Surviving pastoral decline: pastoral sedentarisation, natural resource management and livelihood diversification in Marsabit District, Northern Kenya Deel: "Vol. I"

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Methodology used

This chapter outlines the various methods and sources of information utilised by this study. These sources include primary and secondary data as well as qualitative and quantitative data. The primary data was obtained using household surveys in ten villages in 1998 and in eight of these villages in 2000. In addition, numerous informal and formal interviews were conducted with key persons such as women groups, youth groups, water-user groups, market-based traders, lorry drivers, NGO workers and missionaries. Participatory observation and field diaries were kept during the fieldwork periods. Secondary data included archival material from the colonial period, annual reports, reports from ministries and NGOs and data from meteorological stations on rainfall, temperature and evapotranspiration. Each of these methods will be briefly discussed in the following subsections.

In this chapter we will first focus on the household as a unit of analysis and highlight some classification problems in determining who forms part of the household and who does not. We will then explain the reasons for choosing the study area. This is followed by a clarification of the sampling procedures for the selection of study sites, study villages within the study sites and households within the selected villages. The next section gives details about the two main methods for data collection – household surveys and secondary sources, while we subsequently deal with the main data types at the household level. Next, we present some reflections on ethnicity as a variable and consider some limitations to this study and notes on the field experiences. This chapter ends with concluding remarks on the methodology used.

The household as a unit of analysis

This study used a range of information sources, with an emphasis on households as units of analysis. The household survey contributed, to a large extent, to the information on livelihoods and the use of natural and other household-based resources.
An operational definition of a household

The definition of a household adopted in our research is as follows:

A household is a production and consumption unit of people who live together in one compound or homestead, who eat from the same granary, who have a bond of kinship together or some other form of social ties (such as herd boy or employee), and who share arable land, livestock and other resources.

This definition was sometimes problematic, because households consisted of members who are seasonally absent. Some members were dependent on household resources while absent (i.e. away from the residential home or hut), like herdsmen in satellite camp (fora), who are fed from the same household resources. Others were independent while absent, such as household members like herd boys or casual workers who reside with and depend on resources of the employer for consumption, but have no claim to household wealth. Sometimes it was difficult to distinguish between household members and employees. In many households, it was common to find a relative who helped with domestic work, harvesting, herding fora herds or people staying with a family for a medium-term period. Some respondents felt such a person to be part of the family and household unit, while some respondents regarded such a person as a labourer and not a member of the family. We also distinguished between such individuals using the criteria of food and shelter. If a person feeds and sleeps with the family, we considered him or her to be part of the household.

The difficulty of distinguishing dependent and independent family members has consequences for the present use of household resources and has implications for resource injections into the household. In other words, this choice has implications for determining present household consumptions and assessing the wealth level of individual households. We consistently observed that wealthy households fed more children (who might actually be born in other households) than poor households. Poor households had more family members who were fed by other households.

Another difficulty we had was with households where the husband had more than one wife. In some cases, he had a (second) wife living somewhere entirely different, for example in Songa, or Ethiopia, while he was living in Sagante. In such instances we did not include the household of the second wife in the questionnaire because we consider such households to be independent units of production and consumption. However, our sample did include households of 'second wives' in instances in which the husband lived elsewhere on a permanent basis. He was then not counted as a household member.

A typology of households

The households were classified as male-headed, female-headed and female-managed households. The classification is not based on tasks, gender roles or the decision-making power of the wife or the husband. Domestic affairs (and resources) are in most cases managed and controlled by the wife and in most cases we were unable to observe who exactly had more decision-making power. The classification is only based on the presence of the husband or a senior male in the definition of the household type. A household in which the husband was alive and presently living with the household was classified as a male-headed household,
indicating that the husband is the head of the family. A household where the husband was alive but not living with the household because he was employed elsewhere was classified as a female-managed household, as long as he contributed money to the household. A household where the husband passed away or divorced the wife, or where the woman did not marry (but had children), was classified as a female-headed household, indicating that the wife (or mother) was the most senior person in the house and was the head of the family.

The reasons for choosing the study area

In both our research projects the study area was chosen in 1996 and there were several reasons for this. Large sections of the district's nomadic population are taking up a settled life, while livestock keeping remains the most viable production system. Besides, Mount Marsabit, a small sub-humid island in the desert, is rapidly changing from a fallback area for livestock grazing by pastoralists during critical dry seasons or droughts to a densely populated agro-pastoral conglomeration with an important urban core. The arrival of refugees, ethnic strife, sedentarisation, forest conservation, natural resource management and cultures in transition are all themes which are concentrated in this area.

The Mountain is endowed with a suitable climate for rain-fed agriculture, when rainfall permits. The favourable ecological characteristics need to be weighed against recent frequent droughts during which livestock wealth in the region declined (Fratkin & Roth 1990; O’Leary 1990; Mbogoh 1997). In this regard, the mountain provides a relatively high agro-production niche and functions as a refuge, largely for former pastoral households or people from this background in the recent past. As a result, the mountain has attracted many different populations (a more or less on-going process) that are trying out farming or other means of eking out a living, as an alternative to herding livestock.

Another reason for concentrating research activities on the mountain was the relative isolation of Mount Marsabit. The nearest tarmac road starts in Isiolo, 260 km further south. There was no public transport to the area in 1998 (in 2000 a private lorry was used as a bus for 40 persons and managed to make the journey three times per week). The roads to, from and within the Marsabit Mountain are impassable during rainy seasons, and the frequent banditry attacks on the road make the journey to Marsabit a rather hazardous undertaking.

The Marsabit Mountain also provided a unique opportunity to study competition and conflict management with regard to ethnic groups in a small area, without the danger of a ‘real war’ erupting. Although one of the researchers once had to flee the area in March 1999 when fighting had become too intense, Marsabit was relatively peaceful for most of the time.

Sampling procedures

The selection of sample sites

The sample sites for the study were selected from several villages on Marsabit Mountain and two other hamlets, Korr and Maikona, in the surrounding plains. The main aim of selecting these locations is to capture ecological zones, ethnic diversity, household (economic)
differentiation and the traditional institutions in use and management of natural resources. The selection inherently also picks up certain features of people's social relations and social networks as part of the social capital across the zones. The mountain, although traditionally used by the pastoral groups for dry season grazing for livestock, is used today for its relatively high production niche. Rain-fed agriculture is facilitated by climate-ecology conditions that support crop cultivation. The option of choosing these sites permits a comparison of parameters of interest across mobile pastoralists, settled pastoralists (in the lowlands) and farming households across the ecological zones. In general, the criteria of the sample selection offer an opportunity to investigate differences between households as regards economic production, and possibilities for generating income from alternative sources outside the livestock sector across agro-ecological zones and differences in economic wealth, as well as other social characteristics of the sample households.

The selection of research villages on the Mountain

On the mountain, we selected a number of villages with people from pastoral backgrounds that were settled in the 1970s (see Chapter 5) through assistance from the government and development agencies (Marsabit Development Plan 1979; Adano 2000). Among the sample villages, Manyatta Jillo, Karare (Nasikakwe), Kituruni, Sagante and Badassa have scheme households (see Map 3.1 and Table 3.1). Under the schemes each family was given a farm plot, each village assisted with communally shared oxen for ploughing and each family was provided with an iron-sheet walled and roofed, two-roomed house. We also added three other villages, namely Dirib Gombo, Daka-baricha and Hula Hula which did not have scheme households (see Map 3.1, and also appendix 3.1 for the spellings of names of places and ethnic groups used in the book). Our aim was to gain ample representation of segments of the former pastoral households that are currently settled under the scheme initiative on the mountain and the non-scheme (outside scheme) households, as well as the various ethnic groups on the mountain in the sample.

The selection activities prior to the final selection of research sites comprised seven months of rural appraisals in the area. A lot of villages were visited and sketch maps were drawn and transects chosen for walking along, their resources investigated and described. In each village farmers, teachers, chiefs, women groups, youth groups and church or mosque leaders were interviewed. These field acquaintance tours were severely hampered by the rains of 1997 and 1998, which made it impossible for us to visit Songa and Kituruni during that time. The roads through the forest were impassable by vehicle and the round-paths through the lowlands too long to walk in a day. During these activities it became clear that there are far more villages on Marsabit Mountain than initially anticipated. A lack of adequate maps at

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1 According to the World Bank (1997: 78), the term social capital refers to ‘the set of norms, networks, and organisations through which people gain access to power and resources, and through which decision-making and policy formulation occur’ (see also Chapter 2). This definition encompasses a general view of macro- and macro-scale institutions in the organisation of production that affects performances. In the present context, the term social capital means only a household’s access to various resources; either through family members, kinship ties or social relationships that confer some benefits to the unit (see also Lyon 2000). Social capital can also be realised from either formal or informal social networks. In the survey questionnaire we focused on household gifting and in some instances tried to solicit the monetary equivalence of such transfers.
the departments of the line ministries, Forest Department, KWS and the County Council did not make it easier.

*Map 3.1*

Location of the sample villages on Marsabit Mountain
The selection of villages on the mountain may suffer from a certain bias. It resulted in a selection in which villages far away from the forest were not covered by our research. The initial considerations for the selection of the villages were first the presence of water resources in the area because investigating village management activities was a research goal. The second consideration was adequate representation of the ethnic diversity on the mountain and the third consideration was representation of the different ecological parts of the mountain, that is the leeward and windward sides of the mountain (and hence the drier and wetter sides). Finally, we aimed to cover the villages where settlement schemes were established by external organisations in the 1970s to compare arable production, livestock herd holdings, water resource use and management, the use of forest resources and food availability in the settlement schemes and the non-scheme villages. The eight villages finally chosen in 1998 are presented in Table 3.1.

**Table 3.1**

<table>
<thead>
<tr>
<th>Ethnic group</th>
<th>Scheme village</th>
<th>Water source</th>
<th>Non-scheme village</th>
<th>Water source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boran</td>
<td>Manyatta Jillo (dry)</td>
<td>Karantina wells</td>
<td>Dirib Gombo (wet)</td>
<td>Borehole, Dirib G. wells, Taps</td>
</tr>
<tr>
<td></td>
<td>Gabra Scheme (wet)</td>
<td>Haro Bota pool</td>
<td>Badassa (wet)</td>
<td>Borehole, Gabra Scheme wells</td>
</tr>
<tr>
<td>Rendille</td>
<td>Karare/Nasika kwe (dry)</td>
<td>Sagante wells</td>
<td>Dirib Gombo (wet)</td>
<td>Hula Hula (dry)</td>
</tr>
<tr>
<td>Samburu</td>
<td>Kituruni/Nasikakwe (wet)</td>
<td>Taps</td>
<td>Hula Hula well</td>
<td>Tap, Gof Bongole</td>
</tr>
<tr>
<td>Burji/Konso</td>
<td>Daka-baricha (wet)</td>
<td>Taps, Aite well, Karantina wells</td>
<td>Daka-baricha (wet)</td>
<td>Taps, Aite well, Karantina wells</td>
</tr>
<tr>
<td>Ethiopian refugees</td>
<td>Badassa (wet)</td>
<td>Taps</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Note: In brackets we indicated the ecological conditions prevailing in the village on the mountain. ‘Wet’ means just a relatively higher rainfall during the rainy season compared to the other zones.

