 2005
Participant observations in Rendille and Gabra study sites	Feb. 2005
Change of Gabra study site effected	Feb. 2005
Farmer Field School training attended	Mar. 2005
Training on “Characterisation of AnGR...” facilitated	Mar. 2005
Data collection for “characterisation in the system context” in Rendille area	Apr. – May 2005
Training research assistants & enumerators in Rendille area	Apr. 2005
Data collection for breeding and selection system (MSc 01)	Apr. – Jul. 2005
Livelihood indicator survey	Apr. – Jul. 2005
Farmer Field School methodology meeting at Ngurunit	May 28 <sup>th</sup> 2005
Developing M.Sc. proposal 02 Isacko Tura	Jun. 2006
Facilitating set-up of MSc studies 03 and 04 on “market organisation” and “consumer preferences” supervised by I.Baltenweck and A. Drucker	Jul. 2005
Data collection for “characterisation in the system context” in Gabra area	Jun. – Aug. 2005
Training research assistants & enumerators in Gabra area	Jul. 2005
Data collection on “herds history and social networks” (MSc 02)	Aug. 2005
Data compilation, preliminary analysis - preparation of feedback seminars	Aug. 2005
Feedback seminars held at Rendille and Gabra sites	Aug. – Sep. 2005
Attendance of annual meeting in Addis Ababa	Sep. 2005
Upcoming:	
Kenya Research Team national meeting at Egerton University	Sep. 27 <sup>th</sup> 2005

## Project activities described in detail

Activity	Activity Code <small>(as per Kenya Country Workplan)</small>
Description	Deliverable
<b>Preparatory meeting with stakeholders in Marsabit</b>	<b>n/a</b>
Staff of the Agricultural Extension Services and the GEF/GTZ Indigenous Vegetation Project (IVP) were introduced to the project concept. The research topic and methodology were discussed. Persons present at the meeting were Dr. Christian Hülsebusch, Mr. Guyo Haro, Mr. Isacko Tura, Mr.. Mamo Sora. Possible different project foci and project setups at the local level were devised, the options for involvement of GEF/GTZ in project implementation were explored and possible target group communities pre-identified. The composition of a research team and, therein, opportunities for Kenyan B.Sc. holders for further training at M.Sc. level within the scope of the project were discussed; possible candidates were named.	GEF / GTZ Team members informed
<b>Preparatory meetings with target groups in Marsabit</b>	<b>1.2</b>
The project concept, topic and methodology was introduced to different pastoralist groups in the Rendille area around Kargi and Ngurunit and discussed with view to possible livestock populations and sites to be included.	Target groups sensitised
<b>LoA formulation between ILRI and Hohenheim</b>	<b>n/a</b>
An LoA for the project specific partnership was formulated and concluded.	<b>LoA</b>
<b>PhD fellow for Kenyan site selected</b>	<b>4.1.1</b>
Mr. Harun Warui (M.Sc.) was selected among over 20 international candidates in a competitive selection process, based on documents and a written thematic essay consisting of three parts pertaining to the research theme.	Mr. Harun Warui (M.Sc.) on team
<b>Developing PhD proposal 01 Harun Warui and Kenya Country Workplan</b>	<b>4.1.1</b>
The PhD fellow was introduced to the project background, objectives and activities to be carried out, as well as the overall project setup and the site specific project setup in Kenya.	PhD fellow familiarised with project
The PhD fellow developed his research proposal under the guidance of Dr. Kaufmann. The proposal addresses the activity on characterisation of sheep and goat genetic resources in northern Kenya in their production system context. The proposal was publicly presented within the seminar of the Institute for Animal Production in the Tropics and Subtropics, and was discussed and revised accordingly.	PhD Proposal 01
The PhD fellow attended one lecture module and passed the respective exam as part of the requirement for enrolment as PhD student at the University of Hohenheim.	PhD enrolment requirement partly fulfilled

<b>Project stakeholder meeting held at Hohenheim</b>	<b>n/a</b>
<p>A scientific stakeholder meeting organised was held in Hohenheim with:  Dr. Adam Drucker and Dr. Bruno Minjauw (ILRI),  Mr. James Pattison (M.Sc) (University of Edinburgh),  Dr. Ilse Köhler Rollefson (League for Pastoral Peoples),  Prof. Clemens Wollny (University of Göttingen),  Dr. Brigitte Kaufmann, Dr. Christian Hülsebusch (University of Hohenheim),  Mr. Harun Warui (M.Sc) (Hohenheim PhD fellow), and  Dr. Marlis Lindecke (GTZ).</p> <p>Purpose of the workshop was to discuss the methodology to be employed in the different fieldwork activities of the project across the three country sites and as a preparatory workshop to the First Annual Project Workshop and training held in Benin 11-15 October 2004.</p>	Consensus on methodology components reached
<b>Attendance of the annual project workshop held in Benin</b>	<b>n/a</b>
<p>Presentation, discussion and adaptation of the livestock characterisation methodology for implementation by the three country teams. Based on the concluded methodological framework the country workplan for Kenya was revised between the Kenya SNR, Hohenheim staff and Harun Warui.</p>	Kenya Country Workplan
<b>Stakeholder meetings held at KARI and IVP</b>	<b>n/a</b>
<p>KARI's Assistant Director Animal Production, Dr. David Miano, was introduced in detail to the project setup and discussions were held on the content of a project specific Letter of Agreement. There after a series of meetings, with Assistant Directors Range, Animal Production and Animal Health, to discuss the LoA have been held.</p>	KARI senior Management involved
<p>At IVP, discussions with the SRO were held regarding the activities under implementation within the first quarter of the first project year as indicated in the work plan, and the initial survey to select the project study sites. In the Rendille region, Lengima and Farokoren could be the possible sites with pure breed subpopulations of Small East African goats and Black head sheep. In the Gabra region, Malabot or El Boru Magado (near North Horr) or Elgade in Kalacha with subpopulations of Galla/Somali goat or the black head Persian sheep, where pre-selected as possible sites.</p>	IVP involvement defined
<b>LoA formulation between KARI and Hohenheim and between IVP and Hohenheim</b>	<b>n/a</b>
<p>Draft LoA's for both partnerships were formulated and are currently under scrutiny by the respective legal departments of the institutions involved.</p>	<i>LoAs still pending</i>

<b>Initial survey and selection of research sites</b>	<b>1.2</b>
<p>The proposed sites were visited, starting in the Rendille region. At the Rendille township Korr, key informants and local butchers involved in small ruminant butchering and trade were interviewed regarding the choice of research sites.</p> <p>Farakoren was identified as the most promising Rendille site with subpopulations of "Rendille" sheep and goats, which are considered to have only limited contact with outside herds. It is only during the prolonged dry spell when they have to travel as far as or past Merille. Farokoren and Kargi were described as the Rendille regions with the largest herd size of small ruminants per household. However, due to the close proximity of Kargi to the Gabra region a certain degree of cross-breeding was said to occur. Open discussions with Rendille elders in Farakoren confirmed these statements and Farakoren was selected as study site for the Rendille cluster.</p> <p>The small ruminant resources kept at Farakoren are mainly subpopulations of animals corresponding to the available descriptions of Small East African Goats and Black headed sheep.</p> <p>Elboru Magado area was selected to be the research site for the Gabra cluster, based on key informant interviews with butchers, traders, local chiefs and cross verified by open discussions with elders. Meetings were held in each of the sites to introduce the project to the target groups.</p> <p>The small ruminant resources kept are mainly subpopulations of animals corresponding to the available breed descriptions of Somali (Galla) goats (although a so-called "short type") and Blackhead Persian sheep.</p> <p>These fieldwork trips were carried out jointly by the PhD fellow and Mr. Isacko Tura, the prospective Egerton/Hohenheim M.Sc. candidate.</p>	Research sites selected
<b>Target communities introduced to the project concept</b>	<b>1.2</b>
<p>Project meetings were held in December 2004 at Farakoren and Elboru Magado to introduce the project in detail. Members of each of the respective communities were informed about the project concept, why their locations were selected as study sites, and what the investigations would involve on the parts of the communities and the research team respectively. It is important to note that the element of collaboration was stressed by both the livestock keepers and the research team in each research site.</p>	Target communities sensitised – consensus on involvement reached
<b>Egerton/Hohenheim graduate student (MSc 1) selected</b>	<b>4.1.2</b>
Mr. Samuel Mwanzia Mbuku was selected as MSc candidate to be enrolled at Egerton University and supervised by Dr. Alexander Kahi (NPO).	Samuel Mbuku on team
<b>Egerton/Hohenheim graduate student (MSc 2) selected</b>	<b>4.1.2</b>
Mr. Isacko Tura was selected as MSc candidate to be enrolled at Egerton University and supervised by Prof. Abdillahi Aboud.	Isacko Tura on team

