NIRP 93-2.1
FINAL REPORT

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MARKET DEPENDENCE OF PASTORALISTS IN KENYA AND ISRAEL

July 1998

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African Studies Centre, Leiden, Netherlands

Programme	N.I.R.P. Netherlands-Israel Development Research Programme
Title Project	Growing market dependence of food security arrangements for pastoralists in southern and eastern Kenya
Code No	NIRP 93-2.1
Reporting period	1994-98
Status	Final report
Date	31.07.98

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PART I

SUMMARY OF PROJECT FINDINGS

1. SUMMARY OF PROJECT FINDINGS

1.1 General

Summary of the research project's main topic, objectives, research questions and hypotheses, and research locations:

The future of pastoralists in East Africa is seriously threatened and policies and measures are needed to strengthen the pastoral economies and to secure their existence. In Kenya, the Government has embarked on a policy of integrated development of arid and semi-arid lands. The issue of food security is an extremely important topic in this respect that cuts through at all levels. The underlying hypothesis in this research is that semi-commercial livestock production in pastoral areas can improve food security at the household level. It is expected that the exchange rate between livestock products and grains is generally favourable and that pastoralists will be able to live of smaller herds but that to improve food security it will be necessary to increase the production of livestock systems and to improve the marketing structure in respect of the outflow of livestock products and the inflow of food commodities.

The objective of the research was to examine pastoral economies in Kenya, notably the Maasai in the Kajiado District and the Somali in the Garissa District to study the possibilities and conditions for increased livestock offtake from the pastoral herd and efficient flow of grains into the areas. The comparative analysis further included the Bedouin in the Negev desert in Israel who have relevant experiences with intensification and commercialisation of livestock production.

The study is multi disciplinary in nature and information was collected at district level, on markets and on households. It includes an analysis of the exchange rate between livestock products on the one hand and grains on the other. It further includes surveys of the existing marketing structure for livestock and grains as well as household surveys on degree of commercialisation and household food security.

Participating institutions and researchers

- School of Environmental Studies, Moi University, Eldoret, Kenya
  Prof. D.A.Otieno; Mr.A.Nunow; Dr. S.J.Dima (later from Lesotho);
  Prof. C.O.Okidi (resigned);
- Blaustein Institute for Desert Research, Ben Gurion University, Beer-Sheva, Israel
  Prof. A.A.Degen
- African Studies Centre, Leiden, Netherlands
  Prof. J.C.Hoorweg; Mr.A.F.M.Zaal (University of Amsterdam)

Starting Date February 1994

Original Time Schedule & Workplan:

Kajiado Study	
may-dec'94	Data collection on livestock prices and volumes; maize prices and volumes; and limited household information.
feb-apr'95	Last round of data collection; various additional information.
apr'95-apr'96	Continued data collection on prices and volumes of livestock & cereals and household information (1year).
apr'95-sep'96	Drafting of study report for project purposes.
Garissa Study	
1994	Selection and appointment of Ph.D. fellow.
jan-mar'95	Drafting research outline & data schedule & circulation for rapid comment among team members.
mar'95-sep'95	Training in Netherlands.
oct'95-oct'96	Data collection.
oct'96-oct'97	Continued data collection (1 year).
oct'96-oct'97	Drafting of study report for project purposes.
Negev Study	
aug'94-aug'97	Data collection on livestock prices; cereal prices and in-depth household information.
mar'97-sep'97	Data analysis and preparation for study report
Final Report	
jan'98-feb'98	The report on the Kajiado study planned to be ready by sep'96. The report on the Eastern Kenya study to be available by oct'97 as well as the report for the Negev study. The three to be combined in the final document by the principal investigators and submitted by February at the end of the project.

Date and period of progress reports

MDP (1994a)
Mission Report, May 1994. MDP-Report no.1

MDP (1994b)
Report of the first period of fieldwork in Kenya, Kajiado. MDP-Report no.2

MDP (1995a)
Annual Report 1994. MDP-Report no.3

MDP (1995b)
Report on the period of fieldwork in Kenya, Kajiado (feb-apr '95). MDP-Report no.4

MDP (1996a)
Annual Report 1995. MDP-Report no.5

MDP (1996b)
Report on the period of fieldwork in Kenya, Kajiado (feb'96). MDP-Report no.6

MDP (1997a)
Progress Report of Garissa Study (January). MDP-Report no.7

MDP (1997b)
Annual Report 1996. MDP-Report no.8

Nunow A A (1995a)
Report on the period 12th March to 22nd September in the Netherlands

1.2 Survey of activities during the project period

Kajiado Study

Data collection during the period may'94-apr'96 went according to schedule. Ms. Frija. v.d. Kroef, M.A.student in social geography at the University of Amsterdam, did a 3-month support study on the grain trade in Kajiado District from feb-may '96. Data entry was delayed and completed in feb'97 after Ms.Karin Rustenburg assisted with data entry of the Kajiado household surveys for a 3-month period. Both were supported by external funds. Reporting was done in the course of '97.

Garissa Study

Delays in implementation of the time schedule were caused by the security situation which deteriorated after '93. Moreover, a drought in '96 affected the study in several ways, notably the planned household surveys. Half the district population moved near Garissa town. In Dadaab most households moved their animals to Somalia. The households, though, generally remained behind and were still accessible and were usually aware of the status of their herd. In Ijara, many households with their animals moved in the course of the year and were no longer accessible. The household surveys were by and large on schedule but the planned second year of data collection needed to be revised in view of the altered circumstances. The planned 2-monthly data collections were discontinued. Round 6 was still completed and included additional information on changes in household composition. An additional survey among displaced pastoralists living on the outskirts of Garissa Town in jul'97 was considered necessary and added to the workplan. The extra time spent on the household surveys has been at the expense of the other activities, notably data entry, collection of background information on the district and the important information on livestock/grain prices were still going on early '98. Data on trade volumes of livestock and grains turned out to be largely unavailable.

Negev Study

Implemented according to original plan

Reporting

The report of the Beouin study was completed by the end of 1997 and is included in full in this report. The report of the Maasai study is based on three published reports (Zaal 1997a, 1997b, 1997c) and one draft report (Zaal 1998a). The report of the Somali study was completed in May 1998 and is included in full in this report. The final report was drafted between February and July 1998.

1.3. Results

Scientific findings and relevance

The CToT was favourable in the three groups of pastoralists. It was highest, but most variable, among the Bedouin ranging between 29:1 and 99:1. This fluctuation was due mainly to grain price changes - livestock prices remained relatively constant. It was lowest among the Somali ranging between 1:1 and 13:1 and intermediate among the

Maasai ranging between 3:1 and 19:1. The number of tropical livestock units (TLU) per capita, indicates the wealth of the household and whether the household can survive on livestock only. It has been suggested that a TLU/capita of 4 is the minimum number required. Approximately 58% of the Maasai are above this minimum, 17% of the Somali and none of the Bedouin. In fact, the Bedouin average less than 2, however, the very favourable CToT may compensate for the low TLU/capita in this group.

Land constraints and grazing restrictions are being felt by the three pastoral groups which will necessitate changes in order for livestock raising to continue. It is envisaged that the Bedouin will turn more towards rain-fed agriculture below the 220 mm isohyte and incorporate different degrees of intensification and modernisation of flock management. The future of most of the Bedouin would appear to be integration into the Israel urban economy while maintaining many of their cultural traditions. A relatively small but stable number of households will continue to practice agro-pastoralism as a means of livelihood. The wealthy Maasai are undertaking a programme of upgrading their herds and thus improve productivity. This will allow more production from fewer animals. The poor Maasai do not have the means to upgrade their herds and will eventually be forced to decrease productivity. The Somali neither have the option to decrease TLU/capita because of low productivity of their livestock nor upgrade their animals because of the expense. The solution for this group appears to be the inclusion of irrigated agriculture to supplement livestock production.

Relevance of the findings

This multi-disciplinary study contributes new knowledge on the emerging marketing operations in the pastoral areas of Kenya and elsewhere in Africa. The integration of findings at district and household levels provides insight in the value systems of pastoralists with regard to exchanging livestock for grain and how this relates to the price mechanism in the market. These findings are expected to be used to formulate strategies for increasing the marketed offtake from the pastoral herds in order to arrive at semi-commercial production and improved food security; also to improve the quality of the herds, and reduce the degradation of the range.

Contribution to strengthening of research capacity

The results of this research are of direct use to both the pastoral communities studied and technical personnel of the relevant ministries working in these areas. The government of Kenya is expected to use the findings to review its policies on pastoralism and be in a better position to request for bilateral assistance from the Netherlands and Israel for programmes to improve the pastoral economies of the Maasai and the Somali.

In addition the project contributed to the institutional development and staff development of the School of Environmental Studies, Moi University. The School expanded its field of expertise and involvement in an urgent national development priority namely that of arid and semi-arid lands. The staff development has benefited senior and junior staff, both as regards their field of expertise and as regards research methods among

pastoralists. Dr.Dima was to be the senior staff member but he resigned his position with MU during the first year of the study and went abroad. Prof.Otieno, the Dean at the time, took over his responsibilities. Nunow, the junior researcher is scheduled to receive his Ph.D. degree from the University of Amsterdam and then to join the staff of the School of Environmental Studies. He is bonded to teach for a minimum of three years. The Israeli and Dutch researchers likewise improved their field of research expertise. The project also resulted in further research collaboration among the respective researchers and their institutions.

Project related publications

Degen A, Dima S & Hoorweg J (1993)
Growing Market Dependence of Food Security Arrangements for Pastoralists in Southern and Eastern Kenya. Eldoret: Moi University (research proposal)

Degen A A (1998)
Bedouin households dependent on sheep for their livelihood in the Negev, Israel. NIRP project 93-2.1- Report No.12. Ben Gurion University,

Kroef F van der (1997)
Maize market liberalisation: The Kajiado case. University of Amsterdam, MA thesis.

Nunow A A (1995)
Increasing market participation to improve food security for pastoralists in North-eastern Kenya. Amsterdam, UvA (research outline)

Zaal F (1993)
Food Security in Environmentally Insecure Area: Market relations of pastoralists in semi-arid sub-saharan Africa. Research proposal. UvA.

Zaal F & Dietz T (1995)
Of markets, meat, maize and milk: Pastoral commodization as necessary but risky livelihood strategy. Paper presented at the workshop on 'The poverties and prosperities of East African pastoralism' Uppsala, Sweden, September 15-17, 1995.

Zaal F (1997)
Livestock traders in Kajiado District, Kenya. NIRP project 93-2.1- Report No.9. University of Amsterdam.

Zaal F (1997)
Grain traders and retailers in Kajiado District, Kenya. NIRP project 93-2.1- Report No.10. University of Amsterdam.

Zaal F (1997)
Livestock and cereal markets in Kajiado District, Kenya. NIRP project 93-2.1- Report No.11. University of Amsterdam.

Zaal F (1998)
Market involvement of pastoral households in Kajiado District, Kenya. NIRP project 93-2.1- Report No.xx. University of Amsterdam. (in preparation).

Zaal F (1998)
Pastoralism in a global age: Livestock marketing and pastoral commercial activities. Ph.D. thesis. Amsterdam: University of Amsterdam. (draft)

1.4. Recommendations for practical follow-up

The study provides data on the trade of livestock and grains in pastoral areas of Kenya and Israel together with data on the exchange of livestock for grain calculated in

monetary terms. This report contains the major findings of three pastoral groups. Practical follow-up is recommended as follows.

- Further reports will be in the form of Ph.D. theses of the junior researchers Zaal and Nunow. The thesis by Zaal (1998b) has been submitted and will be defended in November '98. Nunow is currently working on the additional analysis of the Somali data and is scheduled for a stay in Netherlands during the remainder of 1998 and 1999. NIRP has been requested to allocate the remaining 93-2.1 funds for the training of Nunow (as earmarked in the original budget).
- As regards to policy recommendations, the need for improvement of marketing infrastructure in Garissa and Kajiado Districts is brought out in this report. In order, to bring policy and planning further, it is recommended that seminar(s) are organised of personnel at national and district level: producers, government representatives, NGO workers and researchers. Experiences with this type of seminar in other projects in the past have been positive, particularly as a means of dissemination of information and formulation of policy and planning measures.
- The main publications emanating from this project, so far, will be the two Ph.D. theses for the Kenyan studies and derived scientific papers. A journal manuscript for the Bedouin study is in preparation. A joint publication of the three studies in one cover in the form of an adapted version of the end report can serve as further means of dissemination of findings. It is recommended that NIRP publish such a report as one of a series of similar scientific publications.

1.5 Suggestions for further research

Further research is suggested along two main dimensions, namely:

(i) animal production / household livelihood strategies;
(ii) subsistence pastoralism / livestock commercialisation.

Suggested topics with focus on household livelihoods:

- The resource base and future strategies of pastoralists that are no longer able to keep livestock in numbers;
- The dynamics of socio-economic differentiation among pastoral households and the effects on future commercialisation;
- The potential contribution of women to the impending transformation of pastoral households;
- The impact of increasing camel production on Maasai culture and the environmental effects on the range and pastures grazed by other livestock.

Suggested topics with focus on livestock production:

- Effect of precipitation on primary production as the main determinant of
  (i) the number of livestock the pastoralists can maintain and
  (ii) offtake levels that can be achieved;

- Seasonal changes in pasture availability and the effects on animal numbers and animal productivity;
- Effect of environmental factors and breed on milk and meat production.

1.6 Other suggestions and remarks

- NIRP has made worthwhile attempts to facilitate cross-project communication. It is suggested that such exchanges are organised more often and in a more intensive form;
- NIRP financial procedures need to be more flexible and less reliant on existing financial administrations;
- More responsibility should be given to senior researchers to make ad-hoc decisions on project implementation when unexpected developments occur;
- NIRP should reserve funds for unforeseen project developments over and above the contingencies in the project budget itself;
- The existence of NIRP academic monitors in Israel and Netherlands was a most helpful factor in the completion of this project.

PART II

RESEARCH INTRODUCTION

2. RESEARCH INTRODUCTION

Executive summary

The future of pastoralists in East Africa is seriously threatened and policies and measures are needed to strengthen the pastoral economies and to secure their existence. In Kenya, the Government has embarked on a policy of integrated development of arid and semi-arid lands with the issue of food security being extremely important. The underlying hypothesis in this research is that semi-commercial livestock production in pastoral areas can improve food security at the household level. It is expected that (1) the exchange rate between livestock products and grains, that is the caloric terms of trade (CToT), is generally favourable; (2) that pastoralists will be able to live having smaller herds but it will be necessary to increase the production of livestock systems; and (3) it will be necessary to improve the marketing structure in respect of the outflow of livestock products and the inflow of food commodities. The objective of the research was to examine pastoral economies in Kenya, notably the Maasai in the Kajiado District and the Somali in the Garissa District, to study the possibilities and conditions for increased livestock offtake and efficient flow of grains. The comparative analysis further included the Bedouin in the Negev Desert in Israel who have relevant experiences with intensification and commercialisation of livestock production.

The CToT was favourable in the three groups of pastoralists. It was highest, but most variable, among the Bedouin ranging between 29:1 and 99:1. This fluctuation was due mainly to grain price changes - livestock prices remained relatively constant. It was lowest among the Somali ranging between 1:1 and 13:1 and intermediate among the Maasai ranging between 3:1 and 19:1. The number of tropical livestock units (TLU) per capita, indicates the wealth of the household and whether the household can survive on livestock only. It has been suggested that a TLU/capita of 4 is the minimum number required. Approximately 58% of the Maasai are above this minimum, 17% of the Somali and none of the Bedouin. In fact, the Bedouin average less than 2, however, the very favourable CToT may compensate for the low TLU/capita in this group.

Land constraints and grazing restrictions are being felt by the three pastoral groups which will necessitate changes in order for livestock raising to continue. It is envisaged that the Bedouin will turn more towards rain-fed agriculture below the 220 mm isohyte and incorporate different degrees of intensification and modernisation of flock management. The future of most of the Bedouin would appear to be integration into the Israel urban economy while maintaining many of their cultural traditions. A relatively small but stable number of households will continue to practice agro-pastoralism as a means of livelihood. The wealthy Maasai are undertaking a programme of upgrading their herds and thus improve productivity. This will allow more production from fewer animals. The poor Maasai do not have the means to upgrade their herds and will eventually be forced to decrease productivity. The Somali neither have the option to decrease TLU/capita because of low productivity of their livestock nor upgrade their animals because of the expense. The solution for this group appears to be the inclusion of irrigated agriculture to supplement livestock production.

2.1 Introduction

Africa is one of the continents with large pastoralist populations. In all, it is estimated that in Africa 13-16 mln km^2, largely arid and semi-arid lands, are used for grazing, supporting an estimated population of 15-24m. people (Jahnke 1982; Sandford 1983). Pastoralist populations in East Africa find themselves under increasing pressure for several reasons. Armed conflict has been an important factor in Somalia and Sudan and, earlier on, in Ethiopia (Doornbos *et al.* 1992; Markakis 1993; Merryman 1987). Recent droughts have also played a part but pastoralists have always had to cope with the vagaries of the climate and if not for other negative factors might still be able to recuperate successfully after drought periods (Campbell 1991; Fratkin 1991).