We interviewed the same households on the mountain in the 1998 and 2000 surveys, with the exception of Manyatta Jillo (dry zone) and Daka-baricha (moist area), which were omitted in the later survey. These villages were dropped for three reasons: (i) limited available time, (ii) Daka-baricha is inhabited by non-pastoral households and thus not included in the original target households from pastoral backgrounds and (iii) the Boran who occupy Manyatta Jillo are presented in other sample villages as well.

The selection of sample households
The methods of selecting the sample households differed between the mountain and the lowlands.
Sampling procedure on the mountain

The purpose of the study on the mountain was to select households in the settlement schemes, and those households, which settled without initial support from external sources. Realising the importance of farming on the mountain, the intention was to choose villages where the farms of the scheme households and farms of those other households border each other.

Once the research villages had been identified, in two of them a baseline survey of 45 questionnaires was started, questions were posed on, for example, the use of farmland, water, forest and livestock and settlement history, household composition, ethnicity and food habits. Households were randomly selected and the data analysed using SPSS. After a field visit by one of the supervisors in 1998 the survey questionnaires were improved and we started with new questionnaires visiting 287 households in eight villages. The households were selected using the transect approach, an alternative method of sampling which was first used in fieldwork on land use in Cameroon in 1992 (Witsenburg 1994). This method was still in an experimental stage, which we wanted to develop further. Since land is the unit of analysis, fields were sampled instead of households. For the sampling of fields, it was necessary to map out the area carefully and list each household that lived on these fields or used, owned or claimed these fields. With the help of assistants living in the village, the households who used these farm fields, or who lived as squatters on the sampled fields were identified. These households finally became our research population. The advantages of this method are two-fold: it forces the researcher to observe the area intensively for a long time, before the sampling is carried out. In many instances, households became acquainted with the work and the researcher before they were interviewed.

Another advantage of this sampling method is that everybody is covered in one area: those with small land holdings and the squatters, those who would not appear on any formal list used by chiefs, churches or councillors. If we had used the registers of the county council, the land committee (elders) or those pertaining to farm plot ownership it would have been very likely that the sample would have omitted the squatters – the land-poor segment of the households. An important issue is the coverage of large and small landholders. During the acquaintance tour we saw that squatters and small landowners live in small communities together, sometimes on the land of a large landholder. In these cases, the large landholder and the small landholders were sampled together. The question was whether there was a greater chance that small landholders were sampled because of their number or whether there was a greater chance that large land holdings would be sampled because their fields are so big that one section will be covered by the sample area anyway? These are questions to which we have not answers. Yet, we are not aware of another sampling method which does not encounter similar problems. This approach makes our sampling procedure on the mountain a farm-based one. Eventually, we aimed to select at least 15 scheme and 20 non-scheme households at each site, where this was applicable.²

The disadvantage of this sampling method is that we have only covered a relatively small area in each village, because we targeted only 35 households per village. Another disadvantage is that we do not exactly know how representative our sample is. Selecting a

² We followed this procedure for all the sample villages on the mountain, apart from Dirib Gombo, Daka-baricha, and Hula Hula which had no schemes.
piece of land and finding the people who own or use it, might mean that farms and fields far away from the settlement schemes or village centres were not covered.

In the villages with the settlement schemes we selected 15 fields, and 20 fields situated next to these fields outside the settlement schemes. We sampled a small number of absentee landowners, households that live in town and whose fields were fallow or were cultivated by labourers. If they had squatters living on the land, we interviewed the squatters, but we did not interview urban-based landowners. Another bias in the sample could be an overrepresentation of relatively old, established farms. Either newcomers settle as squatters on people's farms, or they settle at the fringe of the mountain where free land is still available, but of very low arable potential.

Selection of sample locations and households in the lowlands

In the lowlands the study aimed to select two locations, one inhabited mainly by the Gabra and another by the Rendille. For this reason Maikona (predominantly Gabra) and Korr (Rendille) were eventually selected. There were two main reasons why we sampled from the lowland sites:

1. To study livestock dynamics and household risk patterns of the main groups in the district.
   The lowland sites were thus to provide a 'control' group to the settled ones on the mountain.
2. To offer background information on societal changes affecting the settled groups. The issues of changes pervade all domains of peoples' lives and livelihood of the local groups, covering economic, social, cultural and political aspects. It became apparent too that such changes are closely linked with peoples' economic means of production and that they form different constituents of household wealth indicators.

After comparison and considerations of various sites in the district, Korr and Maikona appeared to be the relevant sites. Each is inhabited by one of the main ethnic groups, and both fall in the same ecological zone.

The procedure for sampling households in the lowlands differed slightly between the 1998 and 2000 surveys. In the 1998 survey, we interviewed households outside, but within the vicinity of, Maikona and Korr trading centres. After identifying a field assistant, nomadic hamlets were identified on the outskirts of each sample village. An equal number of households were sampled from these villages at each site. On this basis a household was randomly selected and a wife or husband, and at times both of them, were interviewed. These households happened to be semi-sedentary and were living close to the centre temporally because of an abundance of animal forage, following heavy 1997/98 rains in the region. Thus, they had the option of either moving away into the rangelands or into the trading centre. During the 2000 fieldwork period, the former sample 'villages' had moved away, we guess either into or away from the rural centre. As a result we could not sample the same households as in 1998 and we chose different households in the lowlands.

In 2000, the sample covered the (proper) settled households\(^3\) in each hamlet. During this round of sampling we clustered households on the settlement pattern and selected the target

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\(^3\) The main difference between the 1998 and the 2000 sample households is that the former had settled temporarily, and had migrated away in 2000, whereas the latter had 'permanently' settled in the rural centre.
sample households accordingly at each site. In our view, there is no overlap at all of the sampled household at the lowland sites during the 1998 and 2000 surveys. Since the study aim was to sample locations, the sampled households still remain representative of the site. Thus, as a result of sampling different households, it is not possible to compare results of two-sampling periods. However, the results of each sample site in the lowlands can effectively be compared with those of households on the mountain and between lowland sites for each sampling time.

While at Korr the same assistant was employed during the surveys, at Maikona different assistants were hired. At both sites the assistants recorded livestock sales and prices of manufactured commodities on a monthly basis. All in all, no major problems were encountered with the assistants, apart from the fact that some questions were misunderstood by assistants at the initial stages of the survey administration. These problems were resolved during the initial stages of the survey.

The research in the lowlands seeks explicitly to investigate livelihood strategies that characterise various options used by the households to make a living. These may either be livestock, the use of environmental resources, or alternatives such as labour (wage or salaried) employment, or combinations of two or more of these options. Since these options affect peoples’ welfare in profound ways, the household survey questions were designed in such a way that all these issues were interwoven. This approach was also relevant to households on the mountain.

The respondents of the questionnaire surveys
The intention of the household survey was to interview the most senior\(^4\) person in a household, either a man or a woman, because we wanted to interview one adult member of the household who was best informed about the consumption and production pattern in the household. In the first survey, we wanted to investigate the settlement history of the male head of the household. However, many questions in the survey concerned issues relating to water, food and firewood, of which the wife was mostly better informed than the husband. In many cases, the wife was also very well informed on the settlement history of her husband. Of course, the best answers we believe were obtained in instances where both husband and wife were present during the interview. In instances where the respondent could not provide exact answers to questions on behalf of the other partner, we came back later to interview the husband on settlement history, or the wife about water and forest uses, or we left the questions unanswered. We nevertheless feel that generally the answers obtained are not distorted by the gender of the respondent. This holds true for both households on the mountain and those in the lowlands during both survey periods.

\(^4\) In the study, the use of and relevance of who is the ‘head of a household’ is misleading, because in many cases it was not clear who exactly had the main decision-making power over resources in the household. Female household members are at times more informed about some aspects of resource use than male counterparts and vice versa. In the questionnaires, we addressed some questions to female adult member of a household, and others to the male adult (husband) member.
Methods of data collection

The research employed a broad approach to obtaining data. It used household survey questionnaires, market-based surveys and secondary sources to gather information. The types and sources of data collected are influenced by the objectives of the study. The data collected include qualitative and quantitative elements. The data sets are also differentiated by time-span, cross-section and time series. In recognition of the variability of the general economic production in the semi-arid tropics, in some instances we elicited longitudinal data from the sample households, based on annual seasons. To generate this data, we used the traditional names of years and annual seasons commonly used by the main study groups (Robinson 1985; Fratkin 1998; Tablino 1999). However, we restricted our time-varying recall periods to around two years ago, both for livestock parameter values and arable production estimates. In other instances, we also solicited data on the ranks of livestock types, rating of food types commonly used by a household and sources of household cash income.

In broad terms, we collected data from the households per ecological zone (e.g. the nature of local people’s use of natural resources) and at the regional level. The basic approach underlying all data collection methods employed and explored in the study is an attempt to take various components of the ecology as units of analysis. This is at the core of the research interest. These types of information were further complemented by time-series data lodged with the local NGOs, government ministries and departments in the area.

The single-round and repeated household surveys

The household surveys were undertaken during the field\(^5\) periods in 1998 and again in 2000. The household questions were designed and pilot tested using villages on the mountain and in the lowlands prior to the development of the final questionnaire and mass questionnaire reproduction in 1998. In all cases, five households were arbitrarily selected and interviews conducted with each assistant to build familiarity with the questions. Following the pilot tests, some questions were paraphrased and other misleading ones dropped in the final version. The sample surveys covered eight villages in 1998 and six villages in 2000 on the mountain, and two other sites in the lowlands during each survey period.