<b>Developing M.Sc. proposal 01 Samuel Mbuku</b>	<b>2.1.5 / 4.1.2</b>
Mr. Samuel Mbuku has developed a proposal for an M.Sc. research project entitled "Characterisation of the Breeding Practices of Sheep and Goat Keepers in Northern Kenya", entailing the determination of pastoral animal identification systems and actual and theoretical pastoral selection practices for breeding bucks or rams, as well as identification of the factors that bring about the differences between the actual and theoretical selection practices. The proposal was developed under supervision of the NPO Dr. Alexander Kahi and with feedback from the Hohenheim project staff. Mr. Mbuku has been registered at the University of Egerton in Kenya and has joined the research team for his fieldwork.	MSc Proposal 01
<b>Participant observations in Rendille and Gabra study sites</b>	<b>1.3</b>
<p>In order to develop insights into the small ruminant husbandry system in both study sites, participant observations of 2 weeks at Farakoren (Rendille) and one week at Elboru Magado (Gabra) were carried out by the PhD fellow Harun Warui.</p> <p>Knowledge on current management practices was gained considering different gender, age and wealth classes. Information was gathered on:</p> <ul style="list-style-type: none"> <li>- composition and management considerations for the home based herds;</li> <li>- functions for each animal category;</li> <li>- gender tasks in small stock management;</li> <li>- management of adult small ruminants;</li> <li>- management of young stock;</li> <li>- production aims;</li> <li>- performance types;</li> <li>- breeding, selection, and culling practices;</li> <li>- traits of different breeds (described as <i>Rendille, Gabra, Samburu, Turkana, Dasnach</i> and <i>Somali</i>);</li> <li>- traits and how pastoralists perceive the performance of their own herds;</li> <li>- visions and dreams for small stock production.</li> </ul>	Raw Data documented
Based there upon, check lists to facilitate semi structured interviews were developed for the future data collection.	Interview checklist
<b>Change of Gabra study site effected</b>	<b>1.2</b>
<p>A change of study site in the Gabra area from Elboru Magado to Malabot was found necessary due to the lack of school going children and high illiteracy level among other age groups at this site.</p> <p>Malabot, which is neighbouring Elboru Magado, was chosen as alternative site, meeting the necessary criteria. The change of site was concluded in a joint meeting with the elders in Elboru Magado. A project meeting was held at Malabot to introduce the study in detail. Again, the members of the community were informed about the project concept and on what the investigations would involve on the parts of the communities and the research team.</p> <p>As for Elboru Magado, the small ruminant resources kept at Malabot corresponding to the available breed descriptions of Somali (Galla) goats (again a "short type") and Blackhead Persian sheep.</p>	Gabra research site selected

<b>Farmer Field School training attended</b>	<b>4.1.3</b>
<p>Together with members from the Ethiopia and Benin research teams, the Kenya research team members</p> <p>Edward Lentoror, Raphael Gudere, Mamo Sora, and Harun Warui</p> <p>attended a Farmer Field School (FFS) training at Naivasha/Kenya. The training was course was facilitated by the ILRI/lead FFS team.</p>	<p>Warui, Lentoror, Gudere and Sora trained on FFS methodology</p>
<b>Training on “Characterisation of AnGR...” facilitated</b>	<b>2.1.1 / 4.1.3</b>
<p>The PhD fellow Harun Warui assisted by Dr. Workneh Ayalew from the Ethiopian team facilitated a 3 days training on “Characterisation of animal genetic resources within the production system context following the cybernetic control loop”, for the same participants as in the FFS training.</p>	<p>Research teams trained on Characterisation ...</p>
<p>Each of the country research teams devised an action plan for their respective characterisation work. The Kenya action plan reflects the existing country work plan. It was decided that each team adapts FFS methodology to suit the respective communities involved in the study.</p>	<p>Characterisation action plans by country as per workshop report</p>
<b>Data collection on “Characterisation in the system context” in Rendille area</b>	<b>1.5 / 2.1.2 / 2.1.6</b>
<p>A questionnaire using open questions was developed for comprehensive assessment of functions of livestock, traits and trait expression observed and distinguished by livestock keepers, and livestock keepers assessment of traits expression</p>	<p>Questionnaire</p>
<p>Data collection on started at Farakoren (Rendille). Pre-testing of the open questions was carried out in Farakoren and the content and sequence of questions were reviewed accordingly.</p>	<p>Revised questionnaire</p>
<p>A total of 33 livestock keepers were interviewed. Interviewees were chosen to represent all manyattas (villages) within the Farakoren site.</p> <p>The interview using the open questions was kept flexible to give room for adjustment as the data collection progressed. The order in which the questions were asked varied depending on how informative or patient the respondent was during the interview. In the process of carrying out the interviews, for some questions it would reach a point where no new information was being generated and as such the questions were not asked to the other respondents that followed i.e. a point of redundancy was reached.</p> <p>In addition knowledgeable persons were identified as key informants and informal interviews were held to capture management practices that influence trait expressions. The same key informants provided insights into the methods of assessment of trait expressions by practical demonstrations.</p>	<p>Raw Data documented</p>
<b>Data collection on „breeding and selection system“ (MSc 01)</b>	<b>2.1.5</b>
<p>Mr. Mbuku developed a set of questionnaires on the breeding and selection system under the supervision of Dr. Kahi and with support of the PhD fellow Harun Warui. The questionnaires were pre-tested at Farakoren and Malabot locations and revised accordingly.</p>	<p>Revised questionnaire</p>



A total of 100 households selected through simple random sampling were interviewed in each of the locations Farakoren and Malabot.	Raw Data documented
<b>Livelihood indicator survey</b>	<b>2.1.2/2.1.6</b>
A structured questionnaire was developed to capture information on livelihood indicators.	Questionnaire
The questionnaire was administered to a target sample of 100 livestock keepers in both sites. In the Rendille area, 98 questionnaires were completed from April to June 2005. In the Gabra area, 96 questionnaires were completed from April to July 2005.	Raw Data documented
<b>Training research assistant in the Rendille area</b>	<b>2.1.3</b>
The research assistant in Farakoren was trained on the Interview Guide	Rafael Gudere trained as research assistant
<b>Farmer Field School methodology meeting at Ngurunit</b>	<b>n/a</b>
It was agreed that the FFS activities should to start with group meetings every two months following a model agenda: 1) Special topic facilitated by a subject matter specialist; 2) Review of project activities including assessment of trait expression at population level, and monitoring of management interventions (Participatory Technology Development - PTD); 3) Visiting selected PTDs; 4) Planning for the next meeting. However, this proposal is also topic of the feedback seminars where it will be discussed with the livestock keepers	Kenya FFS activities planned
<b>Developing MSc proposal 02 Isacko Tura</b>	<b>2.1.4 / 4.1.2</b>
Mr. Isacko Tura has developed a proposal for an MSc research project entitled "Herds history and social networks – Breeds as result of socio-cultural practices", including elements of the LIFE approach on participatory breed characterisation. The study focuses on social breeding mechanisms and breed genealogies of sheep and goats. The social breeding mechanisms will entail the norms, values, taboos and rules governing selling, sharing and passing of animals within and outside the community. Breed genealogies will encompass understanding family histories. The proposal was developed under supervision of Prof. Abdillahi Aboud, with feedback from Harun Warui and the Hohenheim project staff. Mr. Tura has been registered at the University of Egerton in Kenya and has joined the research team for his fieldwork.	MSc Proposal 02