Kenya numbers about 1.5m. pastoral people among them the Maasai in south-west Kenya and the Somali in north-east Kenya. The pastoralists in Kenya are under pressure because of structural and social changes that have to do with reduced access to land, reduced access to water, changes in livestock ownership, increased demands on labour, coupled with increased population pressure.[1]

Two opposite viewpoints exist concerning the future of the pastoralists in Kenya (Dyson-Hudson 1982; Galaty *et al.* 1981). The first is that in the long run there is less place for pastoralist economies and that the pastoralists will be more and more marginalised and ultimately sedentarised. Such a pattern is typical of what has been happening to the Bedouins in the Negev desert. The other viewpoint holds that more than three-quarters of the country consists of arid and semi-arid lands that can only be made productive through some form of livestock production. The first scenario is the more likely to occur if current trends and developments are left free play. To prevent this, policies and measures are needed to strengthen the pastoral economies.

Following initial sectoral efforts at pastoral development (Goldschmidt 1981) the Kenya Government in the early '80s started a policy of integrated development of the arid and semi-arid lands (ASAL) with the help of foreign donor assistance. The recent ASAL policy plan is a serious effort at improvement and focuses on the development of livestock and crop resources; infrastructural improvements, human resource development and drought management (RoK 1988c, 1992a, 1992b). Food security is an extremely important issue in this connection that cuts through at all levels. Food security among Kenyan pastoralists is dependent on the availability of livestock products as well as grain products from own cultivation or barter/purchases.

In Kenya, substantial parts of the rural diet are nowadays purchased and a similar trend exists among pastoralists. This, however, requires sufficient purchasing power of households which, in the case of pastoralists, can be realised from the sale of livestock, from employment and other economic activities. The traditional pastoral system has been shown to be self-sufficient but under the changing conditions there is need to increase production with improved livestock methods such as improvements in animal health, improved breeds and utilisation of water facilities (Bonfigliolo 1992; Swift *et al.*

1 See Lane & Swift 1989; Rutten 1992; Scoones *et al.* 1991; Sikana & Kerven 1991

1990). Greater possibilities for trade and barter are also needed. The existing marketing structure for the outflow of livestock products and the inflow of food commodities plays a critical role in this respect. Repeated experiences in the past have shown that pastoralists are not necessarily reluctant to enter the cash economy but ever since the first trials during the colonial period, marketing arrangements and prices have proved a veritable bottleneck (Low 1980).

Good marketing facilities are needed to ensure sufficient linkages with the cash economy to be able to sell livestock products but also to purchase food when needed or desired. This requires an adequate network of trading points; stability of demand and supply but also that the terms of trade between livestock products and food commodities (grains) are favourable enough; more particularly in terms of caloric exchange rates. This fits in with current thinking about drought relief by means of strengthening the purchasing power of the population rather than through food distribution. It is evident that the issues of market dependence and food security are closely intertwined, both at the regional and the household level and this will be the central focus of the proposed study.

In Kenya, subsistence livestock keeping is becoming less viable and, by large, will no longer be able to assure the food security of the populations concerned. Alternatives to subsistence livestock include sedentarisation with various forms of agro-pastoralism and out-migration to rural centres and cities in search of employment. These alternatives are not attractive because of the ecological consequences and the existing economic constraints, but they are also not attractive from the perspective of the pastoral households themselves. Improved pastoralism or semi-commercial pastoralism offers opportunities to assure a satisfactory livelihood and the necessary food security and to preserve the traditional way of life. To make improved pastoralism a viable alternative, however, requires improved production methods that will lead to increased production of animals and animal products at low costs. Even more important are effective and reliable marketing channels to assure the outflow of livestock products and the inflow of food commodities, grains in particular, and other consumer goods, as well as barter and trade within the districts.

The general expectation underlying this research is that in Kenya there exist positive terms of trade between livestock and grains in caloric terms and that improved marketing channels will bring about further improvements in food security for pastoral groups. In support of this argument research is needed on livestock production, marketing of livestock and livestock products and food security among pastoralists.

The experience with pastoralists in Israel are relevant here. About 70,000 Bedouin live in the Negev desert, an area of approximately 12,000 km^2. During the 20th century, pastoral livestock rearing among the Bedouin has declined greatly due to a stronger central government, increased cultivated areas, urban growth and more pressure on available land. This has forced many Bedouins into a more sedentary form of agriculture and they have developed an intensive livestock grazing system that may give

insights for possible future scenarios in Kenya. This agriculture includes more intensive livestock production -mainly sheep and goats-, in which there is some grazing on natural pasture but also includes the use of aftermath after grain harvest, and provision of hay, straw, or grain when necessary. The latter may be cultivated by the Bedouin themselves or purchased and livestock production is further increased by the introduction of more productive breeds.

2.2 Theoretical Orientation

The two pastoralist groups that are the subject of the study, the Maasai in the Southwest of Kenya and the Somali in the Northeast of the country, are exposed to similar constraints in terms of reduction of the dry season grazing, access to water sources and labour constraints which make it important for both groups that new solutions are found. At the same time they differ in a number of important characteristics, such as herd composition, land tenure systems, social organisation, dietary habits and market development that make a comparison interesting but also necessary.

A number of studies exist on pastoralist production and commercialisation in the Somali Republic[2], fewer studies exist on the Kenya Somali in this respect (Merryman 1987). From these studies it is clear that the marketing of cattle and small stock from the inland areas towards Mogadishu and Kismayo was well developed at the time, with a chain of small traders, intermediate traders and exporters. Also, milk production for the market was widespread and well organised, mainly by women (Herren 1990, 1992; Little 1989a, 1991).

In the case of the Maasai, extensive studies by ILCA some 10-15 years ago, proved the productivity of the system to be high considering existing wildlife densities[3]. However, the opportunities for increased offtake were considered to be limited because of lack of marketing options.[4] Some authors have emphasised the importance of the traditional values attached to animals that influence the possibilities for greater offtake (Galaty 1981, 1982). Studies during periods of droughts and conflict, have particularly highlighted the working of the pastoral system (Campbell 1978, 1979, 1991; Grandin & Lembuya 1987; Little 1987b) with the relations between herders and farmers coming particularly to the fore, providing livestock producers with grains through favourable terms of trade(Kerven 1992; Little 1983, 1987a, 1992) The marketing of milk by women appears to be limited in quantity.

Recently, the land issue has received attention, since it is likely to be one of the main restricting factors in the future (Grandin *et al.* 1989; Pasha 1986). Control over land

2 See Abdulahi & Jahnke 1990; Glantz 1977; Little 1989b; Poulsen 1990; Samatar 1987, 1992a, 1992b; Samatar *et al.* 1988; Swift 1979; Baumann *et al.* 1993.

3 See Bekure *et al.* 1991; ILCA 1983; King *et al.* 1982, 1985; Leeuw & Peacock 1982; Leeuw & Tothill 1990; Peden 1984.

4 See Bekure *et al.* 1982; Bekure & Chabari 1986; Evangelou 1984a, 1984b; ILCA 1983; Williams 1990.

resources among the Maasai is seriously threatened through the process of subdivision of group ranches; many younger producers no longer have access to land, and land is being sold to outsiders (Bekura & Pasha 1990; RoK 1988a, 1988b). Group ranches are being subdivided and individual ranches are created with individual title deeds which has many consequences (Rutten 1992). One of the consequences is that those who were members of the group ranch obtained an individual ranch. As there usually were more members than families (though not in all cases) and, as before subdivision, new members such as sons were allowed to register (though not always), the groups of people living together before subdivision had split up and gone to their own separate ranches. Apart from the fact that most women lost access to land in this formal arrangement, they also found themselves socially isolated in smaller dispersed units. Also, the most common household now is the nuclear family and, sometimes, family or friends attached to these units. No longer are families living together in *bomas*, but rather the member group, or *elatia*, now live dispersed over various smaller camps close to each other although *bomas*, with four to eight houses, and two to four families, still exist. Among the Somali of the north-east land is communally owned and the above processes of land alienation and privatisation are still largely absent. Here, however, access to water starts to pose a serious problem. The development of irrigation agriculture along the Tana River has denied pastoralists access to the dry season pasture as well as watering places. This is made worse by the increasing number of trading centres in former watering points.

Though the livestock dependence among both groups is considerable, the composition of the diet differs. The Maasai prefer livestock products for their daily diet, milk in particular, while the Somali consume animal products and grain in equal proportions. Research on the dietary practices of the Kenya Somali is not available; data exist on the food consumption and nutritional status of the Maasai.[5] Seasonal shortages were reported, but in general it appears that a more diverse diet has been achieved through improved trade and purchase of other foods with improved nutritional status.

The expectation is that semi-commercial livestock production in pastoral areas can improve food security at household level and that more people should thus be able to live of the herds. To start, this hypothesis was examined by an analysis of the exchange rates between livestock products on the one hand and food commodities (grains in particular) on the other. Terms of trade were expressed in monetary and caloric value and it was expected that the caloric terms of trade in the past and the present are favourable to livestock producers.

2.3 Study Methods

For a full understanding of the relation between market dependence and food security more elements were incorporated in the study. The existing marketing structure for live-

5 See Bekure *et al.* 1991; Homewood & Rodgers 1991; ILCA 1983; Nestel 1989; Nestel & Geisler 1986.

stock as well as that for food commodities (grains in particular) were surveyed together with the volumes of livestock products and grains traded in different years and different seasons.

Information was collected at three levels: district, markets, and households:

District *
- Environmental background data;
- General population data;
- Size of livestock population and grazing lands;
- Livestock number and crop production;
- Exports of livestock to outside the district;
- Imports of grain and other food commodities into the district;
- Existing marketing structure;
- Existing livestock extension & support services.

* In Kenya the districts concerned are Kajiado in the south and Garissa in the north-east; where possible information will be collected for a longer time period, namely '79-'93; otherwise the information will be restricted to an assessment of the present situation;

Markets
- Market structure for livestock in terms of traders and retailers;
- Market structure for grains in terms of traders and retailers;
- Livestock and grain prices over the period '79-93;
- Volumes of livestock and grains traded over the period '79-93;
- Fluctuations in livestock and grain prices during a two-year period;
- Fluctuations in volumes of livestock and grains traded over same period*.

House-hold
- Household size and composition;
- Farm resource base and composition;
- Household access to rangeland and water;
- Livestock production and management;
- Crop production and practices;
- Off-farm economic activities and income;
- Market access & degree of commercialisation;
- Household food package and origin.

Information will be obtained by means of the following methods of data collection:
- Examination of existing scientific literature and project reports;
- Examination of government records and annual reports;
- Visits to markets and observations in-situ;
- Surveys of selected markets;
- Surveys of livestock traders and butchers in selected markets;
- Surveys of grain traders and retailers in selected markets;
- Interviews with elders and group discussions;
- Households surveys in selected geographical clusters.

Statistical analysis will include household parameters and market characteristics. A multi-period linear programming analysis is available that takes into account livestock and grain parameters, labour, capital and land availability. The appropriate technology

over time can be determined that best serves the different agricultural systems. The goals are socio-economically determined and can be subsistence, cash or number of livestock.

As the project in essence entails three studies in different geographical areas the three will be described separately for purposes and ease of continuity within each study. Specific methodology, where relevant, will be included. The Bedouin study will be presented first because the experience in this setting will provide a background for the later findings as a possible scenario of what may follow in whole or in part with pastoral societies in Kenya.

PART III

BEDOUIN PASTORALISTS
IN
THE NEGEV DESERT

PART III BEDOUIN PASTORALISTS IN THE NEGEV DESERT

3.1 Introduction

This part of the report describes a sample of Bedouin households amongst the approximately 1,000 that today still raise small livestock as a main production source for their livelihood. The main characteristics of the Negev, the history of Bedouin settlement in the Negev and the factors that influenced it are discussed. Most of the information describing present day Bedouin conditions was gathered by interviews, personal observations and discussions with people working and/or dealing with Bedouin. In addition, a description of a two-year field survey of six Bedouin households raising sheep for their livelihood is presented.

3.2 Negev Desert

Situated in the south of Israel, the Negev (Hebrew for south or dry land) is triangular shaped and has an area of 12,500 km^2. It lies between 29°29' and 31°33' north; 34°23' and 35°24' east, with its triangular point at Eilat. It is bordered in the west by the Mediterranean sea, to the east by the Judean desert and the Arava rift valley, to the north by the 400 mm isohyte and to the south by the Egyptian Sinai desert (Map 3.1). It is considered to be part of the Sahara-Arabian desert belt (Boyazoglu & Flamant 1990).

The Negev can be divided by rainfall into two main climatic regions: a north-western region which has an annual rainfall of 200 mm (at Beer Sheva) in the south to 400 mm in the north; and a south-eastern region where the rainfall decreases from 200 mm in the north to 40 mm at Eilat in the south. In both regions there is considerable variability (coefficient of variation 30-40%) in both rainfall distribution and quantity among years. The north-western and south-eastern Negev are considered to fall in the semi-arid and arid Mediterranean climate zone, respectively (Noy-Meir & Seligman 1979). The north-western region is characterised by relatively flat plains with deep loess soils while the south-east region is mainly a hilly desert steppe.

The rainfall season is from late October to late April with most of the rain falling from December to February. Mean seasonal air temperatures are 5.4°C to 18.5°C (minimum and maximum) in the winter and 15.8°C to 33.9°C in the summer (Marx 1974). However, frost can be experienced in the winter and air temperatures of up to 45°C are often recorded in the summer (especially in the southern Negev). In general, there is a decrease in rainfall and an increase in air temperature from north-west to south-east. There is also a maritime effect from the Mediterranean sea in most of the north-west that causes a higher humidity and dew incidence than in the south-east (Noy-Meir & Seligman 1979).

For the above described geographic, climatic and topographical reasons, the areas north and west of Beer Sheva are those that were and are sown under rain-fed

conditions to winter small grain crops and, to a lesser extent, spring and early summer crops such as sorghum, melons and sunflower. In contrast, utilisation of land south and east of Beer Sheva is limited almost exclusively to grazing. The field work carried out in this report was with Bedouin households situated in a radius of approximately 20 km around Beer Sheva, that is, on the border between the northern and southern regions of the Negev.

3.3 History of Negev Bedouin

Period before 1948

The word Bedouin is derived from the Arabic word *badawi*, man of the desert. Bedouin are envisioned as nomadic inhabitants of the desert, living in tents and depending solely on raising camels, sheep and goats for their livelihood. Moreover, Bedouin were known for their bravery and warring ways and claimed right to the land by 'force'. They considered themselves as the 'true-noble' or real Bedouin in contrast to those who were semi-sedentary and who practised both arable agriculture and raised animals for their livelihood.

There is evidence to suggest that there were nomadic pastoral activities in the Negev as far back as the Neolithic period when the functions between the farmers and the shepherds were defined (Sauer 1966). Thus began the successive struggle and interaction between the 'sown' and the 'grazed' or between farmers and pastoralists that has marked the history of the region up to and including modern times. Being in a region where rainfall is marginal and unpredictable, the separation between the two systems has never been clear and local populations tended to move between trends of sedentarization and nomadism (Perevolotsky & Finklestein 1980) whether by force, due to climate or due to central rule.

With time, the nomadic population of the Negev was reinforced constantly by nomadic people moving in from the east and the south (Shmueli 1980). The first Bedouin tribes are thought to have infiltrated the region in the seventh century AD with the explosive rise of Islam in the Arabian peninsula. Nomadic infiltration increased during the Ottoman (Turkish) rule of the region (1517-1917) together with peasant farmers (*fellahim*) from Egypt who farmed the lands bordering the desert, mainly along the Gaza strip. The *fellahim* 'leased' lands from the Bedouin and received their protection. The Bedouin in turn received a percentage of the produce harvested by the *fellahim*. During this period, Bedouin brought Negro slaves (*abid*) that originated in Sudan to work for them.

Distinct Bedouin tribes, that eventually became affiliated into tribal confederations, developed during the Ottoman period (Marx 1974). Tribes were territorial and administrative units led by sheikhs whom the authorities recognised as official representatives of their tribes. In the 1870's, the Ottoman government began to pacify the Bedouin amongst whom there had been tribal warfare which had been suppressed by drastic methods. The tribal sheikhs were held responsible for the behaviour of their

tribes (Marx 1967). In 1900, the Ottoman authorities established an administrative centre at Beer Sheva (the first settlement in the Negev from the Nabatean and Byzantine period that ended in the 6th century) and fixed the formerly fluid tribal boundaries, which remained until 1949 (Marx 1967). In doing so, the Ottoman authorities attempted to register land-tenure rights but had little cooperation from the reluctant Bedouin. As a result, most of the land was not registered as the property of an individual or tribe, but as *mawat* (Arabic for dead land) meaning land belonging to the state (Perevolotsky & Landau 1988). Rights to land use by tribes were settled by the authorities by present occupancy and not by ownership.