The survey questions were used to generate substantial data for the study at household level. On the mountain, the same households were interviewed in a follow-up survey, using similar questions in 2000 as in 1998. In the final survey exercise, we eventually opted for at least 33 to 37 households at each site and interviews with a total of around 287 of the 1998 households and 203 of the 2000 households. Nevertheless, in the later survey we could not cover all the households from the previous 1998 survey. This was because the entire household of some respondents had emigrated from the mountain with their herds, while others had passed away during the period between the surveys. We did not seek substitutes for these cases and instead omitted them from the follow-up survey. Moreover, in some cases we were unable to interview the same respondent on the mountain as in 1998 since some of them had moved away with herds or picked up paid labour elsewhere. This forced us to interview

\(^{5}\) The fieldwork period for the first survey lasted from September 1997 to August 1998 with the later survey being carried out between June and September 2000.
another member of the household as a respondent, which in almost all cases turned out to be the wife.6

The other two survey sites are Maikona and Korr. Here, as stated earlier different households were sampled during the surveys, with a mobile group being interviewed in 1998 and settled households around water points in 2000. Even though a repeat survey was never envisioned during the initial stages of the study, tracking the mobile households of the 1998 survey proved prohibitive in terms of time and monetary constraints. For these reasons, completely different households were sampled in the lowlands during the later survey. To the best of our knowledge, luckily, the mobile and settled communities at each site are made up predominantly of the same ethnic groups: Maikona inhabited by Gabra and Korr by Rendille. At first sight it appears unfortunate not to have interviewed the same households in the latter survey in the lowlands so as to enhance the data set. However, this departure offers an added opportunity to compare wealth levels, economic activities and livelihood strategies ensued by the mobile and settled households sampled in the lowlands with farming communities or households on the mountain.

At Korr and Maikona the survey questions were mostly very similar to those used for the villages on the mountain. Even so, we made slight variations to some sections of the questionnaire to ensure the relevance of the questions to the ecological conditions of the households in the lowlands. For example, these variations omitted issues relating to farming activities and the use of woody and forest resources by the mobile households in the 1998 survey. The use of forest resources and related conservation issues are relevant only to the households on mountain, but not in the lowlands. Moreover, we varied the recall periods of livestock parameters (e.g. births, deaths etc) across the study sites each time. The livestock parameter variables provide household longitudinal data on herd dynamics. For the villages on the mountain, these periods were postulated to coincide with crop seasons and farming activities and in the lowlands the periods were clustered on the basis of dry and wet annual seasons. At each lowland site, about 40 mobile households in 1998 and 47 settled households in 2000 were interviewed.

When preparing the questionnaire, we paid particular attention to the structure and order of the questions, deferring sensitive, personal questions to the last part of the questionnaire. The survey questions contained categorical, multiple-choice and open-ended forms of questions. Even though the binary ‘yes-no’ response questions at times fulfil certain requirements, we adopted them in many cases to test the relevance of subsequent questions to the specific household. The household questions depended greatly on the recall ability of the respondents for some variables. This for example focused on herd accumulation and off-take parameters using traditional names of months and annual seasons followed by the main ethnic groups matched with the months of the Gregorian calendar. The survey questions were primarily formulated and structured bearing in mind different resources available to a household. These resources form the main focus of the present study and they conveniently embrace wage labour, social relations (a proxy for social capital), farming, livestock and forest (environmental) resources (Table 3.2).

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6 Interviewing a different member of a household might give rise to variability in responses and informational inconsistencies. Although this is inevitable, it might have caused differences in responses.
Table 3.2
Types and description of information collected at the household level

<table>
<thead>
<tr>
<th>Type and data description</th>
<th>Rate of recall</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Background information</strong></td>
<td></td>
</tr>
<tr>
<td>Gender and age of the respondent</td>
<td>Once/twice</td>
</tr>
<tr>
<td>If respondent is head of the household</td>
<td>Once/twice</td>
</tr>
<tr>
<td>Reasons for settling</td>
<td>Once/twice</td>
</tr>
<tr>
<td>Household size</td>
<td>Once/twice</td>
</tr>
<tr>
<td>Family remittance or/and cash earnings by household members</td>
<td>Once/twice</td>
</tr>
<tr>
<td>Level of formal education reached (final grade, where appropriate)</td>
<td>Once/twice</td>
</tr>
<tr>
<td>Respondent’s position among siblings</td>
<td>Once/twice</td>
</tr>
<tr>
<td>Composition of household of respondent’s parents</td>
<td>Once/twice</td>
</tr>
<tr>
<td><strong>II. Livestock sector</strong></td>
<td></td>
</tr>
<tr>
<td>Herd size and holdings</td>
<td>Once/twice</td>
</tr>
<tr>
<td>Herd migratory routes (over some recall periods),</td>
<td>Once/twice</td>
</tr>
<tr>
<td>Herd accumulation variables (births, purchases and animals received-in)</td>
<td>Once/twice</td>
</tr>
<tr>
<td>Livestock off-take variables (sales, slaughter, gifts, death, and sacrifices/ceremonies)</td>
<td>Once/twice</td>
</tr>
<tr>
<td>Reasons for herd accumulation and off-take (where relevant)</td>
<td>Once/twice</td>
</tr>
<tr>
<td>Livestock ownership rights (trust systems with usufructuary rights)</td>
<td>Once/twice</td>
</tr>
<tr>
<td>Animals in milk, milk sold, and income earned</td>
<td>Once/twice</td>
</tr>
</tbody>
</table>
| Rank of animal species | Once

**III. Farming resources (mountain only)**

<table>
<thead>
<tr>
<th>Type and data description</th>
<th>Rate of recall</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of settlement, type of housing and how household acquired farmland</td>
<td>Once</td>
</tr>
<tr>
<td>Farm size</td>
<td>Twice</td>
</tr>
<tr>
<td>Crops, hectares planted and yield (for each crop, season and span back 2 years)</td>
<td>Twice</td>
</tr>
<tr>
<td>Farming practices and farm tools used</td>
<td>Once</td>
</tr>
<tr>
<td>Establishment and numbers of on-farm agro-forestry trees</td>
<td>Once</td>
</tr>
<tr>
<td>Farm labour (pooling) arrangements</td>
<td>Twice</td>
</tr>
<tr>
<td>Incidents of crop raids and damage by game animals and livestock</td>
<td>Once</td>
</tr>
</tbody>
</table>

**IV. Use of forest and natural resources**

<table>
<thead>
<tr>
<th>Type and data description</th>
<th>Rate of recall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of fuel used for domestic cooking and other resources used</td>
<td>Once/twice</td>
</tr>
<tr>
<td>Quantity of woody biomass and water used, monthly and per season</td>
<td>Once/twice</td>
</tr>
<tr>
<td>Means used for hauling water and fetching fuel wood, by season and gender</td>
<td>Once/twice</td>
</tr>
<tr>
<td>Reasons for a preference for certain tree species for different uses</td>
<td>Once</td>
</tr>
<tr>
<td>Relative measure of resource abundance (scarcity) and adaptive responses</td>
<td>Once</td>
</tr>
<tr>
<td>Availability and access of environmental resources over time</td>
<td>Once</td>
</tr>
</tbody>
</table>

**V. Sources of household income**

<table>
<thead>
<tr>
<th>Type and data description</th>
<th>Rate of recall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimate of monthly cash income</td>
<td>Once/twice</td>
</tr>
<tr>
<td>Sources of cash income and amounts</td>
<td>Once/twice</td>
</tr>
<tr>
<td>Rank (1 to 10 scale) and reasons for income sources</td>
<td>Once</td>
</tr>
<tr>
<td>Rating of sources of cash income (based on resources)</td>
<td>Once</td>
</tr>
</tbody>
</table>

**VI. Food composition and consumption**

<table>
<thead>
<tr>
<th>Type and data description</th>
<th>Rate of recall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Types of food household consumes and requires (quantity and per season)</td>
<td>Once/twice</td>
</tr>
<tr>
<td>Inter-household food gifting/exchange</td>
<td>Once/twice</td>
</tr>
<tr>
<td>Household rating of sources of food (1 to 10 scale), based on resources</td>
<td>Once</td>
</tr>
<tr>
<td>Estimate of household monthly cash expenditure only on food</td>
<td>Once</td>
</tr>
</tbody>
</table>

Notes:

a. On a few occasions, we weighed firewood collected by the sample households at all the sites on the mountain in 2000.
b. The phases and alphabetical scripts under rate of recall differ depending on the site and time of the interview.
c. Once/twice is a variable recalled once at each lowland site, and recalled twice on the mountain.
d. Once stands for a one-recall variable at each site, but only in 2000.
e. Once/twice means two-recall variables on the mountain and one-recall only in 2000 in the lowlands.
f. Once is a one recall variable, but only in 2000 in the lowlands.

The contribution of field assistants to the data collection exercise is critical. Without the assistants the accomplishment of study goals like ours are unattainable. This being the case, the ability of an assistant to understand the nature of data asked for and the manner in which questions are translated and posed to a respondent in the vernacular is of overriding importance. On the basis of these realisations we targeted assistants who complied with the following criteria:

- Someone who belongs to and comes from the same village, and is fairly well known to the villagers.
- Someone who belongs to the same ethnic group as the majority of the resident population.
- Someone who is at least a Form 4 graduate.
- Someone who has had previous experience of working with a questionnaire (at least in the lowlands).

These requirements turned out to be the basics. Almost all the assistants we worked with met these criteria and some had even higher academic qualifications, being graduates of Form 6, trained teachers, former social workers with development organisations, undergraduates and in some cases having combinations of these qualifications. The fact that we chose local assistants hopefully gave the respondents confidence to divulge vital private information and meant that the assistants were not complete strangers to the respondents. Generally, we had no serious problems with the assistants as regards data collection and we believe that the answers to the questions were

The administration of survey questionnaires was carried out with the help of the same assistant in 1998 and in 2000, except for Hula-Hula, Karare, Dirib and Maikona where the former assistants could not be traced (see Box 3.1 for the requirements of field assistants). This meant that new enumerators had to be identified, trained and deployed. Whilst the assistants mostly did the administration and filling-in of the questionnaires, we checked all the answers and made amendments where this was deemed necessary in order to ensure correct entry responses. The administration and correction work was carried out by making frequent visits to specific sample sites in order to visit the respective households to rectify ambiguous responses or complete questions that had been skipped and redone by the assistants. Although this ensured that the responses were complete and eradicated inconsistencies, the process took up a great deal of time. The administration of the household’s survey on the mountain was concluded by August 1998 and in the lowlands by September 1998. The repeat surveys were concluded towards the end of September in the lowlands and on the mountain by the end of August 2000.

**Sources and collection of secondary data**

The household survey information was also supplemented by secondary data. This generally entailed accessing information from various government ministries, departments and NGO offices in the study area, including MDP/GTZ-Marsabit, Community Education Concern (CEC) and the FHI relief office. In particular, we obtained data from the Kenya National

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7 Most of the secondary data on the district, particularly literature and annual reports from various years, are lodged with Marsabit District Development Documentation Centre in Marsabit town. We obtained these reports from people at the highest level possible and photocopied them. However, reports on some years were missing.
archives, Marsabit Development Plans and Marsabit District annual reports of the Ministry of Water Development and the Ministry of Agriculture, Livestock Development and Marketing. These sectors provided records and we reviewed relevant literature. These data sets consisted primarily of time series data with some gaps and are in parts:

**Ministry of Agriculture, Livestock Department and Marketing (+ veterinary services)**
The recent annual reports on the following data were reviewed: livestock population estimates\(^8\) (for about 40 years) and livestock products. These in turn include domestic slaughters, export outside the district (sales) and their prices, hide and skins production, agricultural crop production, their land coverage and annual yields. Crop prices proved difficult to find in the annual reports. The market prices for the crop over the survey periods were however obtained, along with additional crop prices for previous years where available.