<b>Facilitating set-up of MSc studies 03 and 04 on “market organisation” and “consumer preferences” supervised by I. Baltenweck and A. Drucker</b>	<b>3.1.1 / 3.1.2 / 4.1.2</b>
<p>Two MSc students will conduct their fieldwork on aspects of “market organisation” and “consumer preferences” in the Rendille and Gabra area. They will be supervised by I. Baltenweck and A. Drucker and will join the Kenya research team.</p> <p>The students visited the study area in July 2005 for a familiarisation tour and met the PhD fellow in the Gabra site where they were facilitated with site identification.</p> <p>It was agreed that in the Gabra area, in addition to Malabot they will collect information around North Horr township, Elgade, Kalacha and Maikona, whereas in the Rendille area they will target Merille, Korr, Ngurunit and Ilaut in addition to Farakoren</p>	<p>Minutes of meetings at ILRI; Students Field Reports</p>
<b>Data collection on “characterisation in the system context” in Gabra area</b>	<b>1.5 / 2.1.6</b>
<p>Data collection on “characterisation in the system context” was conducted at the Gabra site Malabot (the same methodology was followed as given above under in Rendille area”).</p>	
<p>A total of 22 interviews were held with livestock keepers representing all manyattas (villages) within the Malabot site. Again, key informants provided information on management practices that influence trait expressions in informal interviews, as well as insights into their methods of assessment of trait expressions by practical demonstrations.</p>	<p>Raw Data documented</p>
<b>Training research assistants &amp; enumerators in Gabra area</b>	<b>2.1.3</b>
<p>The research assistant in Malabot was trained on the Interview Guide</p>	<p>John Galgaro trained as research assistant</p>
<b>Data collection on “Herds history and social networks”</b>	<b>2.1.4</b>
<p>A questionnaire was developed by MSc Student Isacko Tura with support from the PhD fellow and with feedback from Egerton and Hohenheim university staff The questionnaire was agreed upon with university supervisor and pre-tested. The data collection will follow in May 2006 after Mr. Tura has completed his coursework.</p>	<p>Questionnaire</p>
<b>Data compilation and preliminary analysis</b>	<b>2.1.7</b>
<p>The data obtained during the baseline survey was compiled and subjected to preliminary analysis.</p>	<p>Preliminary results documented</p>
<p>There-from visualised materials and checklists were produced in preparation of the feedback seminars to be held at the Rendille and Gabra sites.</p>	<p>Feedback seminar materials in form of results charts and drawings</p>

<b>Feedback seminars held at Rendille and Gabra sites</b>	<b>2.1.8</b>
Feedback seminars were held in Malabot on September 3 <sup>rd</sup> and 4 <sup>th</sup> 2005 and in Farakoren on September 7 <sup>th</sup> 2005. The seminars targeted livestock keepers involved in the study, village representatives in the project sites, but were open to other interested community members to attend. A total of 42 and 28 participants attended the seminars in Farakoren and Malabot respectively.	Preliminary results fed back to communities
<b>Attendance of annual meeting in Addis Ababa</b>	<b>4.1.5</b>
Dr. Isaac Kosgey of Egerton University and the PhD fellow Harun Warui represented the Kenya research team at the annual project meeting in Addis Ababa	
<b>Upcoming: Kenya Research Team national meeting at Egerton University</b>	<b>4.2.1</b>
The Kenya Research Team national meeting, organised by the NPO Dr. Kahi was held at Egerton University on September 27 <sup>th</sup> , 2005. Invited participants are:	

## Activities and Milestones as per the Kenya Country Workplan

Activities completed are shaded in blue

Activities started and still ongoing are shaded in tan

Activity (codes to tally proposal)	Milestone	Scheduled	By whom
<b>1 Identification of communities, priority breeds/species and realisation of PRA surveys</b>			
1.1 Collect and analyse existing secondary data	Information on Somali goats and Black head Persian sheep reviewed and compiled (in Germany and in Kenya) by March 2005	10/04 – 03/05	Warui
1.2 Initial survey and selection of Management unit	Information on pure breed animals and where they can be found collected in Marsabit District and possibly neighbouring districts and at least two sites are selected as per survey findings by end of December 2004.	10/04 – 12/04	Warui advised by Haro
	Introductory meetings of the project are held at the selected sites by end of January 2004	10/04 – 03/05	Warui with Tura and Mamo
1.3 Obtaining insight into the small ruminants' husbandry system, their contribution to livelihood and marketing at the household level.	Taking into consideration the different gender, age and wealth classes, through the use of participant observations, determine current management practices of the small stock, by end of February 2005 Preliminary indicators for assessing ex- and post-ante contribution of smallstock to household livelihood developed by end February 2005 Required information on economics of production and marketing of small ruminants at household/herd level determined by February 2005	10/04 – 03/05	Warui & Mamo advised by Pattison
1.4 Holding of community based stakeholders' level planning workshops	Workshops with livestock keepers in the selected management units held and at least 20% (max. of 10 villages) per management unit are selected based on the defined criteria by February 2005	10/04 – 03/05	Village leaders with Haro, Warui, Tura, Mamo
	Mutual agreement on common goals and procedures for collaboration with community (Prior informed consent) are drafted/reached by February 2005	10/04 – 03/05	Village members with Haro, Warui, Tura, Mamo
1.5 Identifying the participating herd owners	At least one willing herd owner and community representative per village identified by February 2005	10/04 – 03/05	Village members with Warui, Haro

Activity (codes to tally proposal)	Milestone	Scheduled	By whom
<b>2 Community-based action research</b>			
<b>2.1 Characterisation of livestock resources in a production systems context</b>			
2.1.1 AnGR characterisation training	Members of the research teams from Ethiopia, Benin and Kenya will have received training on the methodology of "Characterisation of livestock resources in the production system context following the cybernetic control loop"	01/05 - 03/05	Warui with Ayalew
2.1.2 Developing and pre-testing survey instrument for the baseline survey ("Characterisation in the system context" and "Livelihood indicators")	Survey instruments are developed as per the appraisal of husbandry practices and tested by February 2005	10/04 – 03/05	Warui and Mamo
2.1.3 Training of enumerators	At least 2 enumerators are trained on the survey instruments by March 2005	10/04 – 03/05	Warui
2.1.4 Establishing herd histories to obtain breed genealogies and information on socio-cultural practices related to breeding stock	The origins of the animals (breeding females and males) in at least 10 herds are recorded by May 2005. Social networks, including institutions (e.g. rules), for exchange of breeding animals and breeding practices are established by May 2005	01/05 – 06/05	Isacko Tura support: Warui, superv.: Aboud, backst.: Köhler-Rollefson)
2.1.5 Characterisation of the Breeding Practices of Sheep and Goat Keepers	Pastoral animal identification systems and actual and theoretical pastoral selection practices for breeding bucks or rams, as well as identification of the factors that bring about the differences between the actual and theoretical selection practices are described.	01/05 – 06/05	Samuel Mbuku support: Warui, superv.: Kahi
2.1.6 Carrying out baseline survey ("Charcterisation in the system context" and "Livelyhood indicators") 3 month data collection	Data on functions of livestock, traits and trait expression, breeding and selection system, livestock keepers assessment of traits expression Livelihood indicators and economic of production are collected by June 2005	01/05 – 06/05	Warui with enumerator
2.1.7 Preliminary analysis of survey data	Preliminary survey report prepared for discussion in feedback seminars with the test livestock keepers by August 2005	01/05 – 09/05	Warui (assisted by Pattison)