The Ottoman empire was conquered near the end of the first World War by the British who were granted a mandate to rule Palestine, a country whose borders were defined by the League of Nations. During the British rule from 1917 to 1947, there was little interference in the affairs of the Negev Bedouin. However, the British did maintain and strengthen the Ottoman land policy that was to have important and decisive influence in the future land rights of the Bedouin and their livelihood. In the Negev at the end of the British mandate, there were approximately 55,000 to 65,000 Bedouin composed of true-noble Bedouin, *fellahim* and *abid*, which were divided into 95 tribes. These tribes were combined into eight 'Confederations' which were mainly larger territorial divisions whose contiguity was expressed in terms of common descent and/or political alliance. Table 3.1, taken from Marx (1967), provides some information on the tribal configurations before 1948. The two largest confederations also had smaller territorial combinations which Marx (1967) termed 'groups of tribes'.[1]

Table 3.1 *Bedouin confederations of the Negev prior to 1948* [1]

	No. of tribes	Persons	Area
Tarabin	25	21,000	Western Beersheba Plain
Tiaha	28	18,000	Central & Eastern Beersheba Plain
Azazmah	12	12,000	Central Negev
Hanagrah	4	7,000	South of Gaza
Gubarat	14	5,000	North of Gaz
Saidin	6	1,000	South of Dead Sea
Ahewat	3	1,000	Near Gulf of Elath
Gahalin	3	750	Hebron Mountains
Total	95	65,750	

1 All the figures are maximum estimates (Shimoni 1947). Official censuses of the Negev Bedouin were held in 1931 and 1946, with either inconclusive or partial results.

1 For instance, the Tiaha confederation was sub-divided into the following groups of tribes and sub-tribes: Hkuk (6 tribes), Alamat (4), Ramadın (4), Qderat (5), Zullam (4), Eyal Omri (2), Bdenat (1), Qalazın (1) and Qatatwah (2).

State of Israel

The position of the Negev Bedouin changed dramatically with the establishment of the state of Israel and the war with Egypt (and other bordering Arab states) which followed. The Bedouin were trapped between the opposing armies of Israel and Egypt and out of fear and uncertainty, most of them did not form any alliances with either country. For whatever reasons, by the end of the conquest of the Negev by Israel in 1948, and their formation of military rule there, most of the Bedouin had fled the region to Egypt (Sinai and the Gaza strip) and Jordan (mainly what is now called the 'occupied territories' and/or the Palestinian west bank). The situation remained fluid for several years. While some tribal members filtered back, others were moved about or expelled by the military authorities for a variety of reasons. Tribes reformed around their former sheikhs or around men who wielded influence with the Israeli authorities, though always according to traditional tribal groups. In 1954 about 11,000 Bedouin remained in the Negev according to the census in that year. People registered in the census were henceforth regarded as Israeli citizens (later arrivals had to apply individually for citizenship) belonging to tribes that had formed around 19 men whom the Israeli military administration recognised as sheikhs (Israel Army 1954). Every registered Bedouin in the census was issued with an identity card in which was entered his tribal affiliation which served to establish his legal place of domicile (his address was in care of his tribal sheikh). By 1960, the Bedouin population had increased to about 16,000. Over 90% of them were of the Tiaha confederation while only a few hundred Azazmah and fewer Tarabin remained. The only 'tribal group' that remained relatively intact was the Zullam.

All the Bedouin were placed under military administration and most of them, with few exceptions (e.g., Huzail and Abu Rbeah tribes), were forced by translocation from former tribal areas to live in a closed area in the north-eastern part of the Negev called the *siag* (Map 3.2). This area had originally been occupied mainly by the Tiaha confederation, but, to a large extent, had been vacated by them. It is an area of 1,100 km^2 whose geographical boundaries lie roughly between 34°45' and 35°05' east and between 31°05' and 31°25' north. In size, it was only about 10% of the area formerly occupied by the Bedouin. Legally, all the Negev was under military jurisdiction but, in practice, the military exercised jurisdiction almost exclusively over the Bedouin. This was done by dividing the *siag* into two zones - one a small enclave north of Beer Sheva and the other encompassing the rest of the *siag* south-east of Beer Sheva. Bedouin wanting to enter or leave the zones had to obtain a permit to do so. In 1960, the population density in the *siag* was about 15 people per km^2 compared with 220 in the settled part of Israel (Marx 1967). The military administration estimated that the Bedouin cultivated up to 400 km^2, sowing mainly barley. The rest of the area provided part of the grazing land for about 70,000 small ruminants and up to 10,000 camels (Israel Bureau of Statistics 1964).

The military administration derived its legal powers from the Defense (emergency) Regulations originally issued by the British Mandatory authorities in 1945 to combat

the Jewish underground activities. Moreover, it derived its control over the land from the Israel government which claimed the land because, legally, it was considered as non-cultivable and, as such, belonged to the state according to the Ottoman land laws of 1858 (that had been maintained and strengthened under the British Mandate), the Planning and Construction Law of 1958 and, later, the Land Law of 1969. There were Bedouin claims to ownership of part of the *siag* because of long uninterrupted occupancy. However, their only documentary proof was that some of them had paid land tax and received official receipts during the British Mandatory period. Unfortunately, the receipts did not show either the location of the land or its real area as Bedouin regularly understated the size of the area for tax purposes.

Except for the tribes which had not left their land that they had occupied before 1948, the military and a newly formed Land Authority allocated state lands to each family in translocated and landless tribes. The military administration ruled the *siag* by dealing almost exclusively with the tribal sheikhs who, by virtue of this patronage, were able to carry out the administrative instructions issued to them. Land was allocated according to whether tribes owned long land leases or had obtained annual leases from the authorities. In the former case, the sheikhs were free to allocate land as they chose and the authorities neither intervened with them nor allocated them additional state land. In the latter case, blocks of land were allocated by the authorities to the sheikhs of landless tribes. The size of the blocks was determined by the number of families in the tribe, with each family usually receiving 10 km^2. The above factors led to the development of 'spontaneous' settlements or hamlets (Map 3.3) throughout the *siag* after 1948. These were based on tribal and family affiliations, the number of which increased with the sharply increasing Bedouin population. Moreover, the spontaneous hamlets emerged as dispersed settlements without any systematic order, and with no clear communal nature and settlement structure other than those described above.

Land and Settlement Policy

By 1955, most of the state land in the *siag* had been leased to the tribesmen through their sheikhs but, from 1956 onwards, the sheikhs were required to produce authorisations signed by the heads of groups and families. The authorities dealing with land leases increasingly leased land directly to heads of groups and families. The authorities realised that the individualisation of land leases was an inevitable development even though it would reduce their centralised control over the tribes by limiting some of the powers of the sheikhs. The earlier allocation of land through sheikhs had enabled them not only to decide how and where each group and/or family was to receive land but also to retain large tracts of land. Sheikhs were allowed officially to retain double the average quota for their own use.

Only sheikhs were permitted to buy tractors up to 1956. Later, other Bedouin were allowed to buy them as well. However, the power of the sheikhs was strengthened in other ways. One of the most effective means was used by government departments who

dealt with Bedouin through the sheikhs. The Ministry of Interior officially appointed the sheikhs as salaried headmen (*mukhtars*) responsible for registering births and deaths of tribesmen. The Ministry of Education built schools near the encampments of sheikhs, thus giving children of their groups a better opportunity for education. During times of food shortages (caused by drought in the 1950's), the Bedouin had to be supplied with rationed essential foodstuffs. The list of eligible Bedouin was presented by the tribal sheikhs and the distribution was managed by tribal stores. The licensees of these stores were the sheikhs. Only after the bad drought years of 1957/58 and 1958/59 was assistance based on direct application by family heads. It was granted after assessment by a committee of tribal notables, headed by a sheikh, which sat with officials of the Ministry. In 1962, the Ministry of Agriculture drew a line at the 220 mm isohyte, below which no drought compensation would be paid. As a result, only 15,000 out of the 400,000 dunam remained entitled to compensation.

By 1955, the military administration estimated that Bedouin had 60,000 animals, mainly small ruminants and some camels. The administration made no attempt to regulate the size of the flocks and, because meat was in demand and prices relatively high in Israeli markets, the Bedouin increased their flocks by every means possible, including bringing in animals from Jordan. The number of animals was too large to be maintained exclusively in the *siag* and, as a consequence, the military administration permitted the Bedouin to use spring pastures east of the reservation during the early years. The rest of the Negev at that time was sparsely settled so that when the available pastures had been exhausted, usually by June, the *siag* was expanded westwards to increase pasture availability. However, the Negev became settled at an increasing rate and the pasture areas available for grazing decreased drastically. Because Bedouin flocks could do damage to new plantations and sown crops, there was great opposition and even clashes between settlers and the Bedouin. This development resulted in further restrictions being imposed by the military administration and permits for grazing outside of the *siag* became more difficult to obtain. Sheikhs owned the largest flocks and were given preferential permits to graze pastures west and north of Beer Sheva. Other Bedouin had to find summer grazing, unaided by the authorities, by making agreements with agricultural settlements for using winter crop aftermath. The military administration had to approve these agreements and issued permits to these Bedouin which allowed them to take their flocks to the northern and western limits of the Negev.

The gradual easing of the restrictions on flock movement and employment outside of the *siag* continued up to the termination of the military administration in 1965. Its ending was the outcome of a plan, initiated in the early 1960's and which began to be implemented in 1966, to relocate the Bedouin in towns within the *siag* and thus to integrate them into the Israeli civilian and economic systems.

The processes which led to the development of a multitude of spontaneous hamlets also led to many land-use conflicts between the government and the Bedouin. Although most tribes did not legally own the land on which they had settled, their

transition to partial sedentarization caused ownership claims for land which was legally owned by the state. The consequence of this was the illegal construction of 'soft and hard' house structures by the Bedouin. These were the trends that led to the policy of planned sedentarization of Bedouin in municipalities whose primary objective was to solve the land conflict problem and to institutionalise the communal and economic modernization trends by providing regularised public services.

Bedouin with no claims to land ownership became eligible for settlement in the municipalities by purchasing rights to building lots of 1,000 m^2 ($10,000 per lot) from the Government Land Authority. Bedouin with claims to land ownership negotiated rights to the same building lots by voluntarily giving up their claims. By 1983, four towns had been established and, to date, seven are in different states of development. The towns, registered as local municipal localities, were established in the following order: Tel Sheva, Rahat (registered as a town in 1994), Ksifa, Aroer, Hura, Laqia and Segev Shalom (Statistical Yearbook 1994). These towns were strategically placed amongst the multitude of spontaneous hamlets to be found in the *siag*. Table 3.2 presents the estimated urban populations in 1997 and that forecasted for 2010:

Table 3.2 *Population Forecast for Bedouin Municipalities*[1]

	Population 1997	Population 2010
Tel Sheva	10,800	22,000
Rahat	23,700	40,000
Ksifa	6,600	17,000
Aroer	6,300	18,000
Hura	5,400	13,000
Laqia	5,000	15,000
Segev Shalom	6,600	20,000
Totals	64,400	145,000

1 From Statistical Yearbook (1995). Projections based on 1992 statistics of birth rates (43/1000), death rates (2.4/1000).and further voluntary permanent sedentarization from spontaneous hamlets.

The municipalities were planned to take into account the tribal and internal tribal affiliations in order to prevent tribal friction. In addition, it was planned to allow each Bedouin freedom of choice of his housing unit with regard to his previous territorial and pastoral livelihood. Both considerations would be subject only to municipal regulations. Thus municipal approval was first required by residential applicants prior to application to the Government Land Authority for building lots and residents given plots were allowed to build houses to suit their particular requirements. Often, they constructed enclosures near their houses for maintaining unrestricted numbers of livestock. The enclosures and livestock were officially banned and the ordinance was enforced by the authorities refusing electricity link-ups to houses that had them. However, the Bedouin found ways to circumvent the ban after the electricity linkage had been made.

3.4 Social Characteristics of Bedouin Life

Demographic Processes

The following is based on data from the mid-1950s of the Israel Central Bureau of Statistics (1964) and more recently for the years 1993 and 1994, the Statistical Yearbooks of the Negev (1994, 1995). During the period 1956-1997, the Bedouin population doubled itself more than twice, numbering about 88,800 people by 1993. Its growth pattern was an S-shaped curve typical of growth processes: slow start, acceleration and slow down (Meir 1984). Death rates declined from about 7/1,000 in the mid-1950s to less than 3/1,000 in the mid-1990s. However, death rates may have been higher, because the Bedouin may have withheld reports on deaths in order not to lose state benefits for elders over the age of 65. Presumably, mortality rates were higher before the 1950s when the Israeli health services did start to eradicate tuberculosis, the main disease then responsible for deaths amongst the Bedouin (Ben-Asa 1960). With the decline in death rate, life expectancy increased to 68 in the late 1960s and to 73 in the late 1990s (Meir & Ben-David 1990).

Table 3.3 *Population by age group.*

	Number	Percent of Population
0-4	2,400	18.5
5-9	1,800	13.9
10-14	2,200	16.9
15-19	1,700	13.1
19-29	2,200	16.9
30-44	1,600	12.3
45-59	700	5.4
60-64	100	0.8
65+	300	2.3
Total	23,000	100.0

Birth rates in the mid-1950s were up to 40/1,000. From then on, birth rates rose quite rapidly, peaking at 62/1,000 in the early 1970s and declining to about 44/1,000 in the late 1990s. At the peak in 1972, the natural population rate of increase reached 5.8%. According to the Statistical Yearbook (1995), the 1993 population of the Beer Sheva sub-district of the Negev was close to 400,000 of which 88,800 (22%) were Bedouin. Assuming a natural increase rate of 4%, the Bedouin population will be close to 104,000 by the end of 1997. Of this total Bedouin population, about 64,000 have settled in urban municipalities (Table 3.2), so that about 40,000 Bedouin are living in spontaneous hamlets. The age structure of the Negev Bedouin population (Statistical Yearbook 1995) living mainly in spontaneous hamlets is given in Table 3.3.

Bedouin Children

The persistent high birth rate among the Bedouin is first and foremost due to their religious belief, that is, to fulfil Allah's wish and beget children. For this reason they reject any secular reasons which could result in controlling family size. In addition, this

belief complements the semi-nomadic Bedouin concept of their children providing a subservient labour force. As in other pastoralist nomadic societies, young Bedouin children of both sexes participated actively in all pastoral, farming and domestic activities.

Today, however, the traditional role of children as an integral part of the family's labour has changed due to their attendance at schools six days a week. Initially, only the boys went to school but with increased sedentarization in both spontaneous hamlets and municipal localities and with a corresponding increased accessibility to schools, almost all girls attend school. Schools, in general, are below accepted Israeli norms in infrastructure, facilities, equipment, curriculum and teaching staff (Abu Saad 1996). As a result, 70% of Bedouin children (80% of the girls) drop out before completing high school compared with 13.4% and 47.5% in the Jewish and broader Arab sectors; even in Rahat, the largest Bedouin town, only 8% of the high school students passed the matriculum examination in 1994 (Abu Saad 1996).

Apart from the poor standard of the schools, work opportunities for educated Bedouin male youths are limited by lack of competitiveness with their Jewish counterparts and because of socio-political factors (e.g., social stigma, military service). At best, they find employment in trades where the financial rewards are not much higher than the unemployment benefits. A minority of Bedouin young men serve in the Israel Defense Forces and their post army employment opportunities in public service are vastly improved. Bedouin female youths are usually prevented by their families from seeking employment but, even if they were allowed, there are few work opportunities.

Most of the school-aged children in the spontaneous hamlets continue to contribute to the family labour force by attending to household work before and after school. Boys in general seek work in the Negev cities after leaving school, but girls work full time for the household after dropping out of school until they eventually marry. Some young men from richer families have become entrepreneurs and contractors serving the agricultural and building sectors with labour, trucks, tractors and heavy earth moving equipment. Economically then, Bedouin children in spontaneous hamlets can now be perceived by their parents both as a labour force and financial supporters in direct terms and from income derived from National Insurance benefits in indirect terms (Meir 1997).

Bedouin Marriages

Bedouin girls are usually married between the ages of 18 and 20. Traditionally, marriages are arranged by the parents whether in the municipal localities or in the spontaneous hamlets. Fathers prefer their sons to marry first cousins; firstly from brothers, secondly from sisters, thirdly from children from extended family members and lastly from outside the extended family. Within these preferences, sons may have some personal choice and girls may have the choice to refuse the potential groom. In the first instance, discussions are held between the mothers and if agreements are reached by them, the fathers discuss the amount of bride money to be paid (about $2600 for first

cousins, and can be more than twice that for others). Bride money is usually given to the mother of the bride and with it she buys gold jewelry, clothes, bedding and other household essentials for her daughter. At the wedding ceremony, the marriage is sanctified by an officially appointed religious dignitary and the marriage registered at the Ministry of Interior in Beer Sheva. Adult guests that bring money and livestock as gifts, do so to honour the head of the household not the young couple. Only friends of the young couple bring small household presents for the young couple.