**Ministry of Water Development**
Monthly volume of water produced and associated production costs (i.e. labour, fuel cost and chemicals expenditure and sundry costs), and numbers of metered households on flat rate connections and monthly water revenue generated from urban water supplies from the forest were obtained from 1977 to 2001.

**Forest Department and Kenya Wildlife Service**
Closely related to the information from Ministry of Water Development, we accessed information on the monthly revenue received by the Forest Department through firewood collection permits, the amount of tourist revenue accrued to Kenya Wildlife Service (KWS) from the Forest Reserve and on the appointment of KWS staff over the years. Besides, we held personal interviews with senior Game Warden (Mr Korir, who at that time was about to become involved in a transfer) and District Forest Officer (Mr Arama) on the state of forest resources, wildlife conservation and current challenges in meeting the goals of forest ecosystem conservation in the region. A joint, collaborative activity relating to the collection of GPS data, which lasted for two weeks, on a number of villages and water sources on the mountain was initiated with Tim Wright of FHI. The FHI provided an assistant, Ali Tumalo, and transport to collect GPS points\(^9\) in exchange for use of our GPS device and the production of a digitised map. During a brief visit in 2002, GPS points were taken from the few remaining beacons around the Forest Reserve and the arbitrary forest boundary.

**Aerial photos**
A weakness in the study is the lack of aerial photographs of Marsabit Forest Reserve. The Headquarters of Forest Department (Karura) and KWS in Nairobi could not provide us with maps and photos, although these are the most probable institutions that would have had them.

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\(^8\) Unfortunately, previous records make no mention of other livestock variables, notably births, deaths, loss of livestock to wildlife predators, inter-ethnic and across border raids and skirmishes leading to livestock losses by a specific group or country, diseases outbreak and livestock immigration to outside the district.

\(^9\) Tim's interest was in mapping all the FHI contact farmers and the altitude of their farms and our main interest was in the location of water resources and our sample villages on the mountain.
The change in forest cover\textsuperscript{10} was therefore reconstructed from secondary data and oral histories of residents of the villages around the forest.

\textit{Photos}

Henry Dommann, a Swiss constructor in Marsabit town, gave us some photos of Marsabit from about 20 years ago, so that we were able to compare these photos with recent photos of the same spots around Marsabit town. Those confirmed the idea that population growth in certain areas has beneficial effects on the vegetation in the area (planting of more trees as life fences and windbreaks etc). People view planting of trees as an investment since this increases the economic value of residential plots in addition to delineating the individual’s plot as a private entity.

\textit{Ministry of Health}

From the Marsabit District Hospital records we obtained information on water-related (waterborne) disease on the mountain and the corresponding number of hospital attendant cases from 1971 to the present day. The main waterborne diseases are dysentery, cholera and malaria, along with other diseases like eye cataracts and conjunctivitis. We thought that this information might have a bearing on environmental conditions and explain how such linkages may tie up with the condition of Marsabit Forest on the mountain over the years.

\textit{Marsabit Meteorological Station}

Monthly rainfall amounts from 1974 to 1999 and rainfall figures for earlier years since 1919 were obtained from Marsabit District Annual Reports (MDAR), from the colonial records lodged at the Kenya National Archives (Nairobi - see below too). The meteorological department also provided information on monthly evaporation rates and temperatures on Marsabit Mountain from 1974 to 1999. The rainfall figures for Korr and Maikona were collected from independent sources from Maikona Catholic Mission and KARI-office, respectively.

\textit{Kenya National Archives}

A full week and some days were spent at Kenya National Archives (Nairobi) between 7 and 15 September 2000. This time was spent perusing the colonial records of the district and making photocopies. Thereafter, we obtained the district’s annual reports from 1918 to 1960, along with other selected information such as political and handing-over reports during the years of colonial rule. However, the time spent here was far too short and the data obtained is not exhaustive. In addition, the District Annual Reports and the Development Plans’ records complemented the national archives data after 1960. Moreover, some of this information was photocopied (see a and b above).

\textsuperscript{10} Satellite images would have been perfect for this investigation. However, we could not find them at the Survey of Kenya, KWS or the headquarters of the Forest Department at Karura, Nairobi. In 2002, we obtained one image from the former Department of Resource Surveys and Remote Sensing (DRSRS), but we need at least another image for interpretation.
Food for the Hungry inc. (FHI)
FHI was involved in relief food distribution and issuing plans from March to September 2000. However, when comparing relief food distribution plan and the actual receipt of food by the recipients at a few selected sites, we established huge discrepancies between ‘planned’ amounts of food issues and the ‘actual’ food receipts by the target population. It was evident for some months that the amounts of certain foods, especially oil and beans (pulses), planned for distribution were delivered at all. The FHI relief office also provided interim results of the Kenya National Population Census, 1999 for Marsabit District.

Court
There were hardly any records available from the magistrate on land cases. Virtually no land conflicts had been settled in court. The local land committees dealt with all the land issues and rarely took cases to court. Data on land scarcity was most likely not available in the number of court cases. The land committees were very unclear about the way they worked. We did not get a good insight into whether they worked with certain principles, or considered each case independently of the other. It was clearly an ‘elders’ issue and the researchers did not get an opportunity to attend meetings of elders mediating land related conflicts or allocating of farm plots to individuals.

Other ministries and departments
The District Education office provided enrolment figures for Primary Schools on the mountain, by boys and girls. The Marsabit County Council provided information on its sources of revenue and the amount earned from each source. However, this information proved difficult to obtain over time due to a total lack of, or poor, records. The Marsabit Post Office supported us by providing monthly family’s remittance records and we obtained data from 1996 to July 2000.

Main data types at household level

Perceptions of climatic changes
The pastoral production system, based on herds on shared rangelands, relies heavily on the natural environment. In this system people use time to provide a framework for predicting environmental changes, determining livestock grazing movements and for utilising and managing resources in general. For example, perceptions on the nature and duration of climatic (seasonal, annual or yearly) cycles allow herders to anticipate events that affect their lives (Robison 1985: 79). In addition, the performance of traditional ceremonies and rituals are very closely tied to the concept of time as well as days, weeks, months or years (Tablino 1999: 36). It is on the basis of time-reckoning ways that rainy seasons or cyclical good years of rain are associated with plenty of animal food products, an abundance of wild fruits to gather and the calving of animals which are the main drivers of herd growth. On the contrary, droughts are seen as the downturn of resource availability and human hardship.

Recognising this way of reckoning time, this study uses the pastoral system of measuring time to obtain information on herd changes. The pastoral groups in Marsabit District, meaning
the Rendille and the Gabra, regard the seasons as following the solar year (365 days circuit of the sun) – the solar calendar – and most of their ceremonies are linked to the months and to the phases of the moon – the lunar calendar. The solar-based Gregorian and the purely lunar-based Muslim ways of reckoning time are used together, but calculated independent of each other (Robinson 1985; Schlee 1992; Tablino 1999; Abduba & Guyo 2000; Marsabit Calendar 2003). They follow a sequence of days grouped into a seven-day week, which are connected with both the solar and solar calendars, and 12 months, each with a vernacular name. The years bear the names of the days of the week and recur in cycles of seven (see Tablino 1999 for further details). Exceptional years of heavy rains, raids, disease epidemics, etc. are given unique names concomitant to the specific event. The groups also note that years of great events are repeated in a cyclical manner. While some cycles are observed to repeat after 6, 9 or 15 years, others are as long as 35, 42 or 70 years (Robinson 1985), emphasising local people’s clear understanding of dynamics and non-linearity phenomena of climatic years and differential effects of such cycles on households.

On the basis of cycles of seven-day weeks, the Gregorian months and thus years we matched and made use of traditional ways of reckoning time to generate livestock data at household level. To do this, we divided years into annual dry and wet and long and short seasons with a prefix of the corresponding year and matched them with Gregorian months. Each pastoral group, however, has different vernacular names for annual seasons. For example, 1998 is a ‘Wednesday’ year and the long-rain is called Wednesday Ganna (ganna meaning long rain) season by the Boran and Gabra. The long rain periods are termed and known as Guu by the Rendille, and Ing’ereng’erwa by the Samburu (Table 3.3). Both the Gabra and the Rendille call 2000 Gumata (Friday) year.

### Table 3.3

<table>
<thead>
<tr>
<th>Season</th>
<th>Gregorian months</th>
<th>Rendille</th>
<th>Samburu</th>
<th>Gabra/Borana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long rains</td>
<td>March – May</td>
<td>Guu</td>
<td>Ing’ereng’erwa</td>
<td>Ganna</td>
</tr>
<tr>
<td>Long (cool) dry season</td>
<td>June – September</td>
<td>Nabhai der</td>
<td>Lamei dorrop</td>
<td>Bon adolessa</td>
</tr>
<tr>
<td>Short rains</td>
<td>October - December</td>
<td>Yer</td>
<td>Itumeren</td>
<td>Agayya</td>
</tr>
<tr>
<td>Short (hot) dry season</td>
<td>January - March</td>
<td>Nabhai gaban</td>
<td>Lamei lo ’odo</td>
<td>Bon agayya</td>
</tr>
</tbody>
</table>

**Note:**

**Source:** Author’s survey and various other sources (including field notes).

By partitioning a given year into annual wet and dry seasons and by relying on the recall of heads of the household, we inquired into household’s livestock dynamic variables in a survey questionnaire. By superimposing the local names of the years and annual seasons of the groups upon the Gregorian lunar months we collected the key herd off-take and accumulation

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11 The Boran follow complex traditional twelve solar-lunar moons and cycles of 27 days for reckoning time, with the responsibilities vested in the Borana Hayyantu. Nowadays, the Boran hayyantu use the traditional ways of reckoning time for ceremonial purposes only. The Boran at Marsabit Mt. use seven days of the week and they call the ‘moons’ by the names corresponding to the months of the Gregorian calendar (Abduba & Guyo 2000). For this reason our recall periods were based on the traditional ways of reckoning time used by the Rendille and Gabra, and matched with the Gregorian calendar.
variables. The adoption of the traditional seasons and years in the study proved important for investigating changes in individual household herds over time.