<b>Activity</b> (codes to tally proposal)	<b>Milestone</b>	<b>Scheduled</b>	<b>By whom</b>
2.1.8 Conducting feedback seminars for the participating livestock keepers	At least 2 feedback seminars are conducted per study site to agree on traits for characterisation and the methods of how to be done in their herds by August 2005	08/05	Warui responsible (Haro, Mamo, enumerators and the participating herders)
2.1.9 Facilitating herder to collect data for characterisation	1 household member (preferably 16 year old children) identified and trained on regular data collection by August 2005	07/05 – 09/05	Warui and enumerators
2.1.10 Data collection from the herds	Data on the traits agreed are collected over a period of three months by December 2005	07/05 – 12/05	Household data monitors (assisted by Mamo and enumerators)
	Additional data collection on traits relevant to herders but easily measured continue from January 2006)	07/05 – 12/05	Enumerators (assisted by Warui)
2.1.11 Analysis of data collected by herder	Preliminary report on the characteristics of the breed prepared by February 2006	07/05 – 03/06	Warui
2.1.12 Feedback of the results of the characterisation (average performance plus variation in performance)	2 feedback seminars in order to identify management practices leading to high or low performance levels conducted for the participating herders including other members of the selected villages in the management unit by February 2006	01/06 – 03/06	Warui
<b>2.2 Development, establishment, monitoring and assessment of CBM frameworks</b>			
2.2.1 Development an action plan building on the outputs form the feedback seminars	At least 5 herders per site agree to try out identified promising management practices by April 2006	01/06 – 06/06	Willing Herders
2.2.2 Monitoring	Household data collectors (e.g. about 16 years old) continue to collect data on trait expressions (and indicators )by April 2006	01/06 – 09/07	Household data collectors
2.2.3 Supervision of monitoring	Once a months all household data collectors were visited by enumerators/monitors	01/06 – 09/07	Enumerators

<b>Activity</b> (codes to tally proposal)	<b>Milestone</b>	<b>Scheduled</b>	<b>By whom</b>
2.2.4 Assessment of result of the trials	Collected data are analysed and the suitable management practices identified and recommended for scaling up in the management unit by May 2006	04/06 – 09/06	Mamo, Isacko support: Warui
2.2.5 Sharing of results among livestock keepers of the different sites	At least three stakeholder meetings for information sharing between the sites conducted	08/05 08/06 05/07	Haro assisted by Warui, Issako, Mamo)
2.2.5 Support promotion of suitable management practices as per recommendation	Herders in each site are assisted to disseminate the suitable management practices for instance through field days (at least 2 field days per site) and exchange visits by June 2006	04/06 – 09/06	Herders assisted by Mamo
2.2.6 Institutionalisation of support for the participatory monitoring, evaluation and dissemination	Until at least end of the project Facilitate stakeholders workshop for sharing research results for up-scaling of best bet practices	01/06 – 09/07	Herders support: MLFD staff lead by Mamo; N.N. stakeholders
2.2.7 Preliminary impact assessment	Collection of livelihood indicators and establish changes of livelihood indicators over baseline status	07/07 – 09/07	Isacko Tura superv.: Pattison
<b>3 Analysis of the economic, market and policy factors influencing the conservation and sustainable use of AnGR</b> <i>(influencing the outcome of the smallstock husbandry on household level)</i>			
<b>3.1 Economic and market analysis</b>			
3.1.1 Survey on market organisation and alternative markets for livestock and livestock product	Literature review and collaboration with other stakeholders eg LINKS, PARIMA etc. is important Data on market organisations and alternative markets for livestock and livestock products are collected and analysed by June 2006..	01/06 – 06/06	MSc student (supervised by Girma and Drucker)
3.1.2 Consumer surveys	Data on consumer preference / competitive advantage for livestock products from Blackhead Persian and Somali goat from Marsabit district are collected and analysed by June 2006	01/06 – 06/06	MSc student superv.: Drucker, Baltenweck
<b>3.2 Institutional and policy analysis</b>			
Identification and assessment of policies governing the livestock marketing	Policies documented by June 2007	04/07 – 06/07	MSc student superv.: Drucker, Baltenweck

Activity (codes to tally proposal)	Milestone	Scheduled	By whom
<b>4 Capacity building and dissemination</b>			
<b>4.1 National capacity building</b>			
4.1.1 Ph D Student	1 PhD student		
4.1.2 MSc Student	At least 3 MSc students		
4.1.3 Training courses	Farmer Field Schools TOT; Characterisation of animal genetic resources within the production system context following the cybernetic control loop	02 - 03/05	ILRI Team, Warui, Ayalew, Kaufmann
4.1.5 Annual review & planning workshop	Addis Abbaba, all research Teams	09/05	Drucker, with all research teams
<b>4.2 Dissemination of research results</b>			
4.2.1 Kenya National level workshop	Information is shared with staff of Ministry of Livestock, KARI, University of Egerton, IVP, Hohenheim University and other interested stakeholders, e.g. organisations supporting livestock production (possibly in combination with the CRAC –KARI meeting)	09/05 02/06 02/07	Kahi, with Kenya research team
4.2.2 Scientific papers, etc.	Results are presented in National and international level conferences, scientific papers		
4.2.3 Reporting	Annual & final reports	08/05 08/06 08/07	
4.2.4 Report for community preferably in local language	Information collected and knowledge elaborated during the project documented and translated	08/05 08/06	
4.2.5 Dissemination workshop	Principal partners of the project of each country plus international organisations and donors	07/07 – 09/07	



## REPORT OF RESULTS

As the first data collection phases are only just completed, detailed results cannot be presented at this point. The following section provides detailed information on the study area based on a literature review, information on the livestock resources present in the study area and targeted by this study, based on both literature review and data and evidence gathered during the initial fieldwork phase. It will then give an example of the first feedback seminars held with livestock keepers at the Kenyan study sites.

### 1 Study location

The study is carried out in Marsabit District, of northern Kenya (figure 1). The district is subdivided into 6 administrative divisions, i.e. Laisamis, Loiyangalani, North Horr, South Horr, and Central Division. In late 1995, Sololo and Moyale divisions, which previously also belonged to Marsabit District where separated and since then form the new "Moyale District". It must therefore be noted that figures obtained from sources prior to 1996 refer to the old larger Marsabit District, while figures from newer sources refer to a newer, much smaller Marsabit District.

#### 1.1 Human population

The district's population in 1991 was estimated at 157,000 (Chabari and Njiru, 1991) of which about 80 percent were pastoralists, 10 percent were farmers on the mountains, and 10 percent were engaged in commerce or were wage earners. Newer figures estimate a population of 175,000 inhabitants for Marsabit and Moyale Districts together and 121,000 inhabitants for the new Marsabit District alone (Statoids 2005).

The general population census for Kenya in 1989 counted 26,536 Rendille ("pure" Rendille plus Arial Rendille), 35,726 Gabra, 80,160 Boran and 80,004 Garre (a Somali clan) (Government of Kenya, 1989). However, the majority of the Garre live in Wajir and Mandera Districts, and the Boran also inhabit Isiolo District, hence, exact figures of population census by ethnic group are not available for Marsabit District.

The Rendille are said to have their ancestral origins among the Somali, but are considered an own ethnic group with their own language Kirendille, inhabiting the south-west of the district (figure 1). The Gabra originate from the Galla people of Ethiopia. Although in the past the Gabra used to migrate between Kenya and Ethiopia in search of pasture, the present Kenya Gabra population became resident at the beginning of the century (O'Leary, 1985). They speak the Galla language, which is also used by the Boran and some Somali clans in northern Kenya.