Traditionally, heads of families usually arranged second marriages for themselves. These marriages were made for perceived labour needs in their pastoral activities, for strengthening an extended family support system that brought to the husband social prestige as an elder amongst his peers and satisfaction to his ego and libido (Meir 1997). Second wives are chosen for their ability to bring children and may have no family or even tribal affiliation to the prospective husband. The women available to him are usually older (>25 years of age) women that for one reason or another have not been married to younger men as described above. Second wives were given separate dwellings where they maintained a household and their children. First wives would be compensated on the occasion with gifts of sheep and/or gold jewelry from their husbands. Today, to a large extent, elder flock owners continue the practice of taking second wives though not exactly for the same reasons; National Insurance benefits being an added incentive.

In the spontaneous hamlets, sons reach agreement with their fathers on the time it is desirable for the son to get married. This depends on the ability of the son to finance a dwelling and to support a wife. Today, at the age of 23, a son usually has been a wage earner long enough to finance his marriage and by agreement with his father, and from him, will be allotted a site for his future dwelling within the boundaries of his father's land holding. The son will then construct a dwelling for his wife which will become her responsibility to maintain as the family household. With time, the new household may acquire up to 30 sheep which are either corralled near the dwelling or herded with the elder's flock.

Originally, these marriage habits were essential to the traditional pastoral support of the extended family which functioned as an economic enterprise with a collective fund. Earnings, incomes and expenditures were made through this fund that was controlled by the family elder (Meir 1997). Today, households tend to be in close proximity resulting from high population growth, second marriages and the marriage of first cousins. These factors have led to fragmentation of the original land holdings and to the further enlargement and development of many spontaneous hamlets. This, together with the ability of most of the married sons to be wage earners, has led to their financial independence from their elders and the possibility of their relocation to one of the seven municipal localities. As recipients of National Insurance benefits, the elders have also, to a large extent, achieved independence from their sons. All these factors have almost eliminated the existence of a collective fund controlled by an elder. Each household has become financially independent and inter-family relationships are

maintained mainly by constant visitation, transportation help and cooperation in carrying out traditional, family and religious festivities.

Status of Married Women

Traditionally, Bedouin women lived in a male-dominated society. Men were the only providers and controlled all sources of income. Women's lives were centered around the raising of children, maintenance of the dwelling, weaving carpets and tent materials, embroidery, milking sheep and goats, making of milk products and caring for young lambs and kids. Where and when flocks were corralled near the homestead, they, with children, were active in the watering and hand-feeding of the animals. When camping at grazing sites remote from the household, they also carried out these duties and helped with the shepherding of the flocks. Their mobility was strictly limited both within the homestead area and at the remote camping sites in order to preserve the honour of the family household and extended family (Abu-Rabia 1994; personal data).

Today, they are still living in a male-dominated society but they are less financially dependent on their husbands. Women with children are, by law, the direct recipients of National Insurance maternity, child and later old age benefits. As such, each woman is responsible for the care and education of her unmarried children and feeding them in her dwelling. Previous mobility restrictions can, by necessity, no longer be always enforced. To be registered mothers, women must give birth at a public hospital; to claim their National Insurance benefits they must go to the nearest bank or post office, and to buy provisions they must go to the nearest convenient shopping centre. Though they now have this mobility, it is only when accompanied by a member of the family and/or when driven to and fro by vehicle by a paid driver, that they are able to leave the hamlet.

The education of children has meant that the majority of women can no longer accompany their husbands to remote camping sites and help with the management of the flock during most of the year. Usually, only women with no school-age children can participate in flock activities at remote camping sites. However, some women refuse to participate in any flock activities other than the care of a small number of sheep and goats needed for household purposes (milk, meat, wool and pocket money).

3.5 Bedouin Economy

From 1948 (Jewish population 655,000) to 1951, 700,000 Jews immigrated to Israel and by 1961, the number had reached 1,000,000. This created a serious unemployment situation as economic development could not keep up with the rapidly expanding population. Many immigrants were settled in Beer Sheva and in new development towns in the Negev such as Kiryat Gat, Ofakim, Dimona, Yeruham and Arad. Settlers in these towns, which bordered the *siag*, were mostly unskilled workers who were employed in preference to Bedouin for unskilled work. This adversely affected potential employment of Bedouin in the Negev. No labour statistics are available, but it was

estimated that in a male working population of approximately 2,850, the average number of Bedouin employed outside the *siag* up to 1959 was under 100. From 1959, Bedouin employment increased due to shortages of seasonal agricultural labour needed in the citrus groves south of Tel Aviv and in cotton picking in the northern Negev. It was estimated that 400 Bedouin (mainly bachelors) were permitted to be employed outside the *siag* by 1962 (Marx 1967).

As Israeli citizens, Bedouin men are subject to the laws of Israel. As such, all Israeli youths at the age of 18 are required to register with the Israel Defense Forces (IDF). However, as they are considered to be an ethnic minority, the law is not applied to Bedouin or other minorities in Israel. Only the Druze community have asked the Government that the law be applied to them. Individually, Bedouin youths can volunteer to serve in any of the IDF units. Of those volunteering, many of them serve in special units such as tracker units and the IDF's Border Police Brigade where their expertise in tracking, geographic knowledge of the country and Arabic customs and language is in demand. Many will continue to serve permanently in the above units as a livelihood. Bedouin can also apply to the Israel Labour Bureau for employment but usually they find employment on their own or through intermediaries who have good connections with Israel tradesmen in cities such as, Beer Sheva, Arad and Kiryat Gat. Discharged soldiers and men who have lost their jobs can register with the Labour Bureau and become eligible for unemployment benefits for up to six months.

The general occupation figures suggested that about 63% of Bedouin adults of working age was involved either as labourers or as entrepreneurs in secondary and tertiary occupations by the late 1980s (Zohar 1982; quoted by Meir 1997). In 1991, Ben-David (1993) sampled several hundred Bedouin households with the following results (Table 3.4).

Table 3.4 *Bedouin employment 1991 by sector (in percentages)*

	Family Heads	Young and Educated
Manual & construction	46	35
Manufacturing and industry	12	12
Services (government and public)	6	27
Services (tourism and catering)	-	5
Commerce	5	9
Medical, para-medical and others	-	2
Agriculture	31*	9**

* In traditional farming;
** In modern farming

Figures for 1991 indicate that the process of integration into Negev occupational activities, other than agriculture, is far from complete and may have peaked (Table 3.4). A relatively high percentage of household heads (aged > 44) persist in practising traditional farming (pastoralism and rain-fed crop cultivation) in contrast to younger

adults of whom only 9% practice modern farming practices, whether herding and/or cultivation. It would appear that household heads persist in these sources of livelihood for reasons other than profitability from their agricultural activities; namely, maintenance of the Bedouin traditional lifestyle, a claim to the land and a means to hold their money. Furthermore, Bedouin are eligible for funds from National Insurance. Today, as citizens of Israel, registration with National Insurance entitles them to old-age benefits (about $250/month), maternity grants (about $250 per birth), child benefits (about $30-$65/month per child, depending on the number of children per wife) and unemployment compensation (about $580/month for a maximum of six months). In 1991, about 40,000 Bedouin in non- municipal localities registered with the National Insurance (Statistical Yearbook 1994).

There are no up-to-date data of the number of Bedouin who still depend mainly or partially on livestock for their livelihood. Ben David (1988) estimated that about 10,000 and 25,000 people, respectively, derived their livelihood mainly or partially from livestock. The corresponding percentages of the then Bedouin population was 11% and 29%, respectively. Assuming that these percentages have remained relatively constant, the estimated numbers for 1997 are about 11,000 and 30,000, respectively, which is reasonably close to the estimate of 40,000 Bedouin calculated to be living in spontaneous hamlets.

3.6 Livestock Production

Review

There were approximately 70,000 sheep in the Negev in 1961 and there are up to 300,000 sheep today. Officially, 150,000 are registered with the Ministry of Agriculture's Veterinary Services who have estimated that this is only approximately 50% of the actual number of sheep owned by Bedouin. Table 3.5 presents the long term trends in Bedouin sheep holdings.

Table 3.5 *Number of sheep raised by the Bedouin in the Negev between 1961 and 1997 (numbers in thousands)*

1961	1974	1988	1997
70	130	140-250[1]	150-300[1]

1 The lower value is that registered with the Ministry of Agriculture; the higher value is that estimated by various government officials involved in Bedouin affairs

There are about 10,000 Bedouin or about 1,000 families living in spontaneous hamlets in the Negev who derive their main source of livelihood from raising small ruminants (mainly sheep). As previously described, the grazing sources under their control are too small to meet round the year flock maintenance but flock movement to available grazing areas outside the *siag* are strictly restrained by rules and regulations pertaining to their herding practices. Flock owners are perceived by governmental authorities and,

indeed, by the general public, as living on both the geographic and economic margins of the Negev. It is surprising then, that in the late 1980s, when many *kibbutzim* and *moshavim* abandoned sheep raising because of rising costs of inputs and falling prices of sheep, most Bedouin continued to keep their flocks and there are indications that they have even increased their holdings (Table 3.5). How were the Bedouin able to support their households by raising sheep in a changing physical, economic and socio-political environment not conducive to this enterprise and how are they able to do so today?

After the establishment of Israel, Bedouin pastoral practices can be regarded as a response adaptation to government restraints. Noy-Meir (1975) identified major Bedouin pastoral systems within the Negev determined by ecological conditions, flock movements and types of pasture, and the degree of feed supplementation; namely domestic (sedentary) and seasonal movement in the northern and semi-arid desert regions. Bedouin in this field study practice the seasonal type in the semi-arid to arid Negev where flocks are kept near the homestead in the winter season and are moved to relatively remote grazing of up to 50 km distance from the homestead in spring and summer.

The changes that have taken place since 1948 have turned the Bedouin pastoralists of pre-Israel times into marginal pastoralists today. The latter term implies two important aspects of current Bedouin pastoral activity in the Negev below the 220 mm isohyte: 1) pastoralism can be practised only on the margins of other agricultural activities, on fallow and aftermath fields and in uncultivatable areas; and 2) it has become a marginal occupation for the Bedouin population as a whole in that only about 10% or 10,000 of them remain pastoralists living in spontaneous hamlets.

Amongst Bedouin today, flocks are officially recognised as being owned by household heads. However, this may not represent necessarily outright possession by him, but rather him being responsible for the decision making in the management of the flock. Each household is usually related to others in a complex of alliances, obligations, reciprocal relations and clan obligations (Marx 1974; personal data). Within the flock, some members of the household (wives) and extended family (sons) may own some animals and these are considered their property (Abu-Rabia 1994; personal data). Then again, household heads often registers some of the animals in the names of other family members and/or deliberately understate the number of animals in their flocks to the government veterinary authority (compulsory for vaccination against contagious diseases). It also appears that total holdings are always understated (Table 3.5) and not registered with the authorities. In accordance with these flock considerations, households are considered here as a patriarchal unit where the household head or elder male makes all the important decisions regarding flock management for all members of the family who may have ownership of some of the animals in the flock. As a family-operated enterprise, wages are not paid (except where shepherds are hired) nor are expenses and income shared amongst family members.

Animals

Bedouin usually raise Awassi sheep, a fat-tailed breed raised in the Middle East since Biblical times. The name originates from the word *Awass*, a tribe of Bedouins living in the Euphrates region. There are records of Awassi-type sheep being raised in a Jewish town in Judea at the time of Tiglat-Pilesser in 745 BC. and they are described in Arabia by Herodotus in 500 BC. (Finci 1957; Zeuner 1963). Awassi were introduced into Jewish settlements in Mandatory Palestine in 1924. Today, the Awassi is the typical breed of Syria, Lebanon, Jordan and Israel, the dominant breed in Iraq, and is also found in Southern Turkey (Mason 1967; Epstein 1971).

Awassi are described as good walkers, resistant to disease and heat, but less so to cold and humidity (Mason 1967) and is a strong sheep well-adapted to the desert in that this breed can use the driest pasture and can tolerate long periods without water (Degen 1977, Degen & Skolnik 1978). It is considered a triple purpose breed raised for meat, milk and wool. In Israel, the Awassi yield 40 to 60 kg of milk per lactation period under extensive conditions (Hirsh 1933; Mason 1967) and 350 to 400 kg under intensive conditions (Finci 1957). They produce about 2 kg of coarse carpet wool annually (Mason 1967).

Bedouin also own black goats of local origin mixed for household purposes, and some donkeys for local transportation and herding. In addition, a few camels can be tethered for milk and some chickens kept for eggs and meat. Numerous pigeons are generally raised for unknown reasons, a few cows (artificially inseminated) kept for milk and calves and an occasional horse kept for riding (prestige).

Marketing

To maintain their flocks and cultivate crops, Bedouin must have access to grazing areas, supplementary feeds (straw, bran, hay, grains), seeds, agricultural contractors for cultivation, harvesting and transport. They also must have outlets to market their produce. In addition, they must have access to retail markets for essential human foodstuffs.

There are no official marketing channels such as those available for agricultural enterprises in Israel (e.g., milk, poultry, fruit, citrus marketing boards) for Bedouin livestock raisers. In addition, because they cultivate land below the 220 mm isohyte, they are not eligible for drought compensation. The absence of any organised marketing venue and lack of any drought compensation effectively prevents the Bedouin from financial assistance such as credits and guaranteed prices. Because most Bedouin from spontaneous hamlets have bank accounts only for the purpose of receiving National Insurance benefits, they are rarely, if ever, able to negotiate bank loans or over-draft accounts. In addition, as Bedouin buy their agricultural inputs individually, large processing mills and factories as well as Israeli agricultural cooperatives (*kibbutzim* and *moshavim*) prefer to sell their products to large traders or through marketing boards.

Bedouin pastoralists, from roughly the mid-1950s, changed relatively quickly (compared

to African pastoralists) from an essentially subsistence and self-containing economy into the money-dependent market economy that exists today. Nearly all transactions take place on a purely cash and carry basis. That is, the ability to buy and sell depends on ready availability of cash. This situation appears to have arisen out of the Bedouin's reluctance to use bank accounts other than for the receipt of National Insurance benefits. This reluctance is probably due to a desire to keep their income secret from tax and other government authorities. Even the compulsory registration of Bedouin sheep with the Ministry of Agriculture's veterinary department is estimated to be roughly half their actual holdings. Hence money received from all sources of income is kept in cash by household heads and by those women eligible for maternity and child benefits. Household heads may use money, over and above that needed for managing flocks and cultivating crops, for the purchases of items such as sheep and goats, gold jewelry, tractors, mobile water tanks, trailers and open-decked pick up vehicles. All of these are in high demand by Bedouin and, as such, are regarded by them as easily liquidated assets.

Personal connections are important in acquiring grazing sites. Some Bedouin have managed to establish long-standing friendly relations with *kibbutzim* and *moshavim*, the main growers of small grain winter crops, that enable them to lease aftermath grazing areas long before the summer grazing season begins and even at favourable rentals. These relationships, with time, have become solidly based on mutual trust and benefit. Others have managed to establish similar favourable relations with official authorities that are responsible for issuing permits for livestock grazing movement such as the Ministry of Agriculture's Bedouin section, the army and the Jewish National Fund's forestry service. The ability to establish these long-term relationships provides needed security into a grazing system marked by natural (drought) and changing governmental policies that constitute a serious uncertainty and risk factor in livestock management. These relationships may also have subsidiary advantages such as the possibility of purchasing and transporting baled straw and hay at competitive prices, and employment opportunities in agriculture, forestry, guarding and even in tourism. Bedouin with such established relationships enjoy special status within hamlets as they can take some of their extended family members with them to their grazing sites or assist them by acting as intermediaries in acquiring permits for grazing sites and preferential employment (Abu-Rabia 1994).

Apart from the above input sources and their own cultivated areas, inputs such as straw, hay and grains are purchased to a large extent from Palestinian (from the West Bank and Gaza) and Bedouin large scale traders who can also deliver purchases to the homestead. Long term relationships may be established with these traders as a means of financial assistance in the form of extended credit or even loans. For instance, inputs may be purchased on the basis of agreements to sell lambs, kids and mature stock to the traders *in lieu* of cash payment. Bran, an important feed input, is purchased directly from grain mills usually found in one of the seven municipal localities. These unofficial transactions are favoured because no written records are

kept by either the traders or the buyers, and thus are kept hidden from tax authorities.

Livestock are sold mainly from the households; some to other Bedouin, including members of the extended family, for traditional purposes such as festivals traditional slaughter (*Id el-adha*, holiday of the sacrifice), weddings, births and circumcisions and some to traders, often Palestinians. These sales eliminate transport costs and keep the transaction secretive as veterinary supervision in Israel (apart from a transport permit) and by the Palestinian authorities are eliminated. Prices of sheep increase considerably at *Id el-adha*, but at that time sheep have to be at least a year old to be slaughtered. Sons, who need to buy a sheep or two, or to establish small flocks, may buy them from their fathers. Serious bargaining can then take place to the extent that a son may go elsewhere to buy sheep if the price is not favourable.

Sheep are also sold at weekly markets (*shuks*). A *shuk* is held in Beer Sheva on Thursday mornings when approximately 200 sheep and goats are up for sale. There is also a *shuk* at Tel Sheva on Friday morning when up to 20 sheep and goats are for sale and a *shuk* at Rahat on Saturday where up to 100 sheep and goats may be sold. Most of the buyers are traders from the Palestinian administered towns of Dahariyya, Hebron and Gaza. These traders must have permits from the veterinary services in Beer Sheva in order to transport their livestock to their towns. A much larger *shuk* is held in Dahariyya on Wednesdays. However, sheep and goats that are brought there by Israeli Bedouin with transport permits cannot be returned because of Israeli contagious disease regulations and, as a result, that *shuk* usually is not used for livestock trade by the Bedouin.