**Herd sizes**

A survey questionnaire was designed to investigate household herd size at the terminal periods of our recall (May to August 1998, and March to June 2000 for the repeat survey), herd off-take and accumulation variables for intermediary and initial periods of our recall. These variables jointly constitute herd growth parameter values. A simple herd growth model comprising specific parameter variables of herd dynamics necessarily includes:

1. Off-take parameters of slaughter, sales, death (including herd loss to raids, diseases, rains etc) and gifts (animals loaned or given out of own herd); and
2. Herd accumulation variables of natural birth, purchase and animals received from other herders.

Using the terminal period herd size and herd growth variables, we determined changes in household herds for the entire recall periods. The off-take and accumulation variables have opposing decreasing or increasing effects on herd size, respectively. The difference between the variables determines the net effect of either growth (larger accumulation values) or decline (larger off-take values) of the herd. A household herd size\(^{12}\) for a given recall period is derived with the aid of off-take and accumulation parameter responses to intermediary recall periods. Given that household herd size (i.e. stock variable) at the terminal periods of the surveys are ‘known’, herd parameter values are used to obtain herd holding for the intermediary recall periods and for the period preceding the initial recall (t-1) period. Whereas the instantaneous (at a point in time) household herd holdings give stock variables, the herd off-take and accumulation parameters are flow variables. This distinction makes livestock a capital asset and a renewable resource with a logistic growth function. The household responses to herd growth variables generated through the survey questionnaires are presented later in the chapter.

The approach of the current study allows us to ascertain effects of each parameter value on herd changes under variable shocks. It permits an examination of the differential effects of stochastically variable shocks on household herds\(^{13}\) and a comparison of herd size changes across ecological zones. One important question relates to the reliability of herd information generated through this approach. It has been noted that since herd dynamics is a prominent feature among pastoral households, herd history data is typically more reliable relative to short period recall data on crop production, consumption and income (Turner 1999). In support of this, Robinson (1985) finds a striking resemblance between long-term recall and meteorological rainfall records among the Gabra pastoralists; one of our study groups.

We, however, varied the recall periods for the households on the mountain and in the lowlands. The reason for differentiation relates to the main activities of arable farming and

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\(^{12}\) In our approach, we work this out in a reverse order, by assigning ‘+’ sign to off-take and ‘-’ to accumulation variables, and by taking herd size at the terminal recall period as a reference point.

\(^{13}\) Frankin & Roth (1990) use two discrete periods to analyse changes in households herd sizes among Ariaal pastoralists. When comparing herd-size changes, households' herd sizes at the initial period are of critical importance. The assumption that pastoral households are homogeneous in herd holdings is unfounded. Therefore, a comparative analysis of herd holdings should necessarily take into account household wealth differentials at the initial period.
The current study relied on household responses to generate herd sizes and herd accumulation and off-take variables. In addition, we asked the respondents about the composition of ownership rights of animals at the disposal of their household. We are, however, aware of the general doubts about responses of the pastoral household to herd sizes referred to in the literature and thus the reliability of the pastoral herd holdings. Bearing this in mind, a number of attempts were made in the study to improve household responses to herd sizes.

Firstly, the investigation of the animal ownership rights is based on our informed insight (one of the authors originates from the study area and belongs to one of the study groups) about the structure of herd size of the pastoral household in the study area. This enquiry was based on our clear understanding of the importance of the animal ownership rights in the pastoral economy. As a result, different terms were investigated during the exploration visits to the villages which could be used for forms of animal gift and lending arrangements (that give rise to animal ownership rights) by the study groups. The specific terms used for different animal gift and lending arrangements and ownership rights were adopted for each group in the final household survey questionnaires. The use of group specific names for animals in different ownership rights proved useful in bridging the communication barrier of the animals possessed by a household. It turned out that the Rendille and Samburu have similar terms for animals legitimately owned (alal) and animals in trust, the latter adopted the terms mostly from the former and the Gabra and Boran also use similar terms.

Secondly, particular attention was paid to the sequence (i.e. order) of the questions in the household survey questionnaire. The question on number of animals owned by a household for each animal type preceded the number of animals in the different ownership rights. It was possible from the survey questionnaires to crosscheck the distribution of animals across ownership rights for the types of animal possessed by a household.

Thirdly, the livestock owned, herd accumulation and off-take variables were researched using recall periods and with reference to specific names of seasons and years used by each study group (see Table 3.3 above). As in the case of the names of animal ownership rights, these names were also established during preparatory stages of the visits to the sample villages.

Fourthly, an enumerator from each sample village administrated the survey questionnaires. The idea was to reduce any suspicion that might arise if the questionnaires were administered by an assistant from outside a given village who was unfamiliar to the respondent. The assistant had lived in the village, was known to the respondent and had a rough idea about the respondent's herd holdings. Moreover, within a given group, animals owned fall within a public sphere and the ownership of large herds is a source of pride. At each sample village we carried out the administration of first questionnaires with each assistant in order to minimise the chance of the questions being misread. Later, when the assistant administrated the questionnaires alone, we checked all the questionnaire answers to reduce inconsistencies in the responses.

livestock rearing that underpin the basis of human production across the zones. The recall periods for the households on the mountain were clustered on the basis of crop seasons\textsuperscript{14} (ploughing, planting, weeding and harvesting time as a single recall period), with the

\textsuperscript{14} Crop seasons and yields on the mountain are as unreliable as the rains they are dependent upon. Crops are usually planted prior to, or at the onset of, the rains. The long (rain) and short (rain) crop seasons normally last from March to June (planting to harvest) and from October to February, respectively.
exception of the El Niño period.\textsuperscript{15} The El Niño recall covered the period between October 1997 and August 1998, when the last survey interviews were conducted in 1998. In 2000 the survey covered clusters of 4 periods between October 1998, February 1999 and March-June 2000. For the lowland sites, the recall periods were partitioned into distinct dry and wet annual seasons (Table 3.3). At the lowland sites, the El Niño time covered one long recall period from October 1997 to April 1998 for the 1998 survey. The 2000 survey covered clusters of six recall periods from June-September 1998 to January-June 2000. The data generated by this method is analysed and applied primarily in the Chapters 15 and 16.

The sampling hitches described above have implications for a comparison and an interpretation of the data across the survey periods. For these reasons great care has been taken. If this had not been the case it would be incorrect to compare outcomes of the household resources, both in the lowlands and on the mountain. However, the survey results allow important comparisons between semi-sedentary and farming households in 1998, and again between settled households at the lowland trading centres and farming households on the mountain in the 2000 survey. In addition, apart from Manyatta Jillo and Daka-baricha on the mountain, the data allows for temporal comparison of the households’ resources between the 1998 and 2000 surveys on the mountain.

Another methodological note on herd size refers to the reliability of the data. This issue is addressed in Box 3.2.

Other data

\textit{Market level data and livestock marketing information}

The livestock\textsuperscript{16} prices were collected at the three study sites, namely at the livestock markets around Marsabit town on the mountain and at the Maikona and Korr trading centres in the lowlands\textsuperscript{17} (see Fig.2.1). Haro Bota (mainly used by all groups except Samburu and Rendille), and the ‘Rendille/Samburu market at Karatina, close to Cereals Board Depot, are the two livestock market sites on the mountain. The Marsabit livestock markets receive more supplies of livestock offered for sale compared to other study sites and in the district as well. These markets also have relatively many traders of mixed ethnic groups that inhabit the mountain area and benefit from the trade advantages of the town’s location on Isiolo-Marsabit-Moyale Highway which links Nairobi to Addis Ababa. In addition, Marsabit livestock markets serve several other trading centres in the district to which it is connected through earth surface roads. These factors, in combination, provide relatively easy market access (availability of means of animal transport) for traders to link up with the country’s bigger livestock consumer (end-) markets like Nairobi.

\textsuperscript{15} The El Niño rains lasted from October 1997 to May 1998: continuing across the normal short rain periods (October-December), short dry (January-February) and long rains (March-May 1998).

\textsuperscript{16} Cattle and small stock (goats and sheep) are the main animals sold at the markets. However, camels and donkey price information was also collected, but these animals were scarcely sold at the marketplaces.

\textsuperscript{17} One should not forget that, unlike Marsabit which is a relatively a high ecological and economic production area, the latter two sites are located in the semi-arid lowland plains which are of low economic potential.
The Rendille are the predominant group in Korr, and the Gabra in Maikona. Maikona is located at about 100 km from Marsabit town to the north-west (Tablin & 1999), along the Marsabit-Maikona-North-Horr-Loiyangalani (L. Turkana) road. This road serves the majority of Gabra livestock herders and is an avenue for most of their marketed livestock off-take. This road also makes access to market easy for the purpose of livestock marketing and the transport of consumer goods. Korr is situated to the south-west (at about 96 km) of Marsabit Mountain in the heart of Rendille land – off Isiolo-Marsabit road. Compared to Maikona, Korr is not specially connected to other trading centres and its proximate trading centres like Kargi and Njuruni can be reached without passing through Korr (see Figure 4.1). This makes Korr a more isolated livestock-producing area for livestock and grain traders. In retrospect, most animals from the Korr area recorded at Marsabit markets were trekked for at least two-days and arrived at the market on the third day. Animals brought through the Maikona route were mostly trucked to Marsabit, but there are also cases of large herd sellers trekking animals with assistance of hired labour. The livestock markets in the lowlands fed the Marsabit market which then supplies and fulfilled the substantial demand for meat on the mountain and other end-markets.

Livestock market days
In principle, livestock marketing is a daily affair at all the three sites, despite a lot of variation in the volume of animal traded and low trading activities on Sundays. As regards the period for which livestock marketing information is available, animal prices were collected at the marketplaces daily in the lowlands and six-days a week on the mountain. This decision was based on prevailing marketing distortions of animal supplies to the market. During a preliminary assessment of the functioning of the livestock markets and prices collection it was noted that the herders and the middlemen brought unsold animals from previous marketing days and animals bought on previous days, respectively, for re-sale to the market. The latter trade practice is used when animals are bought for price speculations. The selling of animals previously bought regularly occurred on the days of low animal supply to the market. This behaviour was also practised between the two markets on the mountain, since the animal prices differed between them. The animal prices were relatively lower at the Karatina site, especially for small stock, compared to the other site. The traders trekked animals between the

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18 This group is also served by Marsabit-Bubisa-Turbi-Moyal road.
19 The collection of livestock marketing information varied between the sites studied. This was due to the logistic travel problem to the lowland sites at the start of the surveys. The livestock market information collected varies between the lowland sites, with Korr data spanning a shorter time than that of Maikona. This was partly because Logo-logo was initially selected as a sample site, but was dropped on the basis of its location on the Marsabit-Isiolo road, and its relative proximity to Marsabit town for livestock marketing purposes. The travel problem was partly caused by a lack of means of transport to Korr during the early stages of the El Niño rains from October 1997 until February 1998. During December 1997, we also stopped the data collection exercise because of general multi-party elections in Kenya and wild, aggressive campaigns in the area. The election campaigns created a tense atmosphere between diverse ethnic groups on the mountain, and paralysed other activities. Thus we thought it wise to halt the research activities temporarily during December 1997. The livestock market prices, however, will be compared for the sample sites, where deemed necessary.
20 The words herders and producers, in relation to livestock marketing, are used interchangeably in this book.
21 On occasions we identified such animals and traders also used the excuse of unsold animals to bargain for low prices.
markets to reap market price differentials. The differences in market prices usually arose from changes in the number of traders and livestock delivered to the markets. Furthermore, the selling of animals at these market sites also means payment of County Council tax (cess). Traders and herders at times carried out livestock transactions outside the designated livestock-holding areas to evade payment of the cess. Such sales took place more infrequently than the re-selling of animals and the movement of purchased animals between the market sites on the mountain.