Rendille culture promotes large scale co-operation between households (Spencer, 1973; O'Leary and Palsson, 1992), while Gabra culture shows greater acceptance of independent action. This socio-cultural contrast is reflected in settlement patterns. The average size Rendille camp has 24 houses, but some camps have up to 70 houses (O'Leary and Palsson, 1992). This is approximately four times larger than an average Gabra camp. While O'Leary (1985) and Schlee (1991) described 50 percent of the Rendille households

to be settled at trading centres for most of the year, a more recent study found that most of the pure Rendille settled around the two main trading centres Korr and Kargi in 1991/92. The cause for this was seen in the increasing insecurity in the area (Fratkin, 1992).

The average size of Gabra camps varies from 4 to 5 houses (O'Leary and Palsson, 1992). The smaller camps of the Gabra are more mobile than those of the Rendille. Gabra camps are more widely spread over their area than nomadic Rendille camps and in addition localised concentrations of nomadic camps are usually less dense in Gabra country (O'Leary, 1985). The Gabra utilise around 40 to 60 percent of their total area depending on the season. Only in areas where livestock rustling is common and security is bad, Gabra resort to building large settlements.

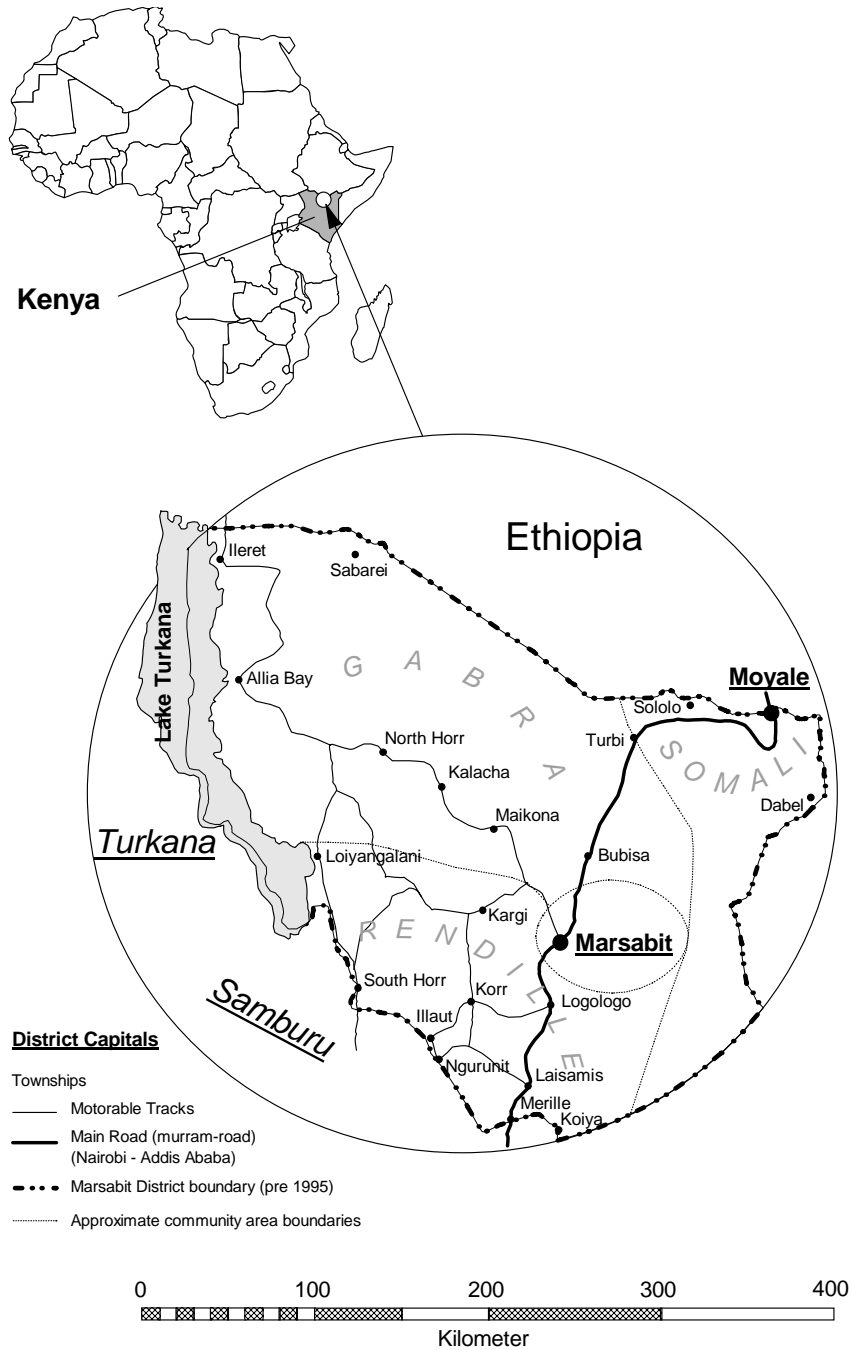
## **1.2 Land resources**

Marsabit District prior to 1996 covered about 71,000 km<sup>2</sup>, the new Marsabit District since 1996 covers about 61,000 km<sup>2</sup> and is the second largest district of Kenya. It borders Ethiopia to the north, Moyale and Wajir Districts to the east, Isiolo and Samburu Districts to the south and Lake Turkana to the west. Unimproved rangeland utilised through mobile pastoral production accounts for about 54,000 km<sup>2</sup> (85 % of the district) and the Chalbi desert extends over 1,200 km<sup>2</sup>. About 5,000 km<sup>2</sup> were demarcated as national parks or reserves, the remainder being fertile upland or hill-slope farming areas. The district today is subdivided into 6 administrative divisions, i.e. Laisamis, Loiyangalani, North Horr, South Horr, and Central Division.

The pastoral groups involved in this project, the Rendille and the Gabra, inhabit distinct parts of Marsabit, with the Gabra area in the north-western part and the Rendille area in the south-western part of the district. They utilise their range resources with virtually no overlap.

Rendille pastoralists inhabit Laisamis and Loiyangalani divisions. The Rendille area covers about 11,000 km<sup>2</sup> between 2° and 3° North and 37° and 38° East. Sedimentary plains at about 350 m a.s.l. (above sea level) are the prevailing landform. The Rendille utilise to some extent the foot slopes of Mount Kulal to the west and Mount Marsabit to the east. These mountains rise to about 700 m a.s.l. and consist of volcanic rock (lava). Further south, the Rendille co-inhabit the foot slopes of the Ndoto Mountains with the Samburu, and intermarriages between Rendille and Samburu formed the mixed Arial tribe (Spencer, 1973; Fratkin, 1991). The northern borderline towards the Gabra area crosses the Chalbi Desert.

The area inhabited by the Gabra stretches from the shores of Lake Turkana in the west to the Bula Dera plain, east of the Marsabit-Moyale road (Torry, 1973; Lusigi, 1981), and falls mainly into North Horr and South Horr divisions. To the north it is bordered by the Magedo escarpment in Ethiopia and to the south by the Chalbi desert. The area is situated between 3° and 4° North and 36.5° and 38.5° East and covers about 27,000 km<sup>2</sup>. Except for the Chalbi desert, which is an old lake bed sediment at about 300 m a.s.l., the Gabra area is mainly of volcanic origin at an altitude of about 400 to 600 m a.s.l., the slopes of the Hurri Hills rising up to 800 m a.s.l.