Retail purchases of household commodities and perishable foods are made in the nearest markets, often in Beer Sheva at the municipal fruit and vegetable market. Storable foodstuffs such as tea, sugar are bought in bulk either at the markets or at grocery stores that specialize in catering to Bedouin. Flour, the basic Bedouin foodstuff can be bought in 50 kg bags, but is mainly bought as wheat from traders who deliver purchases of about a ton directly to the homesteads. The Bedouin store the grain and have it milled as needed at the nearest mill throughout the year, often returning with bran for their livestock.

There is also trade in the sale of handicrafts. Women buy materials and thread from which they make carpets, embroidery and dresses. They also sell milk products such as yoghurt, butter and hard white cheese.

3.7 Field Survey

In the winter of 1994, thirty households were visited in the vicinity of Beer Sheva and discussions were held by the principal investigator, aided by a Bedouin staff member, and household heads to ascertain whether their enterprises met the project's criteria and the possibility of getting their full cooperation. It soon became apparent that the ability to gather reliable data on household flock management, production, expenses, incomes and family relationships would require many visitations to each household.

Furthermore, it was realised that success would depend on establishing personal relationships that would inspire mutual respect, confidence and trust. Because of these considerations, the time limitation imposed on data collection by one investigator and the obvious reluctance of household heads to reveal sensitive information of a secret nature, it was decided to select six households for intensive study. The selection criteria for households in the study were: 1) the main occupation of the head of the household was raising sheep, 2) the number of livestock raised corresponded to the mean number owned by such households, and 3) that the household was in a spontaneous settlement (hamlet) within a radius of 20 km of Beer Sheva, for ease of visitation. Further information on study methods is given in Appendix 1. The findings are presented in Table 3.6 to 3.9.

Household Characteristics

The households selected were usually visited twice weekly and consisted of a husband, 1-4 wives and 8 to 21 children. Married sons established households nearby, but married daughters tended to leave if they married outside of the extended family. However, it is common for the children of two brothers to marry and, therefore, daughters often live closeby. Daughter-in-laws, unmarried daughters and mothers often prepare the traditional bread (*pita*) and tea communally; men receive male guests in a separate part of the dwelling or in a separate dwelling (the *shig*) where they converse and drink coffee and/or tea unattended by women.

Although married sons live close to their parents, their families live as separate units and manage their finances separately. Non-married children live with their biological mother and are her responsibility. In this study, they are considered part of the parental household involved in the management of the sheep and dependent on the income from them.

Flock Size

The mean number of sheep currently being raised per household was determined as follows: It was previously shown that the present total Bedouin population is about 104,000 of which 64,000 live in municipalities and 40,000 in spontaneous hamlets. From the statistical data available, there are about 10 people in the average Bedouin household in all localities, although there are slight differences between 'real' and *fellahim* Bedouin (Meir & Ben-David 1990). Of those living in spontaneous hamlets, 10,000 (or 1000 families) raise sheep as a primary productive source of livelihood. In addition, the total sheep ownership today is 150,000 to 300,000 head. However, apart from the Bedouin pastoralists, Bedouin living in municipalities and non-pastoralists living in spontaneous hamlets also raise small numbers of sheep. Hence there are about 6,400 and 3,000 families respectively, who are non-pastoralists living in municipalities and spontaneous hamlets. From personal interviews, we have estimated that 35% of the municipal families own about 12 sheep each for a total of 27,000 head

Table 3.6 *Family status, lamb production and income from sheep sales for six Bedouin families in 1995/96.*

	A	B	C	D	E	F	Mean
# wives	2	2	2	3	1	2	2.0
# children	14	19	21	23	8	7	15.3
non-married children	7	9	10	11	4	7	8.0
# sheep[1]	125	140	176	61	112	110	120.7
# brucellosis[2]	5 + 5	3	1	7	6 + 3	4	4.3+1.3
# lambs	120	127	180	49	98	96	111.7
Lambing rate	1.00	0.93	1.02	0.91	0.92	0.91	0.960
Lamb mortality (%)	9.7	13.2	12.4	7.1	14.2	12.4	12.0
Sheep mortality (%)	0.08	1.5	1.1	3.7	5.1	5.2	2.4
Lambs sold	65	83	91	23	70	69	66.8
Sheep sales[3]	29,250	37,350	40,950	10,350	31,500	31,050	30,060
Labour	relative's son	shepherd	2 wives, 2 daughters, shepherd	2 wives, daughter	wife, children	wife, children	

Table 3.7*Family status, lamb production and income from sheep sales for six Bedouin families in 1996/97.*
(Families A-D were present in both years).

	A	B	C	D	G	H	Mean
# wives	2	2	2	3	4	2	2.5
# children	14	19	21	23	15	7	15.3
non-married children	7	8	6	11	7	7	7.7
# sheep[1]	116	140	174	101	131	175	139.5
# brucellosis[2]	NC	NC	NC	NC	NC	4	4
# lambs	135	124	160	90	125	143	129.5
Lambing rate	1.16	0.89	0.92	0.89	0.95	0.83	0.928
Lamb mortality (%)	10.4	19.1	12.4	14.1	10.2	17.0	13.0
Sheep mortality (%)	0.09	3.6	1.7	3.0	3.1	11.6	3.7
Lambs sold	82	75	72	40	86	66	70.2
Sheep sales[3]	36,900	33,750	32,400	18,000	38,700	29,700	31,590
Labour	relative's son	shepherd	2 wives, 2 daughters, shepherd	2 wives, daughter	wife, daughter	mother, brothers, sisters	

1 Number of sheep including those that tested positive for brucellosis
2 Testing of sheep of these households for brucellosis was in October - January, 1995 - 1996 and 1995-96. Those tested in 1995-96 were not checked (NC) in 1996-97. Bedouin were compensated with NIS 480/ewe and NIS 300/lamb for sheep tested positive for brucellosis
3 New Israeli Shekels (NIS) at $1 = NIS 3.3

and that half of the non-pastoralist families in the spontaneous hamlets have about 25 sheep each for a total of 38,000 head. Thus the number of sheep held by the pastoralists is about 85,000 to 235,000 head or 85 to 235 sheep per family.

Flock Management

Unmarried daughters shepherded animals; wives and occasionally husbands and sons helped. As more girls are now attending school (education is compulsory by Israeli law), the family labour force is being reduced. When needed, shepherds from the administered territories were hired at 130 dinars (1 dinar = $1.3) per month. None of the sons plan to raise livestock as a livelihood, although many maintained small numbers of animals within the parental household flock or near their homes. Wives owned animals and either kept them with the main flock or corralled at home. Husbands decided when and where to graze, when to corral the main flock at home and when to sell or buy sheep. However, wives were often quite vociferous in decision making. Husbands were responsible for flock movement, either by foot or by truck, to distant pasture sources. They were also responsible for the every day management of the flock such as providing drinking water (by either piped water or tractor-drawn water tanks) and other essential supplies.

Each year household heads apply to the Government Land Authority for grazing areas. Flock movement to these areas is limited by permits issued by Bedouin Affairs Department of the Ministry of Agriculture's to about nine months during spring and summer. Flocks were kept at the homestead for about three months during the late summer and winter. Their black goats were restricted to the confines of the household because of the 'black goat' law passed in 1977 (because grazing black goats was considered destructive to the vegetative environment). Permits were issued only after flocks had received mandatory veterinary vaccinations. During each year of the study, all animals had to be vaccinated against foot and mouth disease and rinderpest (at a cost of $0.65/sheep and $0.35/sheep, respectively), and ewe-lambs against brucellosis ($1.35/lamb). In addition, the flock had to be checked for brucellosis. Sheep tested positive for brucellosis were taken for slaughter by the government veterinary services. Compensation for these sheep were $150/ewe and $91 for her lamb (if there was one). If 10% or more of the flock tested positive for brucellosis, the whole flock was slaughtered. Number of sheep with brucellosis in the households studied ranged between three and seven per flock. Optional recommended treatments at present (not for a grazing permit) are clostridium vaccination ($1.05/sheep) and deworming ($1.35/sheep). The former was done by government veterinarians; the latter by the Bedouins and/or private veterinarians. Thus, veterinary care involved a compulsory and important expense in the flock management budget.

Grazing permits allowed flock movement from approximately mid-February to October. These permits are issued by the Ministry of Agriculture in conjunction with the Government Land Authority in Beer Sheva who stipulate the designated areas and

Table 3.8 *Expenses[1] for sheep production of six Bedouin families in 1995/96.*

	A	B	C	D	E	F	Mean
Veterinary costs	2100	1800	2300	750	1320	1220	1582
Wages	2100	2800	6300	0	0	0	1867
Land rental	5600	5900	6100	2300	5500	1100	4417
Water	750	750	750	400	750	400	633
Animal feed	15,000	13,000	17,000	9000	13,000	16,000	13,833
Tractor + fuel	2200	1400	1200	800	800	500	1150

Table 3.9

Expenses[1] for sheep production of six Bedouin families in 1996/97. (Families A-D were present in both years).

	A	B	C	D	G	H	Mean
Veterinary costs	1700	2200	2250	1210	1610	2260	1872
Wages	2100	3500	7000	0	0	0	2100
Land rental	4000	6500	5000	4000	3500	8500	5250
Water	400	750	750	400	500	800	600
Animal feed	14,000	13,000	17,000	13,000	14,000	15,000	14,333
Tractor + fuel	3400	1400	2000	1000	1600	500	1650

1 Expenses given in New Israeli Shekels (NIS) at $1 = NIS 3.3

exact dates for grazing. The grazing period allowed is dependent on the condition and availability of pasture. In spring, these were usually lands in the control of the Jewish National Fund (mainly forests), the army and the Land Authority. Payment for these sites was minimal and based on flock numbers. Arrangements were also made to graze land under private control such as those of *kibbutzim* or *moshavim*. These dealings had to be registered with and approved by the Ministry of Agriculture. In these cases, fields were mainly rented for summer grazing that consisted of cereal aftermath and winter fallowed fields that were weed infested. Payment varied depending on such factors as quality and quantity of the feed available for grazing. Bedouin were not able to graze their animals outside their permitted areas. This was enforced by Land Authority officers, the so-called 'green patrol'. During the study, part of one of the flocks was moved outside its permitted area, was confiscated and was quarantined in corrals controlled by the government veterinary services. Quarantine costs and a mandatory fine were paid to release the animals.

Drought years with poor pasture availability were experienced in 1995/96 and 1996/97. This forced two of the families to sell their sheep ($156/sheep) in 1995/96. They however, kept approximately 25 head each. The other four families were assigned grazing lands but by the end of February, due to poor pasture availability, their flocks had to return to the homesteads where they were fed purchased fodder. Two other

families were added to maintain the number of households under study. All six families rented private lands in March for grazing where they remained with their flocks till September.

Four families in 1995/96 and five families in 1996/97 rented about 20 km^2 of land, relatively near to their households, of which 10 km^2 were sown in November-December to wheat and 10 km^2 to barley. No grains were harvested during the two years of this study. In the first year, the animals grazed down the crops in June-July but in the second year the fields were harvested and baled as good quality straw.

Only one family milked sheep during 1995/96. The milking was done by two wives or by one of the wives and one of two daughters. However, the daughters were married in 1996 and the family did not milk in 1996/97 nor did any of the other families; labour shortage was given as the main reason for not milking. Yields of milk were approximately 20 kg per day over a two month period between February and March, for a total of 1200 kg. The wives processed the milk into yoghurt (*laban*), butter (*samne*) and a hard, dry cheese (*afig*); the *afig* was stored for future consumption. It was estimated that 200 kg each of *samne* and of *afig* were made for home consumption, but occasionally some was sold by the women. *Samne* sold for about $10.6/kg and *afig* for about $7.3/kg.

All sheep were hand-sheared prior to summer. Wool yield was 1-2 kg/sheep and averaged about 1.5 kg/sheep. Most of the shearing was done by the husband often assisted by wives, children and a shepherd, if employed. There was little demand for coarse carpet and it was used for blanket and pillow filling. Almost no tents were made of wool and no wool weaving was observed during the study. Instead, tents were made from burlap bags and carpets were hand-woven from colourful, synthetic material.

There were on the average approximately 130 breeding ewes per household, with a range from 61 to 176, and 2-4 rams. Lambing occurred mainly between November and March but continued throughout the year as rams grazed with the ewes. Of the ewes lambing, 2.5% lambed twins and produced a total of 120 lambs. Of the 120 lambs, 15 died leaving 105 survivors. Of these lambs, 70 were sold at 3-5 months of age, which mainly covered expenses. Of the rest, 15 ewe lambs were kept as replacements for ewes that either died, were sold or were slaughtered and 20 lambs were used as presents and for traditional slaughter. Sick animals are never slaughtered for home consumption but sold whenever possible. Most of the sheep were sold privately from the households; many of them to members of the family for traditional presents and traditional slaughter as for *Id el-adha* (holiday of the sacrifice), weddings, births, circumcisions, etc.

Besides the droughts of 1995/96 and 1996/97, there were other problems in sheep management and marketing of animals during the study period. First, the administered territories were closed for security reasons much of the time, thus preventing buyers from the territories from entering Israel. This was a serious setback as these buyers purchase most of the Bedouin sheep and sell them in the territories. In addition, shepherds from the territories could not continue to be employed for, by law, they could

not remain overnight in Israel. Second, there was an outbreak of foot and mouth disease in 1996/97 that prevented animal movement and thus sales outside of the homesteads. In spite of this, there were secret movements and sales. These factors, together with the droughts, resulted in lower sheep prices and in higher grain and fodder prices.

3.8 Calorific Terms of Trade

For purposes of caloric terms of trade (CToT), an index that is commonly used in subsistence economies, we made the following calculations based on lamb, goat and wheat prices in Israel and their respective energy yields. A fat lamb of about 40 kg (22 kg meat) sold for approximately $170 and a 30 kg goat (16 kg meat) for $110 during the study and these prices have remained today. At the same time, wheat has increased steadily from $135/ton in 1995 to $365/ton during 1996/97 and has dropped to $275 today. If we assume that a kg of sheep meat yields 2500 kcal of metabolizable energy, a kg of goat meat 1600 kcal and a kg of wheat 3200 kcal, then the cost of energy from wheat can be compared with an equivalent energy cost of meat. At $135/ton wheat, then a ratio of meat energy to wheat energy (equivalent market cost per kcal) is 1:71 for sheep and 1:97 for goats; at $365/ton wheat, these ratios are 1:27 for sheep and 1:36 for goats. These ratios are much higher than found in the subsistence livestock-economy practised in Kenya where the ratio averages about 1:10 and where maize is used in comparison to cattle meat. Furthermore, Israel's CToT fluctuates to a much greater extent than that in Kenya, and this is mainly because of grain prices. Meat prices are relatively stable in both countries as is the price of maize in Kenya but the price of wheat fluctuates greatly in Israel. This is because Israel is a big wheat importer and thus sensitive to world market conditions, whereas Kenya is mainly self sufficient in maize (except in drought years) and consequently prices are mainly subject to internal socio-political control.

PART IV

SOMALI PASTORALISTS
IN
GARISSA DISTRICT

4. SOMALI PASTORALISTS IN GARISSA DISTRICT

4.1 Introduction

Garissa District

North-East Province consists of three districts, Garissa, Wajir and Mandera. Garissa District has an area of about 43,931 km^2 and borders with the Republic of Somalia to the East (Map 4.1). Garissa town, the regional capital, is about 400km from Nairobi on an all-weather road but the rest of the road network is poorly developed with roads becoming impassable during the rains. The area is mostly flat with altitude ranging between 70m and 400m. The Tana, the only perennial river, flows along the western part of the district. It is nonetheless hot and dry, with torrential and erratic rainfalls totalling between 400mm and 500mm annually, with high evapo-transpiration rates. The southern divisions, nearer to the coast, receive relatively more rainfall than those in the north. The temperatures are generally high ranging between 20.5^0C and 40^0C throughout the year.

According to the 1989 population census, Garissa District had a projected population at the end of 1994 of about 141,479 or 17-18,000 households. However, the actual population may be well over 200,000 people as it is difficult to obtain an accurate estimation due to the nomadic nature of the majority of the people. The southern divisions are generally the home of the Abdalla sub-clan with the Abduak and the Aulihan sub-clans in the north. The mean population density is about 3 people per km^2 but much higher densities exist in Balambala and Central divisions, and the southern divisions of Masalani and Ijara. The northern divisions of Jarajila, Dadaab and Liboi have much lower densities. The main reasons for this difference are the lack of water and the increased incidence of banditry due to the refugee influx from the Republic of Somalia. Droughts in 1980/82, 1991/93 and 1996/97 were severe and there was migration to the divisional and district headquarters and even to the neighbouring districts in search of livelihood, mainly in form of relief handouts.