The return of unsold animals from previous marketing days and the movement of animals between the market sites also have implications for collecting livestock marketing information. For example, recording the livestock prices every day on the mountain would cause double counting problems with regard to the number of animals sold and the average daily prices. Thus we opted not to enumerate the volume of livestock sales and prices of livestock supplied on the mountain on the seventh day of the week in order to minimise the double counting problem. Livestock marketing information was collected during both the 1998 and 2000 surveys. The collection of the market-based livestock information was carried out simultaneously with the administration of the household surveys. The main livestock marketing data collected at the markets is:

1. Livestock market prices, daily in the lowland and six days a week on the mountain.
2. Volume of livestock offered for sale, animals bought and unsold at each market.
3. Origin and destination of animals.
4. Reasons for animal sale.
5. Means of delivering animals to the market.
6. Costs of tracking and trekking animals to the next consumer market. These costs include:
   among other things, the cost of herding trade animals, *boma* rent (night enclosure in town),
   bribes paid on the way and the costs of trekking animals between trading centres (if not own herds).

In addition, data on numbers and types of trade premises, types of commodities and number of livestock traders, volume and transport charges of animals in transit and commodity prices of certain consumer goods was observed and recorded on a monthly basis at all the study sites. This information was collected with the help of the assistants based at each market. However, the livestock market-based information and household surveys were carried out by different assistants on the mountain and the exercises were carried out by the same assistant in the lowlands because of the differing scale of work involved at the sites. We made monthly visits to the market locations in the lowlands to monitor progress and discuss

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22 Cess is a form of tax paid for animals sold at livestock market sites provided by the County Council. This fee was about Ksh. 20 for small stock and Ksh. 100 for cattle in 2000.

23 There are other problems of (1) a herder selling animals outside market sites in order to evade the council tax (evade paying council CESS) or (2) few absentee town-based large herd-owners occasionally sell a considerable number of animals at once. Such sales are at times considerably higher than the mean daily livestock sales on the mountain. Although we also covered animals sold through such means, outside regular sale and site, the problem of accurately accounting for all livestock sold on the mountain remains. At the lowland sites, there are no official market sites. Animals brought for sale are tied to a tree, in the shade, and potential buyers come to the place to negotiate a price. Such 'trees' are also a source of information for herders from different range units, and prices negotiation normally takes hours to conclude. However, the volume of animal sales on the mountain is much higher that in the lowlands.
difficulties on the ground with the assistant. During the latter survey period, it was clear from general observations that while the volume of livestock traded considerably decreased in relation to the 1997/98 records (particularly at Korr and Maikona), average livestock prices at the lowlands markets dropped. We attribute the prices and trade-volume volatilities observed to poor animal conditions and the downsized number of buyers that kept the demand and the effectiveness of the livestock marketing low. Linked to the national scenario, this situation might have been influenced by the nation-wide economic crisis that the Kenyan economy was experiencing by then.

The livestock sector and interaction of the pastoral household with the cash market are among the key components of the current study. Livestock capital holdings and households’ linkages and interaction with the market influence the aggregate of resources available to the sample household. The assertion is that the household participation and integration into the market economy allow the household an economic competitive edge. This option is frequently thought to permit herders to participate more effectively in the wider cash-economy under changing social and environmental conditions.

Livestock and grain traders’ data
The information from these market players was collected through the single-round survey questionnaire, monthly observations and records of livestock producer prices. One primary interest was to capture returns on livestock in an effort to identify bottlenecks in livestock marketing and to assess where any benefits from the livestock-grain connection end up. Although the survey covered the number of livestock traders, it proved difficult in the lowlands to ascertain who is a trader and who is not, as well as to distinguish between grain and livestock traders. Individuals regularly switch trade activities and dynamically adjust their behaviour and orientations between trade options and across seasons. That is, when opportunities or circumstances are beneficial, everybody temporarily becomes a trader. Only a few people manning trade premises could be categorised as target traders and in the end we only interviewed this cohort in 1998. On the mountain, more attention was paid to livestock traders, livestock products prices and monthly observations of consumer prices of manufactured goods. The livestock traders on the mountain were interviewed as well in 1998. The questions to livestock traders in the lowlands in part addressed the type of trade enterprise, capital investment, total and working capital, the source of capital, sources of goods and prices, general trade expenses and the main problems influencing trade activities in the region.

Consumer prices
Pastoral households sell livestock in order to purchase market-based manufactured goods. The cash market thus provides a direct forward-linkage for the pastoral household through livestock marketing. To include the livestock-grain prices connection, we observed and recorded, on a monthly basis, the prices of manufactured and foodstuff consumer goods that are commonly used by the pastoral households in all the study areas. Similarly, consumer prices of livestock products (e.g. meat) and the numbers of animal slaughters were observed and information collected at each site, on both a daily basis and on a monthly basis in the case of prices of livestock products. The prices of consumer, livestock and manufactured goods
were collected at all the study sites. In spite of this, the periods of time during which this data was collected do not perfectly overlap for all the sites.

*Forestry and vegetation data*

The data on forest uses by households and forest-related resources has been collected mainly through survey questionnaires and the latter mainly from archival sources. There is an abundance of archival data on forest use and conditions, which were used in this study. The secondary data supported by information from household surveys and personal interviews is used to investigate temporal changes and the current pattern of forest resource use. The latter mostly investigates access benefits of forest resources in production and consumption to protected area-adjacent rural households. The importance of the pattern of the forest resource utilisation by the local communities is contrasted with the problems of forest and biodiversity conservation in the area.

The overall objective of protected areas' management is based on delivering global public goods and protecting catchments for gazetted forests. Although the objectives of conservation programmes are ultimately to safeguard functional biodiversity, direct and indirect benefits of such efforts to rural economies have seldom been explicitly considered in the literature. Additionally, much less has been established about economic-ecological linkages of protected ecosystems within developing countries. The information on the household use of vegetation resources and indirect forest functions are investigated in Chapters 13 and 15. The current study combines a wide range of benefits and costs associated with legally protected areas, which also harbour species of wildlife, to address these issues. Chapter 13 investigates the value of forest resources to rural households and also questions the importance of conservation of biological diversity in the region. The study’s approach builds on recognition of economic and ecological roles of forest ecosystems in supporting critical environmental, economic and social values of the rural economies.

*Water resources*

The objective of the study of this resource was first to explore the stock and flow of water resources and second, to investigate how water use and management were embedded in networks, water users associations, community activities, etc. The fieldwork activities started first at a central well site on the mountain, where the majority of the mountain’s population used traditional hand-dug wells. Large numbers of informal interviews were held before we started with a structured interview. Structured interviews were held with the well owners (*aba ela*), water managers (*aba herega*) and male and female water users. Later, another important well complex was investigated in the same way. Water sites in Maikona, Karawe, Korr and Kituruni were also visited and informal interviews were held in the form of groups. Well management is generally based on certain principles which prevail for virtually all the wells in the same water-catchments. Once the pattern and customs are known, the sample size is actually irrelevant because these patterns are applicable to the whole region.

Pools, dams, boreholes, springs and shallow wells were the other community based water sources which were explored in the area. In the case of the urban water supply in Marsabit we interviewed government officials and read their reports. We referred to the annual reports of the colonial government to acquire historical data on water sources.
A follow-up investigation on water use and management was also undertaken in 1999 and 2000. This time, several additional water points were visited during the 2000 field period. These particularly included water points which were inaccessible in 1998 due to the insecurity resulting from ethnic conflict. Surprisingly we witnessed the peace and cooperation that prevailed during the later period of the fieldwork.

**Resource use and ethnic conflicts**

This was a very difficult topic to investigate. Prior to our fieldwork, we hypothesised that there could be conflicting interests between all kinds of groups. Herders versus farmers, people against KWS and the conservation of the Forest Reserve, ethnic groups among each other, people against their chiefs and councillors and local people against refugees from Ethiopia. After receiving contradictory information from various sources about claims on resources, history and territory it was decided not to focus explicitly on conflicts. Especially during the violent confrontations in 1998 and 1999, various informants tried to (mis)use us in political conflicts. Writing about these political conflicts would only add to the tensions. It was therefore decided to use the existing written documents on resource use and conflicts (like the Marsabit District Annual Reports, historical accounts of Sobania (1979), Tablino (1999) and the Kenyan Human Rights Commission (KHRC)(2000). In 2000, when peace had been restored, some of the conflicts were discussed when various ethnic groups met and less contradictory information was obtained.

**A reflection on the dynamics in ethnic identities**

Ethnicity is a popular theme in the social sciences. That is not the only reason though why we are devoting a number of pages here to this topic. Although the role of ethnic identity as an explanatory variable should not be exaggerated in research, ethnic identity as a social resource is an important element of resource ownership, allocation, management and distribution. Against the background of resource fluctuation and social transformation, we adopted a dynamic view on ethnic identity.

Similarly to variables such as gender and age, ethnic identity is often perceived as a characteristic someone is born with. Jenkins (1997) calls this the primordial view on ethnicity. From this point of view, it is tempting to take ethnic identity as an independent variable in the analysis and explanation of social phenomena. Ethnic segregation and violent conflicts, for instance, are often explained as resulting from incompatible differences or competing interests between ethnic groups. However, in societies where someone’s ethnic identity can change under certain circumstances, ethnicity obscures as well as explains reality. In Northern Kenya one ethnic group might look like an easily identifiable social unit, harbouring people who dress the same, who speak the same language and generally share the same ancestral origin. However, as long ago as in 1989, the anthropologist Günther Schlee shed light on the interethnic clan relationships in the Horn of Africa. He showed how various clans within present-day different ethnic groups like Somali, Rendille, Sakuye, Gabbra, Garre, Boran, Orma, shared historical roots of ancestry, language, territory and rituals (Schlee 1989). Moreover, the Cushitic speaking Rendille and the Maa speaking Samburu share clans through
affiliation. The Samburu, who are originally thought to have originated from a Maasai clan and the Rendille who share ancestry with the Somali intermarried so frequently that at present most Rendille and Samburu families have blood relatives in both groups. In some areas like Ngurunit, the mixed origin of most families resulted in them being given a different ethnic name, such as in the case of the Ariaal (on Ariaal see Spencer 1973; Fratkin & Roth 1996; Falkenstein 1995).