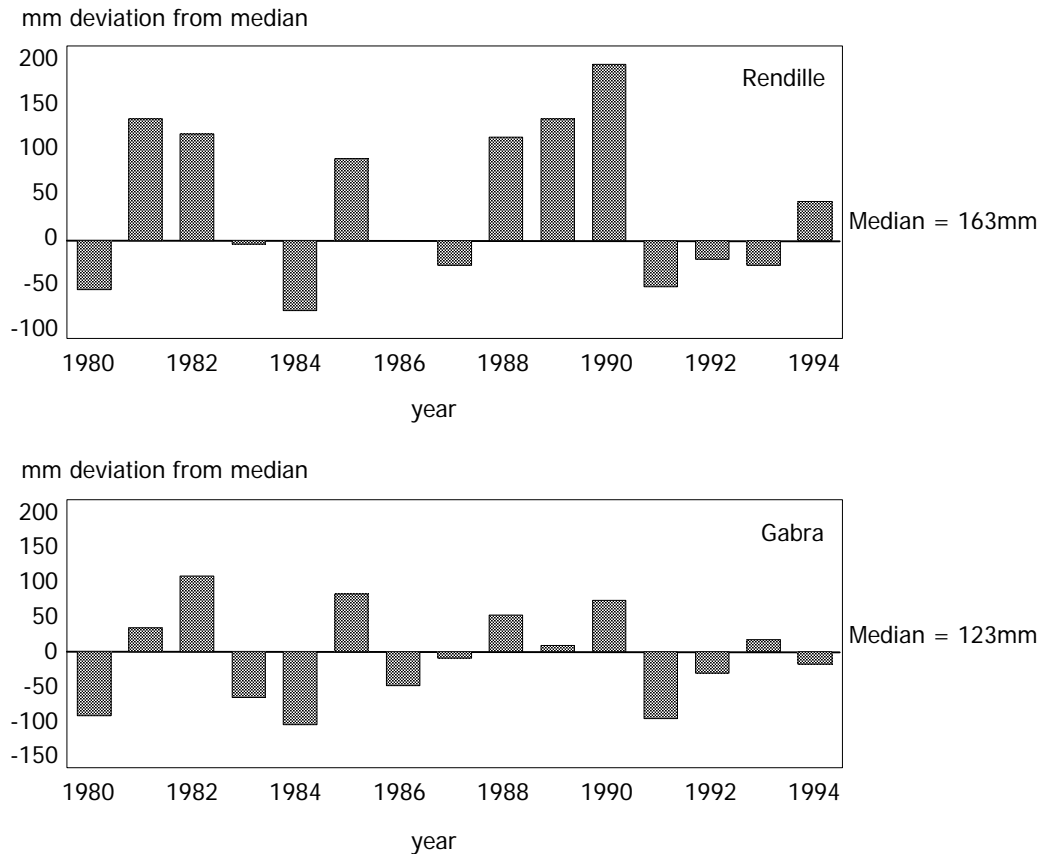


**Figure 1: Map of the study area in Marsabit District**

### 1.3 Rainfall

Rainfall in northern Kenya follows a biannual pattern. The long rainy season from March to May brings the majority of rain, whereas the short rainy season from October to November brings only little rain and often fails completely. The median rainfall for the Rendille and the Gabra area was calculated from rainfall data for the period 1980 to 1994 obtained from the Kenya Meteorological Department (figure 2).

The annual deviation from the median is plotted for the Rendille and Gabra areas respectively. The figure is based on aggregated annual rainfall data for the years 1980 to 1994 from six locations in the study area, i.e. Korr, Kargi and Logologo for the Rendille and Maikona, Bubisa and North Horr for the Gabra area. Data are being requested from the Kenya Meteorological Department to extend this time series up to present.



**Figure 2: Rainfall distribution for 1980 to 1994 (Kenya Meteorological Department)**

Schwartz et al. (1991) provide a map on long term rainfall distribution for 1957 to 1987. Median annual rainfall in the Rendille area was 150 to 300 mm in the sedimentary plains and up to 500 mm on the foot slopes of the mountains. Median annual rainfall in the Gabra area was 150 to 300 mm throughout with only the slopes of the Hurri Hills receiving 500 mm. The reliability of rainfall during the period from 1957 to 1987 for the different areas was also extracted from rainfall maps (Schwartz et al., 1991) and is summarised in table 1.

**Table 1: Reliability of rainfall and average length of growing period (Schwartz et al., 1991)**

	Rendille	Gabra
Rainfall long rainy season (mm) (66% reliability)	50-100	50-100
Rainfall short rainy season (mm) (66% reliability)	0-25	0-25
Growing period in long rainy season (days)	20-50	20-50
Growing period in short rainy season (days)	0-20	0-20
Maximum lengths of droughts observed (months)	12-20	12-20

#### 1.4 Water resources

The majority of surface springs, which constitute the core of the natural water system, are found at the perimeter of Chalbi Desert (table 2). During dry seasons, these water sources are supplemented by water-holes dug in and close to the seasonal river beds. Several boreholes and shallow wells provide additional water. Boreholes normally yield more than shallow wells, however, they are frequently non-operative due to lack of fuel or mechanical breakdowns. Detailed information on yield, distribution and water quality is found in Bake (1991).

**Table 2: Availability of water sources in the study area (Bake, 1991)**

Number per 1000 km <sup>2</sup>	Rendille	Gabra
Wells	2,1	2,4
Boreholes	0,4	0,3
Springs	0,6	0,8

#### 1.5 Vegetation and biomass production

Information on vegetation and terminology are drawn from Schwartz et al. (1991).

In the Rendille area, the dominant vegetation is "bushed grassland", with a tree- and shrub-coverage of less than 10 percent. Either *Acacia melifera*/*Acacia reficiens*- or *Acacia-Capperacea*-associations are found. The latter prevails in the central area, where it is mixed with "dwarf-shrub/annual-grassland". From the central area towards the Chalbi desert dwarf-shrub becomes predominant. Deciduous shrubland, either open or with thickets, is found in other parts. Evergreen bushland is only found at the slopes of the mountains. The area around Korr has been degraded during the past 20 years leading to stretches of barren land between *Commiphora-Acacia* bushed grassland.

Most of the land in the Gabra area is barren with stretches of "bushed grassland" or "dwarf-shrub/annual-grassland". The sparse vegetation is not regarded as a result of human impact (Schwartz et al., 1991). "Bushed grassland" is dominant on the foot slopes

and ridges of the Hurri Hills around Kalacha and Maikona. Bushland and perennial grassland is found higher on the Hurri Hills.

Natural pasture prevails throughout the lowland parts of the district as the climate is too dry and variable to invest in crop farming or pasture improvement measures. The overall production potential is low. Using the biomass production given for the range units by Schwartz and Walsh (1991) the average annual dry matter biomass production for the Rendille and Gabra range areas was calculated and is given in table 3.

**Table 3: Average annual biomass production in kg DM/ha (based on data published by Schwartz and Walsh, 1991)**

	Rendille	Gabra
Herbal layer (kg DM/ha)	1190	1301
Shrub layer (kg DM/ha)	469	534
Total (kg DM/ha)	1659	1835

The figures presented in table 3 must be interpreted with caution, as rainfall varies greatly both temporally and spatially, whence a large spatial and temporal heterogeneity in vegetation results. However, being averages over several years, they can serve as indicators of forage availability if it is borne in mind that biomass can fall critically short of this average in drought years. For the Rendille area, during the years 1980 – 1994, the median annual rainfall across the different range units varied from 200 mm to 380 mm, whereby two thirds fell during the long rains and one third during the short rains. Across the range units, herb layer forage biomass production ranged from 608 to 1332 kg/ha and 293 to 702 kg/ha following the long and the short rains respectively. Shrub layer forage biomass production ranged from 242 to 668 kg/ha and 57 to 298 kg/ha after long and short rains respectively (calculated from Schwartz et al., 1991).

The access to forage is in some areas further constrained by land surface structure (e.g. surface stones and boulders) and soil (e.g. muddiness of clay soil area during rainy seasons). The proportion of rangeland with restricted accessibility is given in table 4.

**Table 4: Rangeland area with restricted access for livestock because of constraints**

	Rendille	Gabra
Maximum distance to permanent water sources (km)	>15	>15
Proportion of rangeland with permanent restrictions in accessibility due to landforms and soil		
Severely restricted (%)	10	40
Medium restricted (%)	30	30
Not restricted (%)	60	30
Total	100	100

Source: SCHWARTZ et al., 1991

### 1.6 Infrastructure and market outlets

The infrastructure of the district is poor as in most of Kenya's remote areas. There is only one main "all weather road", connecting Isiolo and Moyale. This is a graded non-tarmac road, virtually impassable for heavy vehicles during the rainy season, which is the reason for high transport costs, low traffic and insecurity. Motorised traffic is negligible on all other roads and tracks in the district. Telephone facilities are limited to the townships of Marsabit, Laisamis and Moyale, and radio services are only operated on a private basis by missionary stations and development organisations. Poor infrastructure is seen as one major constraint to market access (Chabari and Njiru, 1991).