North-eastern province (N.E.P.) is the home of Somali pastoralists who derive their livelihood from livestock and livestock products. They are generally nomadic and move with their animals as dictated by the availability of pasture and water. In periods of droughts, they move to the neighbouring regions some of which are in other countries, in particular Somalia and Ethiopia. Historically, the north-eastern Kenya pastoralists have close relations with clans in southern Somalia and the South-eastern region of Ethiopia, having been split by the colonial demarcations which subsequently put them in different countries.

Pastoralists utilise sparse and widespread pastures. The migration to water and pasture is usually influenced by the presence or absence of seasonal *laghas* (small seasonal streams) and water pans which may provide pockets of temporary settlements depending on the length of the dry season. In this respect, the loss of the riverine areas to irrigated agriculture has significant consequences for the traditional pastoral use of

the riverine resources.[1]

When there is drought they move into areas that are less affected, either within or outside the province. As the drought intensifies, the herd is split into dry and wet herds. The dry herds, consisting of bulls and dry cows, are taken far away by the herdsmen, while the wet herd consisting of cows and lactating females are left with the family near the settlement centres. There are cases when Somali herders move into the neighbouring Somali Republic and vice versa.

As a result of the severe droughts of the early 1980's, some Somali pastoralists moved into cultivation through irrigation using the Tana River waters (Nunow 1994). Some of these people have since restocked and returned to nomadic pastoralism, but some have divided their labour between farming and livestock rearing while those who returned to pastoralism still maintain their plots on the irrigation schemes. In addition, a group of pastoralists who lost all their livestock to the droughts of 1991/93, or who were left with insufficient stock for subsistence, moved to towns and trading centres to survive on wage labour and relief food. Although they still see themselves as pastoralists, they have little chance of re-establishing their pastoralist ways in the near future.

The concentration of refugee camps and hence the NGO activities in Dadaab and other northern divisions like Liboi, is absent in Masalani and the other southern divisions. At the beginning of 1994, there were well over 150,000 refugees (about 15 times the local population) in the four camps in Dadaab division and this had far-reaching economic, political and environmental consequences. Many pastoralists benefited from the food relief by registering themselves as refugees and moving into the camps, others were able to buy grains and food stuffs cheaply from the refugees.

Somali Livestock Economy

Nomadic livestock rearing accounts for over 90% of the population's livelihood in North-Eastern Province. Livestock is predominantly kept for subsistence. Settlement patterns and livestock rearing are mainly influenced by the available pasture and water. Two distinct livestock production systems are practised in the Garissa District. The northern part has a system based on camel and cattle production whereas the southern part has one based only on cattle. The northern divisions receive lower rainfall and hence are more suitable for the hardy camels whereas the south is unsuitable for camel rearing due to the higher incidence of tsetse fly. In addition,

1 In the late 1960s and early 1970s the grazing block system was started in northern and northeastern Kenya with the aim of developing livestock and domestic water supplies and also social and physical infrastructure with the purpose of promoting livestock marketing and improving resource utilization RoK (1990a) . Although each grazing block had registered users consisting of the local social group, the participants had no legal corporate status to strengthen their voice and influence, nor did they have title or licence to the land. Fourteen of these were in Northeastern province. The grazing blocks range between 2000 and 8000 km^2 (i.e. up to 800,000 ha) RoK (1990a). Unfortunately, the grazing block system was poorly planned and implemented; hence did not produce desired results and was largely abandoned although some of the boreholes are still in use today.

because of the relatively higher rainfall in the south, these pastoralists practice some rainfed cultivation. Crop production throughout the year is only possible along the Tana River through irrigation.

Table 4.1 *Livestock Production, Garissa District, 1991-95*

	1991	1992	1993	1994	1995
Cattle	700,000	280,000	373,000	440,000	440,000
Shoats	600,000	250,000	298,000	420,000	462,000
Camels	74,263	60,000	73,320	74,000	77.700
Poultry	12,500	15,600	17,000	13,500	15,000
Donkeys	3,764	3,200	3,648	4,200	6,300
Beehives	400	450	510	608	680

Source: RoK 1997a

According to official figures, Garissa District in 1987 had the 2nd highest number of cattle in the country (Appendix 2). In 1995 there were 440,000 head of cattle and a slightly higher number of small livestock (Table 4.1). Livestock were heavily decimated by the 1991/93 and in 1996/97 droughts which impoverished many pastoralists. It forced a large number to move into urban centres and refugee camps to benefit from food aid by government and Non-Governmental Organisations (NGO's). The facts that there was higher cattle loss in the south during the droughts and the minimal or absence of relief efforts in this area emphasise the need for the pastoralists to grow food for themselves.

Despite the attachment of the Somali to their livestock, sale of animals at low prices is sometimes inevitable. During the rainy seasons, the animals are taken further from the settlement into the wet season grazing areas; hence there is a reduced supply of animals for sale and subsequent high prices. The opposite is true during the long dry seasons. Income from livestock is usually from livestock sales, sale of hides and skins, milk and occasionally ghee in years of good rainfall. Major livestock markets include urban centres at Garissa, Nairobi, Mombasa, Lamu, Athi River and Dagoretti. There are also smaller trading centres where livestock are sold but these are not in operation at all times and prices are lower than in larger markets. Milk is usually consumed locally and its sale is only seasonal. Hides and skins are marketed outside the district for use in the leather tanning industries (Poulsen 1993).

Traditionally, Somali pastoralists perceived milk as the most important food resource and hence the significance attached to camels, especially lactating females. Since female camels were raised principally for milk, it was quite difficult to purchase lactating or mature females. This is still the case today. Trade in milk has never been widespread among Somali pastoralists and it was even considered a curse to the animals in the traditional system. This has changed significantly and the sale of milk nowadays is an enterprise conducted by both rich and poor pastoralists. The marketing

of milk by rich households is voluntary and strategic with the main aim of increasing the number of livestock. Like in many other pastoral communities, Somali women are usually responsible for milking and disposal of milk products, while men are responsible for herding and disposal of live animals.

Although camels are the most important livestock because of milk production, cattle, sheep and goats are the major subsistence and cash animals. There is said to be a rising trend in sale of animals and this may be indicative of a move from predominantly subsistence pastoralism to a semi-commercial livestock production system although the net offtake is still low, as shown later on. Because livestock marketing is concerned with business activities which facilitate the flow of livestock and livestock products from production until the final consumer, pastoralists sell livestock to local butchers and large traders.

Livestock Trade

The importance of trade and exchange in pastoral economy has varied over the years and among seasons. It is partly because of trade and exchange that the pastoral system has survived and flourished for thousands of years. Pastoralists, even those who did not have much demand for supplementary food, usually sold or exchanged animals for goods they could not produce, such as tea, sugar, tobacco and clothes (Markakis 1993). However, the level of participation in the market varied from one pastoral community and region to the other. Unless under pressure to purchase food or critical inputs such as veterinary drugs, the pastoralists participation in the market depends on the economic environment of the market, with high susceptibility to external interventions (Kerven 1992). It has been argued that pastoralists are responsive to price increases and tend to increase off-take accordingly (RoK 1986); and it has also been suggested that pastoralists are powerless in influencing the demand and prices for livestock and livestock products. The extent to which pastoralists can influence the market essentially depends on their ability to take collective action which, apparently, has not happened thus far. The formation of pastoralist associations may be a possible means by which pastoralists could increase their influence on the market.

Traditionally, pastoralists sold only live animals while the sale of milk was abhorred. Excess milk was given to those who needed it and this tended to obscure food insufficiency in some households and improved food security Nunow (1994). In recent years, it has been suggested that since pastoralists enjoy favourable terms of trade in terms of caloric value, they should increase the off-take of livestock and livestock products and purchase foodstuffs, especially grains. Despite the pastoralists' preference for milk, maize yields about five times more in caloric terms on a monetary basis (Fratkin & Smith 1993). Dietz goes into a more detailed calculation of caloric value of livestock meat and sorghum and arrived at a value of not less than twice. In the case of livestock meat for maize, he obtained a ratio of 7:1, and sometimes as high as 20:1 in favour of maize (Dietz 1991,1993; Kerven 1992).

Another important factor, the ability of pastoralists to actively participate in trade, is dependent on their proximity to the market where livestock products, especially milk, could be marketed. The distance to market centres is usually dictated by the availability of pasture and water within a 'reasonable' distance. Presumably the pastoralists' closeness to market centres could improve significantly the nutritional status of the children since milk can be sold to purchase high caloric maize meal (Fratkin & Smith 1993). However, the proceeds from milk may be used to purchase other products such as clothes and weapons and may not necessarily improve the nutritional status of the children, as presumed.

Although increased off-take of milk could improve the food security of the pastoralists in the short-term, it could undermine the very basis of their survival in the long-term, in so far as it impairs herd replacement by ignoring the needs of the calves (Finkel & Darkoh 1991). If calves are denied the minimum milk requirement, they may not survive and this eventually undermines the potential growth of the herd. Thus, the needs of the calves must be balanced with the amount of off-take if pastoral sustainability is to be achieved. At the same time, it is important that grains are within reach of the pastoralists if their market participation is to improve their food security.

4.2 Study Methods

Data collected consist mainly of own surveys and secondary data from various sources: government records, annual reports and project reports, national archives and the Central Bureau of Statistics (CBS), Nairobi. A number of surveys on markets in Garissa district were done between November 1995 and January 1996.

The first set of surveys was taken among livestock traders, livestock brokers and butchers (N=102) in three markets of Garissa town (60) , Dadaab (25) and Ijara (17). Similarly, surveys were done among retail traders (N=60) in the three markets of Garissa (20), Dadaab (20) and Ijara (20). These were all selected randomly.

A second set of surveys was done in Garissa town among impoverished households (N=50) that were displaced (June 1997) and a group of grain traders (N=34; February 1998).

Furthermore, bi-monthly household surveys were done in the two divisions of Dadaab in the north of the district and Ijara to the south between January 1996 and January 1997 (Map 4.1). In all, 80 households were included. Details on sampling procedures and data collection methods are given in Appendix 3.

4.3 Household Production & Commercialisation

If pastoralists are to trust the market, there is need for harmonious relations with the other key players, especially the traders. Samatar (1987) reported that in northern Somalia, trader-producer relationships were strengthened by the fact that pastoralists were risk-minimising rather than profit-maximising. This implies that most pastoralists

sold livestock for specific purposes and as long as they obtained enough money for their purchases, they parted with their animals for such a price. This is partly the case among the Somali pastoralists of north-eastern Kenya, but they usually seek the highest price and may not sell their animals if either prices are not attractive or if they are not in a desperate situation. Price considerations by pastoralists are usually in terms of the intrinsic value attached to the animal as well as the price of the goods they wish to buy. In all cases, the traders have an advantage in determining prices since they could collude and create a single-buyer situation while the pastoralists do not. Enhanced availability and dissemination of current market information could increase the market benefits that accrue to the pastoralists since they would determine the most opportunistic time and place to sell their animals.

In spite of the positive contribution of pastoralists' market participation to their food security, concern has been raised that increased commercialisation may break down the traditional social security through the individualisation of livestock and livestock products (Peter *et al.* 1982). Whereas several related people could have interest in a single animal in the traditional system, commercialisation tends to place the household head at the centre of decision-making independent of his kinsmen and relatives. Besides, milk which was traditionally given free to the poorer households is increasingly being marketed (Dahl & Hjort, 1976).

With increased commercialisation and the emergent household-centred ownership of livestock, the economic power of the household is increasingly becoming dependent on livestock and livestock products and hence the need for the herd to grow. Such interest in herd growth may not necessarily be the same as the traditional prestige-seeking purposes but may be based on economic rationale resulting from increasing market participation. Livestock marketing and increased participation in trade could be a process of constructing or reinforcing that power. In such a process, it is feared that pastoralists may change their production from that of camel or cattle raising to that of small livestock which is said to be more market-adapted (Dahl, no date). Should that happen, increased commercialisation may worsen food security in the long-run since camels and cattle are the backbone of food production among many pastoralists of sub-Saharan Africa. Although cattle and camels are not superior to small livestock per se, they produce more milk and usually fetch higher prices than small livestock. At the same time, it has been mentioned that increased marketing could marginalize women and turn them into mere 'labourers' (Dahl, no date), or passive participants in the pastoral economy instead of active producers as in the traditional system. Such a situation may arise when men sell livestock products such as milk and hides and skins, traditionally a female domain, and appropriate the proceeds. This could have profound implications for food security since women play a crucial role in household food management and food security.

The importance of pastoralist women may be appreciated when roles they play in the production system are considered. Among Somali pastoralists, milking of animals is traditionally a female task, although the men sometimes help in milking camels and to

a lesser extent cattle, but never small stock. In almost all cases though, the control of milk and milk products rests with women. Since women do the milking, they determine the amount of milk off-take, and hence the survival of calves and consequently the growth of the herd. It has been pointed out that although women may know the effect of denying the calves enough milk on the herd viability they may risk it if milk is in acute shortage (Bruggerman 1994). Thus, women are said to have children as their priority while men usually emphasise herd growth as their major concern.

In most pastoral societies, including the Somali, the women market the milk and other livestock products such as hides, skins and ghee, and they control the income they obtain. In most cases, they are said to use this income to purchase foodstuffs for the entire household and hence their crucial contribution to food security (Dahl, no date; Fratkin & Smith 1993). However, the men usually control the larger incomes from the sale of live animals and often use their incomes on non-food items such as clothes, *'miraa'/khat'*, diesel for the borehole generator to water the animals and payment of debts. Despite the significant contribution women make to household food management and food security, it is feared that sedentarisation may restrict the ability of women to control milk resources, and hence their income, since men tend to be attracted by the increasing monetary importance of these resources.

Herd size, herd composition and herd management [2]

The population in the two study areas, Dadaab and Ijara, were chosen because they practice different livestock systems. While Dadaab pastoralists keep all species of livestock there are no camels in Ijara due to the presence of the tsetse fly. However, in the population surveyed, only 3 households in Dadaab owned camels - 20 head in all. Less than half the households owned cattle (in Dadaab 8 or 20%; in Ijara 18 or 45%). In all, nearly two-thirds of the households did not have large stock and relied on small stock. According to the figures given, 75% of the households had less than 20 head of smallstock (Table 4.2). Therefore, most households had less than 4 TLU which are needed per capita for subsistence - meaning that the pastoralists in Garissa should not be able to survive (p.73).

Table 4.2 *Livestock ownership by species, per location and per household* *

	Camels		Cattle		Smallstock	
	total	per hh	total	per hh	total	per hh
Dadaab	20	0.5	50	1.25	1120	28.0
Ijara	0	0.0	110	2.75	1580	39.5
Total	20	0.25	160	2.00	2700	33.8

* Non-weighted results

2 The household figures in this sub-section and in the two following sub-sections (pp.48-53) are weighted results unless indicated otherwise (See Appendix 3).

However, the Somali are known to be reluctant to disclose the number of their animals. But even if they under-estimated their animals by a factor of four, pastoralists in that area have far fewer animals than would be necessary for survival. This is a first indication that many of them depend on foodstuffs outside the livestock sector. The sources of such foodstuffs include purchases from the market, relief food and food from refugees near Dadaab.

In responding to the size of their herds, the households were unwilling to give absolute numbers. To obtain at least some indication of livestock ownership and herd sizes, we asked for ranges of male and female stock and mature and immature animals instead of absolute numbers. Converting these ranges into centre values, the results are presented in Table 4.3.

Table 4.3 *Household herd structure and composition* (N=88) *

	Camels		Cattle		Smallstock		Total	
	total	per hh	total	per hh	total	per hh	total	per hh
Dadaab (N=45)								
Males, mature	10	0.23	117	2.6	303	6.8	123	2.7
Females, mature	15	0.33	330	7.4	503	11.3	296	6.6
Males, immature	7	0.15	143	3.2	217	4.8	129	2.9
Females, immature	7	0.15	162	3.6	291	6.5	149	3.3
Total	39	0.86	752	16.7	1314	29.4	697	15.5
In milk	15	0.33	234	5.2	326	7.1	211	4.7
Ijara (N=43)								
Males, mature	0	0.0	146	3.4	242	5.6	126	2.9
Females, mature	0	0.0	615	14.2	882	20.4	519	11.9
Males, immature	0	0.0	197	4.6	317	7.3	170	4.0
Females, immature	0	0.0	179	4.1	327	7.5	158	3.6
Total	0	0.0	1137	26.3	1769	40.8	973	22.6
In milk	-	-	260	6.0	403	9.3	222	5.1

* Weighted results

Most households ended up with herd sizes larger than they had stated initially but it is also clear that the underestimation concerns mostly cattle. The Dadaab households were found to have an average cattle holding per household of about 2.6 mature males, 7.4 mature females and 5.2 lactating cows. Including immature males and females, the average number of cattle per household would be 16.7. For Ijara households, the corresponding figures for cattle were 3.4 mature males, 14.2 mature females and 6.0 lactating cows per household. When the figures for the immatures were included, the Ijara households had 26.3 cattle per household.

Both for cattle and small stock holdings, the Ijara pastoralists, on average, had larger herds than their counterparts in Dadaab. The smallstock ownership per household for Dadaab was 6.8 mature males, 11.3 mature females and 7.1 lactating ones. The total average per household was found to be 29.4 shoats. The same figures for Ijara were 5.6

mature males, 20.4 mature females and 9.3 lactating shoats with a total of 40.8 animals.