*Changing identity through marriage, migration, emancipation or oppression*

With ‘dynamics in ethnic identities’, we mean both ‘ethnic diversity’ in a region as well as ‘identity (trans) formation and change’. Present-day ethnic groups are composed of clans who may originate from different areas and ethnic groups. Even today, individuals or families may decide to live with a neighbouring group, which means that they move to a neighbouring territory where they dress like their neighbours and adopt their language. Although they often adopt the physical identity markers, some of their original rituals or habits through which their origin can be recognised and remembered are retained.

In Northern Kenya there are various instances of individuals or families deciding to change their ethnic identity. Marriage into a different ethnic group is a common development in someone’s lifetime where the move to another family and territory requires a sudden adaptation to a new community and a new social network, and sometimes even to a new mode of economic production. This happened not only to women after marriage, but also to men who adopted the ethnic identity of their wives and families in-law. Furthermore, the migration of individuals, households or families to a new place sometimes requires a swift transition in ethnic identity and mode of production. This happened in Marsabit, for instance, in times of environmental stress and war, when people moved to Marsabit Mountain after losing large numbers of animals. Married women whose husbands died or divorced moved with their children to Marsabit to build up a new life. Ethnic or clan identity would guide such families in their decision regarding where to settle and whether they could find relatives who would be able and willing to help them. However, if such relatives were not present, individuals also adopted the dominant ethnic identity of the place in which they wanted to settle.

Less sudden is a change in identity without a change in territory. This change can be a result of a process of emancipation where a distinct group wants to be recognised (after being oppressed for instance), or contrarily, where individuals or families want to hide their original identity. Through adoption of language, ethnic name and physical identity markers (like dress, jewels and colours) the original ethnicity can be ‘forgotten’ after some time, especially by outsiders. Families however will not ‘forget’ their roots. Especially in cases of marriage, traditional ‘avoidances’ and taboos on relationships between certain families the ancestry will be remembered. Considerations of past conflicts, caste hierarchy or the possibilities of inbreeding can also play a role here.

*Ethnic identity in our study*

Changes in identity through marriage, migration and sedentarisation, processes of emancipation or as a result of a disguised origin seemed to be part of the survival strategies among the settled households. Marsabit Mountain is a migration area and a meeting place for at least twelve different ethnic groups. Before we started the research, we knew little of the double and changing identities of families and we decided that we would register the present ethnic self-identification of each individual in a household. This turned out to be a very
difficult exercise. The following example demonstrates the methodological problems we faced in interviews at household level.

In Dirib Gombo we interviewed a man who was the head of a wealthy, large family with several wives. He said he was Boran, belonging to the clan of Karayu. During the interview, it became clear that he had inherited a wife from his elder brother who had passed away. This was, according to our limited knowledge, not a custom among Boran families. On the way home our informant, who is of Gabra origin, told us that this man is not of Boran but of Waata origin. The Waata are perceived as a lower caste of hunter/gatherers in Boran and Gabra society, and this man clearly did not want to be identified as Waata. This turned out to be a common occurrence. Some Waata respondents on the contrary said openly that they were Waata, and they found it important to be recognised as such. Some say that other groups discriminate and abuse them. A process of emancipation among Waata started recently which involved terminology like ‘equity for all’ and ‘universal human rights’ not being avoided. The Waata are not officially recognised as a distinct ethnic group by the Kenyan government. They are either registered as Boran or Gabra, although they have a rich and distinct culture of their own. In the region the Waata are famous for their songs and dances. They have distinct rituals and had a different language in the past. Many feel now that they have the right to have their own representatives in the government and that their sacred ancestral grounds in the Huri Hills should be protected. One Waata scholar, Ali Balla Bashuna who is currently writing a book on Waata culture and history is one of the main initiators of this emancipation process.

‘Hiding’ ones own ethnic identity behind the dominant one was also a tactic used by Turkana families, whose ancestors were adopted in the past by Rendille families. During the colonial time they were used as slaves and cheap labour in the Rendille livestock economy.

These examples show us that within one ethnic group some individuals want to hide their identity behind the dominant group in the area, while others stress the differences in their struggle for liberation and emancipation. So which identity should we have registered? Should it be the identity people want to hide but which has clear consequences for them because they are treated differently by the society they live in, or should it be the one they adopt in their struggle to change their livelihood? We stuck to our method of registering the ethnic self-definition, but we understood that this definition was temporal and not exclusive.

Double identities also played a role in a number of families. In the Gabra settlement scheme we interviewed an old Gabra widow. Her husband was Boran, but died a long time ago. She dressed like a Gabra and lived among other Gabra (or people who identify themselves as Gabra) in the Gabra settlement scheme. Her son, who is Boran because his father is Boran, is about 45 years old. He married a Gabra wife. Sons often marry into the clan of their mothers. They live in the Gabra settlement scheme and their children are brought up as Gabra. They celebrate the Gabra ceremonies like Almadho and Soro. One of the children lives with his Gabra grandmother in a nomadic camel camp. For outsiders this family seems purely Gabra. Within the Gabra family, however, it is always remembered and kept in mind that the family is actually a Boran family. During the interview, the man said that he is Boran, but lived as Gabra. This family therefore had a double ethnic identity. They were not hiding one of the two identities, because being Boran or being Gabra is equally prestigious; although in their situation it was socially more desirable or easy to be identified as Gabra.
As Schlee also pointed out, every ethnic group consists of clans that may host migrants from clans with a similar name in another ethnic group. For instance the clan called ‘Karayu’ among Borana speaking groups exists in Boran, Konso, Burjii and Waata. Odola is a clan in Gabra that also exists among the Rendille and the Sakuye. Families can migrate from Gabra Odola to Rendille Odola and move from Gabra villages to Rendille villages or vice versa. In addition, other Gabra clans host migrants from Rendille. The Gabra Algana clan hosts Rendille Rengumo and Saale families. Many Gabra Algana families are direct descendants of clans in Boran and may host Boran migrants. To ‘outsiders’ (enemies, western researchers or individuals with a distant ethnic identity) people may picture themselves as being the ethnicity of the host group where they presently live with. To insiders (relatives, clan mates and friends) they will give the name of the ethnic group where they, their fathers or their grandfathers were born.

Other areas in our sample with double ethnic identities are Hula Hula, Kararé and Kituruni – villages where Rendille and Samburu families live. The residents perceive Hula Hula as a Rendille village, the other two as Samburu villages. Anthropologists would call Kararé and Kituruni Ariaal communities because that is the name used for people from mixed Rendille/Samburu families. The residents themselves told us that they do not mind whether they are called Ariaal, Samburu or Rendille, but if they are asked how they call themselves, they either call themselves Samburu or Rendille rather than Ariaal.

This complicated our method of registering ethnic identity considerably. Does the name they use show their present identity or the one they used in the past, which they thus share with parents or grandparents who might live in another territory? Our translators, who were in most cases residents of the villages themselves, would often inform us about the double ethnic position of a family. Yet, whose definition counts? If people themselves show flexibility in their self-definition, why should we rigidly classify society along ethnic lines if ethnic identity is changeable? It appeared to us that the definition of one’s ethnic identity was subjected to a temporal and flexible use by the people concerned. If being Rendille in one village means being Gabra in another village after migration, ethnic identity is a dependent variable and territory the independent one. Ethnic identity seemed to be a social resource that can be tapped from according to the circumstances.

Moreover, political leaders in Marsabit try to manipulate ethnic identity in order to claim dominance over natural resources. In this respect we can use the terminology of Mohamed Salih ‘resourcing’ identity politics (1999). In his discussion on the linkages between environmental resource conflict and identity politics he shows that in certain areas that one can gain access to resources through appropriation of various sources of identities, while exhibiting the dominant identity. Political leaders can use and misuse this fact, influence symbolic identification to claim either ethnic homogeneity according to the circumstances.

Even though we asked people not only about their ethnic identity but also their area of origin, the area of origin of their parents and grandparents and their clan name, we have to take into account that this did not provide us with enough information on one exclusive or dominant ethnic identity of a household.

We therefore decided to perceive ethnic identity as a changeable characteristic of a household like other household characteristics such as wealth and livelihood strategies. However, even though we can classify households according to production system (pastoral
or agro-pastoral) and wealth levels according to boundaries commonly agreed upon, it is difficult to find boundaries based on ethnic group. Ethnic identity is not exclusive, neither is it fixed. There is generally no consensus on who belongs to one group and who does not. In many cases, it might even be desirable to belong to more than one ethnic group. In times of stress, when resources need to be shared, people emphasise what they have in common with the other rather than what separates them. This could even mean that the strict ethnic definitions reporters might use could have negative consequences for poor people in times of stress. It is interesting to note that political elites seem to profit from ethnic separation because they find it easier to mobilise groups according to clear (physical or imaginable) identity markers. As it is not our intention to contribute to the political power struggles in Marsabit Township, we decided during the interviews not to insist too much on ethnic identity or claims of individuals and territory of past and present. We registered the ethnic identity of the household as the respondent perceived it in their present situation, with the notion that a double ethnic identity is more often the rule than the exception. We use the names of the ethnic groups, but we stress that in our typology being ‘Boran’ means as much ‘living with Boran, or living like Boran’ as being born in Boran, and being Rendille means ‘living with Rendille’ as much as being born as a Rendille.

In some analytical exercises we used language as a classification boundary because ethnic division did not produce interesting results. We split our research sites into two language zones, a Boran speaking language zone and a Rendille/Samburu speaking zone. In this way we avoided the difficulty of having to choose between people’s own ethnic self-definition and the definition used by others. We can assume that people from Boran and Gabra descent who live in the Samburu/Rendille language zone speak Samburu and/or Rendille and that they presently identify themselves with Rendille and Samburu.

To maintain one ethnic classification is justified only if such classifications are relevant in understanding today’s realities. Violent conflicts in Northern Kenya, for instance, seem to have a strong ethnic component, which suggests the relevance of ethnicity in explaining and solving the problems. In the Marsabit Mountain area, most armed violence seemed to involve the Borana speaking people on the one hand and the Rendille/Samburu speaking people (clans in Rendille, Samburu and Ariaal) on the other. The mountain (excluding Marsabit Township) is presently split into two language zones, where all the Borana speaking people (Boran, Gabra, Burji, Konso, Sakuye) inhabit the Northeast part (Manyatta Jillo and Goro Rukesa to Badassa), and the Rendille/Samburu inhabit the Southwest part of the Mountain (from Hula Hula to Songa).