During the 60's and 70's, missionary stations were established at various places in the Rendille and Gabra area. They were mostly surrounded in due course by the chief's office, dispensaries, schools, water supply systems, famine-relief distribution centres and some small traders private shops (Njiru, 1986).

The major restrictions to livestock marketing in Marsabit District are poor quality roads, frequent quarantine restrictions, cumbersome transport and movement regulations, lack of reliable market information, scarcity of handling facilities, stock rustling and general insecurity, poor terms of trade, absence of consistent livestock marketing policies, and hence dependency on private traders (Chabari and Njiru, 1991). There are always more animals on offer than in demand, strengthening the position of the traders. In addition, the terms of trade are unfavourable for the pastoralists, i.e. high prices of cereals, sugar and other commodities coming into the area, and low prices for livestock, both due to high transport costs and poor infrastructure.

### 1.7 Overall production conditions

As outlined above, the Rendille and Gabra operate under different production conditions. While the Rendille are nowadays virtually settled around trading centres, the Gabra live more dispersed over their rangeland areas. This has also historical reasons: Rendille were always less flexible due to traditionally larger settlement sizes. Market facilities are poor in

the remote areas, especially in the Gabra area. Table 5 summarises the major differences in production conditions.

**Table 5: Production conditions in the study area**

	Rendille	Gabra
Vegetation	scarce	scarce
Drought risk	high	high
Size of settlement	large	small
Population concentration	near town	scattered
Market access	medium	poor

## 2 Livestock resources

Pastoralists in Marsabit District keep camels and/or cattle as large stock and goats and sheep as smallstock (O'Leary, 1985). According to a livestock census by Surtech (1993), cattle are more numerous than camels, however, camels account for the majority of livestock biomass if expressed in livestock units (LU)<sup>1</sup> (table 6).

**Table 6: Livestock numbers in Marsabit District (Surtech, 1993)**

Livestock	Head	LU*	LU/km <sup>2</sup>
Camels	274,000	274,000	4.2
Cattle	354,000	247,800	3.8
Goats	504,000	80,640	1.2
Sheep	503,000	80,480	1.2
Total	1,635,000	682,920	10.5

\*LU = livestock unit

### Sheep and goat breeds

The goat and sheep populations are not uniform throughout the district, but seem to consist of specific sub-populations in different locations. Especially the sub-populations kept by Gabra livestock keepers in the Kalacha area are renowned beyond their location of origin for being superior animals. Livestock keepers from other locations apparently try to acquire breeding stock from the Kalacha area, but up to now there is no systematic exchange taking place (pers. comm. Guyo Haro, 2004).

<sup>1</sup> 1 camel = 1 livestock unit (LU); 1 cattle = 0.7 LU; 1 goat or sheep = 0.16 LU



The present study started out by trying to identify the sheep and goat breeds kept by the pastoralists in the Rendille and the Gabra area and to choose the specific study locations, one in the Rendille and one in the Gabra area.

At the Rendille township Korr, key informants and local butchers involved in small ruminant butchering and trade were interviewed regarding the choice of research sites. Farokoren was identified as the most promising Rendille site with subpopulations of sheep and goats referred to as “Rendille” goats, which are considered to have only limited contact with outside herds. It is only during the prolonged dry spell when they have to travel as far as or past Merille. Farokoren and Kargi were described as the Rendille regions with the largest herd size of small ruminants per household. However, due to the close proximity of Kargi to the Gabra region a certain degree of cross-breeding was said to occur. Open discussions with Rendille elders in Farokoren confirmed these statements. Farokoren was therefore selected as study site for the Rendille area. The small ruminant resources kept at Farokoren are mainly subpopulations of animals corresponding to descriptions in the scientific literature and in breed databases of Small East African Goats and East African Black headed sheep (table 7).

Elboru Magado area was initially selected to be the research site for the Gabra area, based on key informant interviews with butchers, traders, local chiefs and cross verified by open discussions with elders. However, due to the lack of school going children and high illiteracy level among other age groups at Elboru Magado, Malabot was finally chosen as the Gabra site, as literacy criteria are important when aiming at community based animal recording schemes. Malabot is neighbouring Elboru Magado. The small ruminant resources kept at Malabot corresponding to breed descriptions of Somali (Galla) goats (a so-called “short type”) and the Blackhead Somali (Blackhead Persian) sheep (table 7).

**Table 7 Sheep and goats identified and chosen as “target breeds” in the Rendille and Gabra area**

	Rendille	Gabra
Sheep	Blackhead sheep	Blackhead Somali (Blackhead Persian) sheep
Goats	Small East African goat	Somali (Galla) goat (“short type”); Small East African goat

A preliminary review of scientific literature and internet resources on livestock breeds, their origin, characteristics and figures on their population status revealed the following information on the “breeds” identified.

***Blackhead East African Sheep***

According to DAGRIS (2005), the East African Blackheaded sheep is a breed of fat-tailed hair sheep, and has its main area of distribution in semiarid regions of Tanzania and Uganda, and which is also known by the synonyms Tanganyika Long-legged, Ugogo.

While similar to the Blackhead Somali (cf. below) in colour - with black head and fore part of neck, the rest of the body being white with occasional black spots – the coat is short and coarse. Horns are usually absent, but if present they are either short or just manifest as scurs. The ears are short and either pendulous or vestigial. Apart from the fat-tail, which is variable in shape, length and amount of fat deposit, further small fat deposits (pads) are present on the nose and behind the head. Neck and legs are long, the legs being poorly fleshed (Wilson, 1991).

DAGRIS (2005) assigns the Blackhead East-African to the group of fat-tailed hair sheep of African origin, which is found in the whole of eastern and southern Africa from Ethiopia southwards. The whole group is said to be very variable both in tail form and in extent of woolly undercoat. However, the fat deposit in the tail is thought to be the decisive trait for pastoral communities, as it is a source of energy-rich food. It is believed that this might have contributed to the replacement of the original thin-tailed sheep by the fat-tailed types. According to DAGRIS (2005), the risk status of the Blackhead East African sheep population is unknown and no population figures are given (DAGRIS, 2005).

### **Blackhead Somali (Blackhead Persian) Sheep**

DAGRIS (2005) refers to the breed name Blackhead Persian as synonym applied to the Blackhead Somali, a fat-rumped hair sheep which is commonly known in different areas under a number of further synonyms: Berbera Blackhead, Blackhead Ogaden, Toposa (Sudan), Murle, Turkana, Gabbra, Boran, Adali (Afar blackhead), East African Blackheaded Persian (Uganda). According to DAGRIS (2005), Blackhead Persian refers to sheep of Blackhead Somali origin, which were transported to South Africa in 1869 and henceforth were genetically improved. The breed "Blackhead Persian" was registered in the South African Stud book in 1906, and by 1930 there were registered studs with 4000 animals. It has since been used to produce several recently developed breeds (Wilson, 1991). According to Epstein (1971), the South African breed name "Blackhead Persian" is misleading, as the breed did apparently not originate from Persia but from Somaliland and developed through crossing with local domesticated stock and selective breeding (Epstein, 1971).

Wilson (1991) describes the most common features as the fat rump, the black colour of the head and neck, and the white of the body and limbs. Horns are absent (even though scurs occur) and the ears are short to moderately long. According to DAGRIS (2005) it appears to be difficult to unambiguously attribute the Blackhead Somali to either the fat-rumped or the fat-tailed group of sheep. Its short, smooth coat is believed to indicate the breed having evolved from the crossbred progeny of fat-tailed and thin-tailed sheep. All western Asian fat-tailed sheep breeds have considerably longer hair than the Blackhead Somali sheep, while several East African fat-tailed breeds that have interbred with thin-tailed sheep bear the same short coat, which may therefore be inherited from the African ancestors. The distribution range of the Blackhead Somali sheep in East Africa includes Somalia, eastern Ethiopia, and North Kenya. According to DAGRIS (2005), the risk status of the population is unknown and no population figures are given.