Most families had more mature and lactating females in their stock than in the other categories. Since mature females are breeders as well as milk producers, this structure is considered to be positive from both herd growth and food security perspectives. In Dadaab about 67% of mature females (cattle + smallstock) were in milk; in Ijara the figure was lower with about 44% mature females in milk. Converting the figures for camels, cattle and smallstock to TLU, the average TLU per household for Dadaab and Ijara were 15.5 and 22.6 respectively (Table 4.3). The TLU per capita from these figures was found to be 2.57 and 3.33 for Dadaab and Ijara respectively. These figures are much higher than those presented in table 4.2 and confirm the difficulty in obtaining accurate figures from Somali pastoralists on their absolute numbers of livestock. However, we place more confidence in these figures generated from the herd composition than the previous ones because they were obtained indirectly.

The Somali pastoralists usually roam in a wide expanse of land, sometimes stretching as far as southern Somalia. However, in recent years, more and more of them have settled semi-permanently in locations for periods longer than in the past. Only 5 households (2 from Dadaab and 3 from Ijara) or 7% of the total, had lived for less than 1 year in the place where we interviewed them. Most of them, 57 households (65%) had remained there for longer than three years. The pastoralists in Ijara are more sedentary than those from Dadaab. This is closely connected to water resources and to a lesser extent, pastures. Whereas the north has many government-provided water sources, mainly boreholes and a few dams, the south has only very few public dams. Instead, there are many privately-owned dams and wells, and others that are communally-owned. All the households from Ijara used either private or communal sources of water for domestic purposes, whereas 34 households (76%) from Dadaab used borehole water. Only a quarter of the households, 11 (24%), from Dadaab used private or communal sources. Communal sources are differentiated from public sources because the former is provided and maintained by the community through traditional management while the latter are provided by the state and maintained by it. In the case of livestock water, nearly all households (99%) from Ijara depended on private or communal sources of water, with 1 household taking the animals to the river Tana. Most households from Dadaab also depended on private and communal sources of livestock water (85%). This was for two reasons. Firstly, the private and the communal water sources in Dadaab are poorly maintained and heavily polluted from animal waste and other pollutants. Thus, these waters are unfit for human consumption and households obtain water from the boreholes for domestic use. Secondly, the public boreholes charge a fee per head of livestock for watering while no fee is charged at the polluted private and communal sources.

Livestock production in Garissa district, and indeed the rest of northern Kenya, faces a number of problems including lack of security, wild animals, livestock diseases, poor pastures and inadequate water supplies for both human and animals. Lack of security

is reportedly the single biggest problem facing the respondents, especially those in the north of the district. In total, 33 households (38%) mentioned insecurity as a constraint to livestock production - 26 were from Dadaab and only 7 from Ijara. The problems of wild animals was the second constraint to livestock production and mentioned by 30 households (34%). Lions, hyenas and other predators seem to affect Dadaab and Ijara equally. Livestock diseases, the third major limitation to livestock production, was mentioned by 22% of the cases, all from Ijara. This is mainly because of the Boni forest in the Ijara area with heavy infestation of tsetse fly. Although both the pastures and water are better in the south, the tsetse makes it impossible for camel rearing and makes rearing of cattle and small stock more expensive than in the north. Livestock health costs are generally high - 75% of the households gave a figure of sh.1,000 as the minimum cost for drugs per head of cattle per year. In Ijara, 32% of the respondents mentioned drug costs of at least sh.3000 per head of cattle per year compared to only 1 household from Dadaab, confirming the difference in health conditions between the two divisions.

Livestock sales

Livestock markets are in the divisional centres which are widely distant. In the past, the Somali pastoralists sold animals as money was needed for various purposes such as purchase of food and non-food items - payment of dowry, strengthening social relations, payment of *diya* (blood money paid to the *reer* of the deceased) and to finance other needs. In recent years, animals were sold mainly to purchase foodstuffs because of insufficient milk as well as an increasing tendency towards consumption of non-livestock products. This tendency is partly attributable to increased sedentarisation of the Somali. More settled pastoralists have to meet additional costs such as school fees, self-help contributions (*harambee*) and clothes. Among the survey households, 80 (91%) sold animals occasionally, while a few sold animals on a regular basis, seasonally or monthly. They explained 'occasionally' to be whenever they needed cash. At other times, they exchanged animals for whatever they needed. Exchanging livestock was also practised. For instance, a pastoralist in Dadaab exchanged 25 goats and 15 sheep for a female camel of 4 years old. However, such exchanges were never fixed but mutually agreed upon by both parties. While most livestock sales were said to be for the purchase of food and non-food items, other reasons given included family maintenance, solving family problems and 'complex' problems. The latter include the payment for *diya* and compensation for rape or unauthorised elopement with a girl. Among all households, 59 (67%) were found to sell animals to purchase foods and non-food items. Of these, 35 households were from Ijara and the others from Dadaab. Another 20 households (23%) gave solving of family problems as their reason for selling of livestock. As to the type of animals sold first during times of crisis, 64 households (73%), mentioned the 'least valuable' animals as the priority sales. The 'least valuable' animals were considered to be those poor in milk production, those with history of multiple abortions, those with permanent injuries or disabilities, castrated bulls and

those that are more vulnerable to dry spells. Another 20 households (23%) mentioned small stock as priority sales. All the households that mentioned small stock were from Dadaab, showing the relative importance of small stock in that area.

Table 4.4 *Annual net offtake per household by location (1996).**

	House holds	Cattle				Smallstock			
		Herd size	Sold	Bought	Net Offtake	Herd Size	Sold	Bought	Net Offtake
	N	N	N	N	N (%)	N	N	N	N (%)
Dadaab	40	16.8	1.4	0.3	1.1 (7%)	29.4	3.7	0.7	3.0 (10%)
Ijara	40	26.3	1.5	0.3	1.2 (5%)	40.9	3.3	0.7	2.6 (6%)
Total	80	21.5	1.5	0.3	1.2 (5%)	35.1	3.5	0.7	2.8 (8%)

* Non-weighted results

Only 29 households (33%) reported they had potentially marketable stock while most households mentioned that they had no potentially marketable animals in their herds. There are considerable regional differences in this case. In Ijara, 40 households said they had no potentially marketable animals in their herds, in Dadaab this was 17. This difference is a reflection of market involvement and the different perspectives of the two areas regarding the potential marketability of animals. The south is less involved in the market due to the distance from the main market of Garissa town whereas the northern part of the district is more involved because of easier access to market. When asked about the existence of buyers for their animals, 67 households (79%) answered in the affirmative. The households that said there were no ready buyers were mostly from Ijara which confirms the earlier assertion. Table 4.4 and 4.5 provide information on the number of livestock transactions that occurred during the study period and the reported prices of livestock.

Table 4.5
Average prices of cattle and smallstock reported by survey households (1996; sh/animal) *

	Cattle		Smallstock	
	Dadaab	Ijara	Dadaab	Ijara
selling	5174	6783	988	976
buying	8229	4064	699	759
difference	-3055	2719	289	216

* Non-weighted results

Economic Differentiation

The two survey populations in Dadaab and Ijara were analysed for economic differentiation in terms of TLU/household ratio. Camels, cattle, small stock and donkeys were expressed in Tropical Livestock Units (TLU) [3] and two distributions are given for the respective areas in Table 4.6: livestock units per household and per capita.

3 See note 4, page 71.

The majority of households had less than 20 TLU which indicates the meagre subsistence basis of most households. In Ijara, there are more households with relatively high numbers of livestock but the households tend to be larger as well in this area. Still, the distribution according to TLU/capita ratio also indicates lesser conditions in Dadaab. The figures per capita show even more clearly that the majority of households have less than the number of animals needed for subsistence requirements.

Table 4.6 *Distribution of Tropical Livestock Units by Area*

Tropical Livestock Units/Household						Tropical Livestock Units/Capita					
	Dadaab		Ijara		total		Dadaab		Ijara		total
TLU	N	%	N	%	N	TLU	N	%	N	%	N
0-9.9	14	32	09	21	23	0-0.9	08	18	02	05	10
10-19.9	23	52	17	40	40	1-1.9	16	36	17	41	33
20-29.9	03	07	05	12	08	2-2.9	07	16	05	12	12
30-39.9	02	05	07	16	09	3-3.9	08	18	08	20	16
40+	02	05	05	12	07	4-5.9	02	04	04	10	06
	-	-	-	-	-	6+	04	09	05	12	09
	45	100	43	100	88		45	100	43	100	88

* Weighted results

Income sources, other than keeping livestock, are minimal among the groups studied. Table 4.7 gives information on the frequency of other economic activities, crop cultivation and wage employment. Not only are the external resources minimal, but also it is clear that there is little relation with cattle wealth. The command of external resources is fairly evenly spread over the different wealth categories confirming that livestock is still the main basis for wealth among the Somali pastoralists, However, with the exception of the lowest wealth category, which takes less than its share of external resources, and this suggests the development of a group of impoverished households.

Table 4.7
Frequency of economic activities other than livestock keeping by wealth category *

	N	(%)	economic activities		crop cultivation		wage employment	
			yes	no	yes	no	yes	no
0-9.9 TLU	23	(26)	01	22	01	22	02	21
10-19.9 "	40	(46)	08	32	08	32	07	34
20-29.9 "	08	(09)	03	05	01	07	04	04
30-39.9 "	09	(10)	05	04	02	07	01	08
40+ TLU	07	(08)	02	05	-	07	01	06
	88	(100)	19	69	12	76	15	73

* Weighted results

Displaced and impoverished households

Pastoralists in Garissa district, and indeed those in all other pastoral districts, have always been highly susceptible to the effects of droughts and diseases on their animals. Following some of the drought years of the 1990's, especially 1991/1993 and the more recent one of 1996/97, many pastoralists found themselves unable to continue with their pastoralism, either because of insufficient livestock or total loss of stock. Most of these households moved into towns and trading centres in order to benefit from relief food from government and Non-Governmental organisations (NGO's). Some of the families moved into refugee camps and registered themselves as refugees. Thus, people who used to be confident and self-reliant found themselves in a precarious situation regarding their livelihoods following the loss of their stock. They live in villages, locally know as *bullas*, and they are almost entirely dependent on relief food and other assistance offered by NGO's and sometimes the government. A few supplement this with income from casual labour in towns if this was available.

A survey was done among of 50 displaced pastoralists around Garissa town, in July 1997. There were 39 males and 11 females as heads of households. Of those interviewed, 37 (74%) household heads were married, 5 (10%) were single, 3 (6%) were divorced, and 5 (10%) were widow(er)s. None of the households had any livestock in the *bulla* or elsewhere. Most of the households (27=54%) said they had lost their livestock to drought the previous year (1996) and 21 households (42%) had lost their livestock to a combination of drought and diseases. Thus, nearly all households (48) had lost their livestock to either drought or to a combination of drought and diseases during the previous year (1996), rendering them destitute surviving on relief handouts.

Most of the respondents had settled in their present *bullas* after July 1996, with 35 (70%) of the households falling into this group. Only 6 (12%) of the households had moved into their present settlements before 1996. The households originated from all over Garissa district including Mbalambala (4), Bura (6), Masalani (4), Hulugho (6), Ijara (8), Galmagalla (6), Korakora (5) and Nanighi (2). Only 8 households came from other parts of the province, mainly from the neighbouring district of Wajir. They moved into towns, not only to benefit from relief distributions but also to seek casual employment (18 households). Many moved simply because they were unable to survive in their rural homes, without knowing what was available in the town to which they were moving. *In a big town, you will never starve*, their saying goes. Almost all the households had moved by motor vehicle, with only 2 households making it on foot for about 70km from Bura division to Garissa town.

Relating their experiences as displaced families, the majority of the households (38; 76%) mentioned that they were better off than the previous years as impoverished pastoralists in their rural homes. Only a few (11=22%) said their new life was very difficult and feared the uncertainty. In their rural camps, these impoverished pastoralists experienced hunger and the inability to move with the others since most of them did not even have pack animals left. This made their contention that they were

happier as displaced pastoralists more understandable. But, of course, this is the short-term view. However, the traditional system of assistance to the poor seems to have vanished from the Somali community. The major reason cited was the increasing number of households in need while the numbers that were expected to assist continues to decrease.

The former pastoralists (although they still regard themselves as pastoralists), received foodstuffs and other material assistance from various NGO's in the area. Only one household mentioned getting assistance from other sources. Although utensils, clothes and medicines are provided, the largest single form of assistance is the relief food that is distributed by the NGO's once a month. The foodstuffs distributed include mainly rice, beans and oil. In general, less than 15 kilograms of rice, about 10 kilograms of beans and about 10 litres of oil is provided to each family once a month. Such amounts of food cannot sustain an average family for a whole month, hence most households were involved in income earning activities such as casual labour, mat making, charcoal burning and firewood gathering.

When asked about their plans, most respondents (25=50%) intimated that they had no plans at all for the future of their families. Others responded as follows: continue to live on relief food until further notice (10%), go back to the rural home at the earliest opportunity (14%), try to start some kind of business (12%) and other plans (12%). The majority blamed the 'changing times' as being responsible for the loss of their livestock and hence their subsequent misery. Changes included limits on livestock movement and increasing settlement centres. They had some suggestions regarding possible planning for drought and managing it whenever it occurred. Suggestions included better animal husbandry (20%), storage of food reserves ahead of drought (16%), increased facilitation for irrigated agriculture (16%), better foodstuffs and shelter for drought victims (12%) and urgent and timely intervention in drought management (22%).

If the increasing number of impoverished pastoralists in urban centres in north-eastern Kenya is not curbed, there could be a sad story in the offing. A recent survey by a Garissa based international NGO had estimated the number of displaced pastoralists settled in the villages around Garissa town to be over 185,000 people (Mikono International). If we assume that an average pastoral household in that area has about 8 members, the number of displaced households will be well over 23000. This is more than the total number of households in the district but it also includes many households from outside Garissa District. Nevertheless, it is an extremely high number. Moreover, these households have presumably seen their last days of pastoralism, with almost no possibility of resuming their former lifestyle.

4.4 Livestock Trade Sector

Livestock traders, livestock brokers and butchers were interviewed in the three locations of Garissa town, Dadaab and Ijara. In all, 33 livestock traders, 30 brokers and

39 butchers [4] were interviewed (Table 4.8). In Garissa town, 20 respondents were easily identified in each category. This was not the case in Dadaab and, even less so, in Ijara where, with effort, 10 were found in each category. In both divisions more butchers were present, followed by traders and lastly brokers of which there were only 10. The smaller the market the less of a role there was for brokers.

Table 4.8 *Sample composition of trade actors.*

	Garissa	Dadaab	Ijara	Total
Brokers	20	6	4	30
Traders	20	8	5	33
Butchers	20	11	8	39
Total	60	25	17	102

Of the 30 brokers, 47% specialised in cattle while 43% specialised in small stock (Table 4.9). Only 10% handled camels. For the brokers, cattle and smallstock were almost of equal importance. This is probably because these two are the most traded and fewer people deal in camels. In the case of livestock traders, the majority (64%) were involved in cattle trade, some 21% dealt with camels while 15% traded in small stock. Among the traders, none dealt in all animal types. The traders usually buy animals from producers, brokers and even other traders for resale locally or in distant markets of Nairobi and Mombasa. The distant sites of Dadaab and Ijara had fewer traders, most trading at the local level and in smaller scale than their counterparts in Garissa town.

Table 4.9 *Type of animal and specialisation of persons interviewed (n=94).*

	Broker	%	Trader	%	Butcher	%	Total	%
Cattle	14	47	21	64	14	45	49	52
Camels	03	10	07	21	09	29	19	20
Small stock	13	43	05	15	05	16	23	25
All	0	0	0	0	03	10	03	03
Total	30	100	33	100	31	100	94	100

Of 31 butchers, almost half (45%) dealt with cattle, mainly for slaughter at the local level. Some animals were slaughtered immediately, others at a later date when there was short supply of meat. The latter usually occurred when there was an increase in demand for cattle resulting from the arrival of distant traders, mainly Kamba. Some 29% of the butchers were engaged in camel trade while another 16% and 10% dealt in small stock and in all animals, respectively. Butchers usually shared the meat of the larger animals, i.e. cattle or camels, with other butchers. In addition butchers usually sold their meat to individual customers, hotels, and other institutions such as schools, hospitals, army and police canteens in Garissa town. In the case of the divisions of

4 Although there were 39 butchers interviewed, only those who responsed are presented here, while the others who declined to do so are not.

Dadaab and Ijara, most sales by butchers were to individual customers and to small food kiosks, although substantial amounts were supplied to refugee camps in the case of Dadaab centre.

All brokers were Somali as were most of the traders and butchers. The brokering business entails taking someone's animals to sell and pay him afterwards. Thus, there has to be a high level of trust between the owner and the broker. All butchers were also Somali. This was expected in the divisions of Dadaab and Ijara since the residents were all Somali. However, Garissa town has substantial ethnic mix but the non-Somali butcheries in Garissa town are few, since people buy meat from those they know, especially from their fellow Somali because of the Islamic requirement of slaughter (*halaal meat*).