Using language zoning as a method of classification, however, does not clarify all armed violent conflicts. Armed violence does not involve all ethnic groups, or all the people within one ethnic group. When some Samburu and Boran warriors raid each other’s cattle, for instance, it does not mean that the whole group of Boran is suddenly at war with all Samburu. Neither do other Borana speaking people like Konso or Sakuye participate in the conflict. In

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24 We did not incorporate the Turkana village of Milima Tatu.

25 There is a small Turkana village close to Marsabit Township, but these people seem (at present) not to play a role in ethnic conflicts. In all other villages in the Marsabit Mountain area there are several Turkana, who speak the language of the dominant group in that area. In Karare it is very difficult to identify Turkana families. They speak and relate to Samburu or Rendille.
addition, several alliances and break-ups over time cut across those boundaries with ‘internal’ violence occurring within the language group (for instance the Boran fought the Burji in 1994 and the Burji maintained an alliance with the Rendille who were willing to herd their animals). In addition, relationships between Gabra and Boran are not always good. Boran is certainly not able to count on Gabra cooperation with regard to participating in political struggles or fights against Rendille and Samburu, among whom the Gabra have many relatives.

This means we can sum up as many counter arguments against using language zones as against using ethnic boundaries. If an ethnic group is a flexible social construction, about which there is no consensus as to who is ‘in’ and who is ‘out’, ethnic groups are not even what people believe or think them to be. Although cultural differences may seem to mark ‘group-ness’ they do not cause it. Ethnic identification arises out of and within interaction between groups. Today’s reality is that ethnic segregation seems clear in times of conflict, when people are forced (by their political leaders) to take sides. However, as soon as households have control over their own situation they can relax their ethnic identity and use multiple identities if that benefits them. As Falkenstein observed: ‘ethnicity is the outcome of social and political processes which can be of different kinds in different periods’ (Falkenstein 1995: 2).

We therefore chose to perceive ethnic identity as a social construction, where identity is defined ‘situationally, strategically or tactically manipulable, and capable of change at both the individual and collective level’ (Jenkins 1997: 44). This opposes the primordial view in which ethnicity is seen as a fundamental, primordial aspect of human existence and self-consciousness and is essentially static and clear in ‘who is out’ and ‘who is in’.

When ethnic identity is perceived as a social construction, it does not mean that primordial elements do not exist. Clan identity, for instance, could supersede ethnic identity in certain situations. Clan identity is used to mark inter-ethnic relationships. However, when clan identity is used to mark ethnic differences, this act can be seen as a step in the construction of a new grouping and therefore ceases to be primordial and becomes a social construct again.

Yet, it should be noted that people are not always in a position to choose their identity (see also Jenkins 1997: 45). External categorisation is equally important, when communities define ‘outsiders’ according to ‘un-self-chosen’ identities. Social exclusion, stigma and caste stratification are often results of external categorisations, which can form considerable obstacles to pursuing a livelihood.

External categorisation is often a result of power or wealth differences, but can change over time. For instance, migration, or sedentarisation was a way out for some poor pastoral families to relieve them of the stigma. A double or overlapping ethnic identity might therefore even be the norm more often than the exception in the Marsabit Mountain area. Therefore, ethnic identity cannot, by definition, be seen as an explanatory variable for social phenomena in Northern Kenya.
Limitations of the study: causes and consequences

The task of carrying out fieldwork and data collection exercises is highly dependent on the prevailing conditions on the ground and political circumstances that confront the study population. Three instances stand out as constraints to a smooth undertaking of the study. In 1997/98 there was torrential downpour of El Niño rains that caused a complete breakdown in road networks in Marsabit and many other areas of Kenya as well. This lasted for a couple of months and severely restricted mobility with regard to carrying out fieldwork. Towards the end of 1997 there was a national election and political campaigns. We thought it wise to halt fieldwork during the months of December 1997 and January 1998. A halt to the field exercise was also necessitated by mass recruitment and high pay, relative to ours, by the electoral body that attracted most of our assistants.

In 2000, there was a severe drought in the district. Droughts challenge people’s daily means of sustenance and put extra a burden on people’s efforts with regard to tendering herds and making ends meet. The consequences were that an earth-dug tuber had to be dug, weak and young herds had to be fed and animals frequently provided with water. These demands drew people away from their homes. In certain cases we made arrangements for the assistants to visit some of the sample households to interview whichever head of the household was present during the evening.

The response to the questionnaire surveys

In virtually all instances, people enjoyed answering the questions and had no great difficulty in recalling harvests, expenditures and various herd dynamic variables (e.g. births, deaths, slaughters, sales and purchases) during recent seasons. We nevertheless sometimes had our doubts about the estimated size of the fields. We therefore treat field size in our analysis as an estimate. Information about some other activities was also inaccurate. People were sometimes ashamed of the fact that they burned charcoal as an income-generating activity and the brewing of alcohol is illegal. We think that the proportion of households engaged in these activities might be higher than in our analysis. In addition, the information on ethnic background was sometimes untrue. The Waata community, for instance, have all sorts of reasons why they do not want to be recognised as ‘Waata’ and they usually ‘adopted’ the ethnic identity of the group they live with. We therefore think that their number in our survey is higher than indicated.

In some instances, the questions in the survey were not relevant to the research populations. For example, a whole section in the first questionnaire concerned the settlement history of nomadic pastoralists and their change to an agricultural production system. These questions were irrelevant for the Burji community, who have always been farmers or settled agro-pastoralists, traders, teachers or businessmen. In addition, many people of the Burji community suffered greatly during the ethnic clashes in 1994. The Burji community was the target of much frustration and envy from other ethnic groups, who destroyed their harvests and houses in 1994. Many Burji families left their homesteads in the rural villages and hid in town where many still lived in 1998. Among the Burji some mistrust existed towards outsiders and some information remained hidden. They sometimes did not want to disclose their income, harvests or settlement history. This was also one of the reasons why we omitted
Daka-baricha in the survey carried out in 2000, although the Burji community is one of the most productive ones on the mountain.

The impact of climatic extremes
The 1998 rains and the 1996/97 droughts, and again the 1999/2000 droughts, all had adverse impacts on the production sectors and these events coincided with periods of our fieldwork. The 2000 visit was thus aimed at assessing the ex-post state and 'recovery' of the households following adverse variable shocks. These objectives, in particular, meant the 2000 field visit was necessary in order to assess the ex post effects of the 1996/97 droughts, and to compare these with the effects of the 1997/98 El Niño rains on the households and on the local use and management of natural resources. On this note, the 2000 visit enabled us to generate data on the dynamics of household wealth holdings and access to resources through time. The insights gained from the resource assessments are expected to provide information on the prospects for the rural livelihoods, household risk exposures and resource management and the pastoral economy as a whole.

Conclusions
In this chapter we reviewed the methods used in our research. We employed several methods from different sources, encompassing cross-section information and different time spans. These sources included personal interviews, a household questionnaire (plus repeated) surveys, and local market and time series data contained in reports and government documents. Our interest in resources and the dynamics in the rural resource base over time determined the choice of the data collection approaches employed. This recognition also motivated us to repeat the household surveys. In choosing the study sites particular attention was given to the ecological zones, which are partly responsible for the differences in production and partly influence the prevailing livelihood strategies. The methods used in the study generated both qualitative and quantitative datasets, covering multi-disciplinary aspects of geography, economics, ecology and anthropology. The wide range of datasets and the multi-disciplinary approach permitted us to come to grips with the dynamics in various resource bases, which are central in our study. A remark should be made, however, concerning the fluidity in certain concepts employed such as ‘the household’ and ‘ethnicity’. This represents methodological issues and related empirical irregularities that need to be borne in mind when conducting studies such as this one.

Climatic and associated environmental stresses are a common cause of negative covariate shocks of livestock loss among pastoral households in sub-Saharan Africa, especially in the long term. Our fieldwork periods coincided with two extreme events of severe drought and heavy El Niño rains. These events enabled us to assess short-term impacts of extreme climate events on rural production and peoples’ livelihoods.
Appendix 3.1
Some notes on spellings of names of places and ethnic groups used in the book

Mobility across space and time is one phenomenon, although not the only one, that is shared by all the pastoral peoples in the study area. After such movements and relocations, newcomers to a place at times try to erase the historical occupation of an area or region in the past by another group by giving places their own ‘new’ name. For example, Orandere in the Gabra/Boran area today is a Rendille word, and Karare might have derived its name from a Borana word ‘Qarari or Karari’. Thus such mobility has implications for names of places over time.

In addition, different writers and scholars who studied the various ethnic groups in the study have used different spellings for a specific group. The use of different wordings of names of places and ethnic groups might have diverse implications to different users and readers, and particularly in places where diverse ethnic groups co-inhabit such as Marsabit Mountain. Therefore, in this section we clarify the spellings of places and ethnic groups as used in this book, and we do so for the purpose of consistency. In choosing these spellings, we follow the spellings most commonly used by the previous scholars and reported in the official government documents such as National Population Censuses, and Marsabit District Annual reports.

The following are the spellings we adopted in the book:

<table>
<thead>
<tr>
<th>Place</th>
<th>Ethnic group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manyatta Jillo</td>
<td>Boran (also written as Borana or Booran(^{26}))</td>
</tr>
<tr>
<td>Dirib Gombo</td>
<td></td>
</tr>
<tr>
<td>Badassa</td>
<td>Gabra (others sometimes use ‘Gabbra’)</td>
</tr>
<tr>
<td>Daka-baricha</td>
<td>Rendille</td>
</tr>
<tr>
<td>Sagante</td>
<td>Samburu</td>
</tr>
<tr>
<td>Kituruni</td>
<td>Burji</td>
</tr>
<tr>
<td>Hula Hula (Ulanula in the past)</td>
<td>Konso</td>
</tr>
<tr>
<td>Karare</td>
<td>Turkana</td>
</tr>
<tr>
<td>Maikona</td>
<td>Ariaal</td>
</tr>
<tr>
<td>Kargi</td>
<td>Sakuye</td>
</tr>
<tr>
<td>Ngurunit (others use Ngurnit too)</td>
<td>Somali</td>
</tr>
<tr>
<td>Korr</td>
<td></td>
</tr>
</tbody>
</table>

It should be noted that as far as the spellings of names of places and groups are concerned, we make no suggestion of new spellings. However, it is our aim to respect the names which have been used by previous writers and scholars, and of course set right those names which have been incorrectly spelt in the past. For example, Dirib Gombo should not be Dirib Gumbo.

\(^{26}\) The latter is the spelling used by scholars of phonetics, or phoneticians. It should be noted that we use the word ‘Borana’ in this thesis to refer to the language spoken by a number of Cushitic sub-groups in the region.