### **Small East African Goat**

According to DAGRIS (2005), the Small East African Goat is widely distributed throughout East Africa and also known in different locations by the synonyms East African Dwarf, Sebei, Karamoja, Tanzania, Zambian. The breed belongs to the group of short-eared and small-horned goats. The Small East African Goat is described as a diverse group of goats with variable type, conformation and body size, with an average height at withers of 60 cm and an adult body weight of 25 kg. They are hardy animals, and both sexes wear horns of variable size up to 25 cm in length. Ears are prick and of moderate size, wattles are common and the coat is usually short, fine and smooth. The coat colour varies in colour type and pattern (Epstein, 1971). The Small East African Goat is distributed throughout a wide and diverse range of environments in Kenya, Tanzania, Uganda and southwards through central Africa as far as Zaire, Angola and the north of Namibia. However, no detailed records on their distribution and population status are available from DAGRIS (2005).

Domestic goats with scimitar-like horns (a scimitar is a curved dagger) are considered to have descended from the Bezoar goat (*Capra hircus aegargus*), which still exists in south-west Asia. Domestication occurred before 7,000 BC around the borders of the present-day Iran and Iraq. Goats had reached Egypt by the 5<sup>th</sup> millennium BC and small, short-eared, sabre-horned, goats appear on tomb paintings of the 4<sup>th</sup> millennium. Apparently, these types of goats were gradually replaced in Egypt by goats with spiral or corkscrew horns, which entered Egypt from the east about 3,500 BC. However, the short-eared and short-horned goats persisted in equatorial west, central and east Africa (DAGRIS, 2005).

### **Somali (Galla) Goat**

According to DAGRIS (2005), the Somali Goat is also known by the synonyms Long-eared Somali, Large-White Somali, Galla, Digodi, Melebo, Boran Somali, Benadir, Gigwain, and it belongs to the short-eared and small-horned group of goat breeds. This Somali goat also belongs to the group of domestic goats with scimitar-shaped horns, which descended from the Bezoar goat. The Somali Goat is described as relatively large (70 to 75 cm in height and 31 to 42 kg weight) with a white and shiny coat, short and fine hair, and horizontal or semi-pendulous ears. About 19% males and 8% females were reported to be polled (FARM-Africa, 1996).

The Somali Goat is reported to be widely distributed throughout Somalia – common with Somali and Borana pastoralists - and North Kenya, usually in the semi-arid and arid areas under pastoral, agro-pastoral and also agricultural production systems (Wilson, 1991; FARM-Africa, 1996). According to DAGRIS (2005), the risk status of the population is unknown and no population figures are given.

Livestock keepers usually further differentiate performance and adaptation types of livestock within species or breeds. Information on this differentiation for sheep and goats

was gathered for the different communities and is compiled in vernacular names in table 8.

**Table 8 Performance and adaptation types of sheep and goats as differentiated by the livestock keepers (vernacular names)**

Rendille		Gabra	
Sheep	Goats	Sheep	Goat
	Dabakh	Garó	Qorti
	Maaso Khabo	Dorigo	Ayun
	Godan		Mirghisa
			Baku

Livestock herds consist of animals of different age and sex classes. Each animal, depending on its sex, age, and possible additional criteria, thus belongs to a distinct animal class (e.g. adult breeding females, heifers, castrates). Animals of different categories or classes usually fulfil different roles and functions within a production system. In order to arrive at a finer differentiation – a more differentiated classification – of the livestock resources in the area, more detailed information was collected on:

- a) Criteria for the animals entering in the respective age and sex classes;
- b) Functions (uses and importance) of the different age and sex classes of sheep and goats within the herd;
- c) Preferred trait expressions of the animals belonging to the different age and sex classes.

**Table 9 Vernacular terms for sheep and goats of different age and sex classes distinguished by Rendille and Gabra pastoralists**

Animal Class	Rendille Sheep	Rendille Goats	Gabra Sheep	Gabra Goats
Very young pre-weaned	Lukuo Kunini		Ilmolle waba	Ilmolle waba
Middle aged pre-weaned	Lukuo Puusi/Kotiti		Ilmolle qaye	Ilmolle qaye
Old pre-weaners	Lukuo Botoro		Ilmole ola/olicha	Ilmole lalesa
Weaners	Guus	Karat	Karat or Rupa	Karat
Sub-adult female	Sipen/Leeker	Sipen/Lekinne	Karso Goromsa	Goromti
Mature females	Riiyo	Onno	Ola	Reti
Sub-adult males (Uncastrated)	Lepukutorege	Lepukutorege	Elemo Jibicha	Korbes jibicha
Castrates Wethers	1st Grade: Loro Lentare Uni Ilarecha 2nd Grade: Lorolesipen 3rd Grade: Loro lentare tare		Elemo Mirgo	Mirigole
Bucks/Rams	Lmerigesh	Orgee	Elemo	Korbes

### **3 Further data collection accomplished**

**Pertaining to this differentiation, further data collection was done on:**

- a) Characteristics used to differentiate the different types (traits and trait expressions);
- b) Reasons for having the different performance types in the herd.

**In order to compare the current livestock breeds raised by the livestock keepers with other breeds they know of or are familiar with, data were collected (n=55) on:**

- c) Differences in trait expressions between the current and other breeds
- d) Reasons for preference of the current or other breeds

**In the framework of the M.Sc. study 01 by Samuel Mbuku, data were collected (n=200) on:**

- e) Pastoral individual animal identification system and its reliability.
- f) Sources, age at selection, selection criteria (own, father's, mother's characteristics) and their importance of breeding rams and bucks used in the flocks,
- g) Breeding decisions, selection practices, breeding management,
- h) Differences between theoretical and actual selection practices,
- i) Differences in trait expressions between the current and other breeds,
- j) Reasons for preference of the current or other breeds.

**Based on the preliminary livelihood indicators identified in the Benin Meeting a structured questionnaire was developed and data was captured (n=194) on:**

- k) Contribution of livestock to income, consumption, buffering, insurance and accumulation.

#### **4 Analysis of survey data and feedback seminars**

The data obtained during the baseline survey was compiled and subjected to preliminary analysis. From these, visualised materials in form of charts, drawings and results-posters were produced in preparation of the feedback seminars to be held at the Rendille and Gabra sites. Feedback seminars were held in Malabot on September 3rd and 4th 2005 and in Farakoren on September 7th 2005. The seminars targeted livestock keepers involved in the study, village representatives at the project sites, but were open to other interested community members to attend. A total of 42 and 28 participants attended the seminars in Farakoren and Malabot respectively. The participating project team members included the following:

Dr. Isaac Kosgey – Senior Scientist, Egerton University

Mr. Mamo Sora – Extension, Ministry of Livestock and Fisheries Development

Mr. Edward Lentoror – Extension, Ministry of Livestock and Fisheries Development

Mr. James Pattison – Consultant, Monitoring Indicators

Mr. Samuel Mbuku – M.Sc. student, Egerton University

Mr. Harun Warui – PhD fellow, UHOH

In each of the two sites the seminars started with a welcoming note, followed by prayers and by self introduction of each of the participating members. Such form of introduction ensured that participating livestock keepers developed a feeling of their attendance and participation appreciated and thus expected to participate actively through making of contributions through a dialogue process.

The objective of the seminars as explained to the participating livestock keepers was “to present an overview of all fieldwork that had been carried out by the different members of the research team so far. This entailed presentation of selected results and discussion of the “way forward”. The facilitator went through all the activities that had been carried out in the past project period giving room for questions and clarification from the participants.

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