Although dominated by Somali, there were livestock traders from other ethnic groups, but only in Garissa town where there were 5 Kamba and one Boran. The Kamba usually come on market days (Wednesday) to Garissa town and travel back the next day in lorries with their animals to Nairobi or Mombasa. Others leave their animals behind with people to track them on hoof while they travel by bus.

Table 4.10 *Importance of trading partners for persons interviewed (n=102)*

	Broker N=30	Trader N=33	Butcher N=39	Total N=102
Buying from				
Producers	24	11	36	71
Brokers	0	11	01	12
Traders	06	04	02	12
Others	0	01	0	01
Non-response	0	06	0	06
	Broker N=30	Trader N=33	Butcher N=39	Total N=102
Selling to:				
Producers	0	01	-	01
Brokers	0	16	-	16
Traders	16	12	-	28
Butchers	08	04	-	12
Others	03	0	-	03
Non-response	03	0	-	03

The relation expected among the various actors in the market was in the following order: producer-broker-trader-butcher-customer. However, the network was much more complex since each group of actors dealt with multiple partners (Table 4.10). For instance, some producers bought animals from other producers or brokers or even from traders when they needed breeders. Brokers, on the other hand, sold animals for producers on whose behalf they sell for a commission. The majority of brokers fall under that category. A few brokers sold on behalf of traders as well. However, these traders were usually local ones who either bought animals from the local market for resale in the same market, or from distant markets for resale in the main Garissa

market. The brokers are assumed to be the most informed actors in the market. In terms of whom they sell to, the brokers usually sold to traders, butchers and a few sold to individuals who came to buy animals for ceremonies or for consumption at the household level.

Livestock traders usually bought animals from producers and from brokers equally. A few bought from other traders, especially exporting traders bought from local traders who acted as agents for larger traders although they also traded on their own behalf. The butchers bought livestock mainly directly from producers. This is primarily to save the commission charged by brokers and traders. However, a few of them still purchased from these intermediaries, especially when they could not obtain good animals directly from the producers, or when the brokers and traders had bought all the sought after animals.

About 70% of the brokers, traders and butchers bought animals from producers (Table 4.10), only 25% bought from amongst themselves while 6% did not disclose their source of purchases. The majority of brokers sold animals to traders and butchers. While 53% of the brokers sold to traders, 27% sold to butchers while only 10% sold to others with a similar percentage not disclosing the trade pattern. Although not apparent in this survey, brokers are known to handle animals on behalf of each other. However, this handling of animals for each other is not considered as sales since no money changes hands. In fact, brokers in Garissa rarely pay for animals they handle but only sell on behalf of others. Livestock traders sold to brokers who obtain animals and keep them for resale to traders and butchers. Thus 49% of livestock traders sold animals to brokers, while 12% and 36% sold to butchers and other traders, respectively. A few of the traders sold animals to producers. Such producers usually bought specific animals for particular purposes such as breeding, sacrifice and dowry. There was little or no exchange between brokers and traders on the one hand and butchers on the other hand. Apparently the former cater largely to the external market, i.e. outside the district.

Table 4.11
Annual Sales Volumes Leaving Garissa District with Prices by Livestock Type, 1983-93*

	Cattle		Shoats		Camels	
	Number	Av. Price	Number	Av. Price	Number	Av. Price
1983	7160	920	19965	173	09	1340
1984	31951	880	20904	161	313	1390
1985	43853	1390	16358	277	=	=
1986	22629	1738	22412	276	41	1756
1987	16227	2344	17547	314	1000	2059
1988	29789	1867	33911	267	257	1239
1989	24395	2120	61759	335	298	1674
1990	55899	2580	44842	284	04	1767
1991	33449	2975	36903	328	725	2172
1992	65127	2492	40188	211	3416	1826
1993	67076	5772	30487	411	944	3850

* Kenya shillings
Source: District Livestock Production Office, Garissa.

Table 4.11 presents the volumes of sales leaving the district. In 1992 this came to about 65.000 head of cattle, 40,000 smallstock and 3,500 camels, although the latter was an exceptionally high figure. The table shows considerable annual fluctuations that cannot be explained only by local climatic conditions such as drought. The level of off-take is considerable and compares with the figures for Kajiado District which is more favourably located near the large towns.

There is little flow of market information in the area. Traditionally, most of the information was relayed through word of mouth. When people travelled, they were obliged to inform those they met on all issues that were of importance. This flow of information included market prices and whether auctions were expected. However, people are now more pre-occupied with their survival as well as survival of their animals and little of this traditional communication seems to be taking place. In the household survey, 69 households (90%) mentioned that they were not aware of the market prices for livestock and livestock products. Only 8 households (10%) said they had knowledge of market prices in markets they visited regularly. For the few who had access to market information, the sources they mentioned included livestock traders (2%), other pastoralists (4%) and other sources (4%). Factors mentioned that affect livestock marketing included poor prices, price fluctuations and lack of security. From this survey, 67 households (85%), mentioned poor prices as the single most important factor affecting livestock marketing. Another 8 households (10%) blamed the lack of security while 4 households (5%) said price fluctuation was an impediment to livestock trade. While the households from Dadaab mentioned all the above factors, though in different proportions, in Ijara poor prices were mainly blamed as the limitation to livestock marketing.

Table 4.12 and 4.13 give information on the prices and volumes of livestock traded in Garissa, Dadaab and Ijara. There are considerable seasonal fluctuations and regional differences.

Table 4.12 *Heads of cattle traded and average prices per animal by month and location*

	Garissa		Dadaab		Ijara	
	number	price	number	price	number	price
mar'96	1048	5184	26	6250	37	3386
jun	1165	5678	32	6919	44	4230
sep	1774	4750	92	4403	29	4097
dec	1886	5729	104	6210	33	3863
mar	4313	5667	118	4131	58	7121
jun	3313	5837	144	5008	33	4749
sep	5211	4800	108	4781	165	3940
dec'97	2997	5528	95	6305	88	5759

Regarding possible ways of improving livestock marketing, the respondents mentioned elimination of middlemen, improvement of security, improvement of range lands, provision of veterinary services, setting up market days for livestock products and fixing

of minimum prices for livestock and livestock products. From our survey, 38 households (48%) regarded market days for livestock products and more market days for livestock as the key to increasing off-take in the area. Most of these households were from Ijara, which is furthest from the main market of Garissa. The second most important factor to increasing off-take was said to be the improvement of security in the area. This factor was found to be more crucial to Dadaab households, as the 25 households (32%) that mentioned it were all from there. Insecurity has been rampant in the north of Garissa mainly because of the increased infiltration of illegal arms into the area from Somalia after the overthrow of president Siad Barre in 1991. Fortunately, the situation has been better in the south which is considered the most secure part of the entire province. While all 40 households in Dadaab mentioned refugees as affecting the deterioration in security, in Ijara there was no effect of refugees because there were none. Provision of veterinary services (9%), elimination of exploitative middlemen (5%) and improvement of range lands through effective regulation (about 4%) were mentioned as other possible means to improve livestock marketing.

Table 4.13
Number of smallstock traded and average prices per animal by month and location

	Garissa		Dadaab		Ijara	
	number	price	number	price	number	price
mar'96	1754	1454	748	809	104	756
jun	2785	980	1019	1050	163	581
sep	3357	853	3520	708	95	659
dec	3771	1158	2325	914	114	522
mar	5629	668	2680	738	200	581
jun	7449	655	2571	729	269	526
sep	9875	772	645	718	513	456
dec'97	6755	765	1300	947	245	601

4.5 Grain Trade Sector

Grain Trade in Garissa town

Consumer goods are obtained from Garissa town and distributed through divisional headquarters to smaller centres. Buying and selling of livestock is an important activity in Garissa town and in all market centres in the district. The National Cereals and Produce Board (NCPB) and the Kenya National Trading Corporation (KNTC) act as the major stores for the provision of foodstuffs in the district. NCPB started its operations in 1987 and the district imports are not adequate to meet the needs of the population. Some wholesalers, who have their own stores, also bring in foodstuffs including grains and other cereals. But this latter group charges higher prices than government stores and is frequented less.

Little, if any, of the traded grain is grown locally with almost all of it being brought in from the agricultural centres of the country, Most of the grain trade in the district is

concentrated in Garissa town, the only town connected by a tarmac road to the rest of the country. It serves as the entry point of grains into the district or even into the province. Given the logistical problems to the far off divisions and locations and the prohibitive transport costs, most traders found it convenient to do their trading in town rather than in outlying centres.

A survey of grain traders in Garissa town was done at the beginning of 1998 when all 34 traders were contacted. There were 21 men (62%) and 13 women (38%). Most of these were operating from the central market with a few on the outskirts of the town. Because of the intricate networks and the labour requirements involved in the grain business, most women find it difficult to carry it out and instead leave it to their husbands or sons. The majority of the traders (62%) were between the ages of 25 and 40 years, with only 7 (21%) below 25 years and 6 (18%) above the age of 40 years. There was only one respondent above the age of 55 years. This contrasts with the livestock trade where older people are represented substantially.

The grain trade in Garissa is dominated by the local Somali with very few traders from other communities. Kamba and Kikuyu were each represented by only 2 respondents (or 6%). The 2 Kamba traders were both males; the 2 Kikuyu traders were women. Indeed, most of the Kikuyu market traders in the area were women with men trading in retail trade and hardware, among other activities. The Somali do not have a long history of grain trade with most having been involved in this activity for about three years or less. In fact, we gathered from our informal discussions with some of the traders that the devastating drought of 1991/1993 was more or less the genesis of the Somali grain trade on a substantial scale. The majority of the grain traders in Garissa traded in maize grains rather than maize flour. In all, 32 of the respondents (94%) traded in maize grains while only 8 of these (or 25%) sold maize flour as well. The few traders who dealt in maize flour were those who owned their own maize milling machines. The grain traders also dealt in other commodities such as rice, vegetables and beans. In our survey, 25 respondents (74%) sold at least three of the above commodities.

The majority of traders started trading after 1990, with only 6 respondents (or 18%) having traded before 1990. In fact, 16 of the respondents (or 47%) actually started their maize business after January 1994. When asked where they started their business, 28 of the respondents (or more than 82%) mentioned Garissa town as their first trading point. Others started their trade in some of the divisions of Garissa district while yet others started in far off towns such as Wajir, Kitui, Mwingi and Thika. Those who started their business outside Garissa district were mainly the non-Somali respondents. Of those who started their grain trade outside Garissa town, the majority started after January 1992 and only one before 1990. The grain trade did not involve much initial capital, the highest being about sh.70,000 ($1166) and the lowest less than sh.1,000 (less than $17).[5] However, while 16 of the 34 respondents (47%) said

5 The exchange rate Kenya shilling:US dollar was about 1:60 during the study period.

they had started with more than sh.11,000, the rest (53%) started with less. All respondents who started their grain trade with more than sh.11,000 were Somali. When asked about the source of their initial capital, 20 respondents had personal savings, 6 (18%) sold animals, while 3 (9%) sold land. Of the 16 respondents that had initial capital of more than sh.11,000, 9 made it from personal savings, 4 sold some animals, while 1 borrowed and 1 sold land.

The volume of maize traded, whether in the form of grain or flour, was found to be fairly low considering the size of the local population. While 21 of the respondents (62%) sold more than 50 kg per day of maize grains, only 7 respondents (21%) sold maize flour of more than 50 kg. Ten of the 16 respondents who traded in rice had a daily turnover of more than 50 kg. Only three traders mentioned trading in sorghum and vegetables at a relatively low turnover, however, there were 25 respondents who traded in beans along with maize. Of the bean dealers, 12 had daily average turnover of about 50kg and above, while only 3 had a daily average of less than 10kg. The volume of trade in maize grain or maize flour is dictated by the amount of capital invested in the business, with those who can garner more funds increasing their volume of daily sales substantially. Among the 33 maize grain traders, 18 (55%) had initial capital of sh.7,000. Indeed, 13 had an initial capital of more than sh.11,000. Similarly, 7 of the 8 maize flour dealers had a start-up capital of sh.9000 and above and 5 started with sh.11000. A similar pattern was established for those who traded in rice, beans and sorghum.

The prices of maize grain, maize flour, rice and sorghum depend on several factors, including seasons, locations and the seller. Often, the prices of these products are lowest in Garissa town and increase with distance and accessibility into the divisions and locations. The selling price of both maize grain and flour was sh.10 to 14/kg, while for rice and sorghum it was sh.35 to 40 and less than sh.10/kg respectively. In most cases, the traders mentioned that they make about sh.5 for every kilogram of maize grain, maize meal, rice and sorghum sold. However, the profits depend on the source of their commodities. When questioned on the source of the merchandise, 24 (71%) bought the grains from Garissa and resold it on a retail basis. Other sources included Mwingi, Kitui and some locations of Garissa where food distributed as relief by agencies found its way back into the town and was traded. Most traders in maize made their purchases daily (24 or 71%) with only a few (8 or 29%) doing so weekly or monthly. The main reason cited for this was the storage costs associated with maize grain and maize flour, as most traders did not have their own stores. For those who had stores in the market, there was the additional cost of a night watchman. Generally, the costs associated with grain trade include transport, loading/off-loading costs, county council fees, rent and wages of employees/attendants if any. These costs seemed to be higher for those who had an average daily sales turnover of more than 50 kg.

The most regular buyers of grains were the town dwellers as well as pastoralists, with 28 respondents (82%) falling under this category. The pastoralists were said to increase their purchases of grains during the dry season compared to the rainy season. Their trade volumes were high during the dry season but much lower during the rainy

season. This may be attributed to the fact that many households which purchased grains during the dry season probably used more milk than grains during the rainy season when there was more milk. When we enquired about plans for the future, 15 of the respondents (or 44%) expressed a wish to expand grain trade. The majority of the rest said they would like to diversify into other economic activities to avoid putting all their eggs in one basket. At least five respondents (15%) mentioned that they would like to replicate their business elsewhere. In all, it can be concluded that the grain trade is an increasingly popular business that is attracting more and more traders. The participating traders tend to increase during droughts and when there is too much relief food being distributed in the area.

Grain Trade in the Divisional Centres

During and after the severe droughts of 1980/82 and 1991/93, food security for most pastoralists has been quite tenuous. Like many other pastoral groups in Africa, the Somali have inherent mechanisms for resource sharing in various forms: gifts of milk to the poor households *('hirsi')*, lending of lactating animals, and 'donations' of a mixture of animals, i.e. including some in lactation. Oba (1994) observed a similar interaction between the poor and the relatively better-off among the Boran of northern Kenya. Unfortunately most such traditional systems of mutual assistance are on the decline among the Somali pastoralists. The major reason for this is probably the reduction of the resource base for many households – the number of households which need assistance far beyond those that can assist. Oba (1994) emphasised the importance of livestock sales to purchase foodstuffs such as tea, coffee, sugar and tobacco and the importance of these items in strengthening the household relations. Many pastoral households in north-eastern Kenya have been forced out of traditional pastoralism into a refugee camp or have settled, although they still consider themselves as pastoralists. Nonetheless, interventions aimed at enhancing food security for pastoralists should attempt to do so through the indigenous food security system which better identifies the susceptible groups (Odegi-Awuondo 1990).

Foodstuffs are usually bought by pastoralists from trading centres nearby. Even when animals are taken to distant markets for sale, the cash is brought home for the purchase of commodities in local trading centres. All households either mentioned Dadaab or Ijara as their centres of purchase of maize meal and other merchandise such as sugar, tea leaves and utensils. The price of maize meal has not been favourable in the area, and most households complained that prices were high or very high. It must be noted, that food prices in the area normally have an inverse relationship to the amount of relief food that is brought in and distributed. In most cases, there is minimal relief food taken to the south of the district which is also much further from the main administrative centre of Garissa, and therefore food prices tend to be higher than in the north. Many families in Dadaab area in the north have enrolled themselves as refugees in the local camps and they obtain free foodstuffs like the refugees. Such households

do not have to buy much food, at least for the duration when the refugees are present.

Table 4.14 presents information on the prices of various food items that pastoralists have to purchase. It is clear that the geographical differences are as large as the seasonal ones, although this was a time of drought which may have enlarged the latter. This will be further analysed below.

Table 4.14 *Food Prices by location (sh/kg).*

	Maize meal			Maize, grain			Rice		
	Gar.*	Dad.	Ija.	Gar.	Dad.	Ija.	Gar.	Dad.	Ija.
mar'96	12.80	20	30	10.25	17	25	31.70	40	45
jun	12.80	20	30	10.25	18	25	31.70	40	45
sep	13.50	25	30	10.80	20	25	33.40	40	45
dec	13.50	25	30	10.80	20	25	33.40	40	45
mar	14.25	25	35	11.40	20	30	35.15	40	50
jun	14.25	30	35	11.40	25	30	35.15	45	50
sep	15.00	25	40	12.00	23	30	37.00	40	50
dec'97	15.00	30	45	12.00	20	40	37.00	45	65

* Gar.=Garissa; Dad.=Dadaab; Ija.=Ijara

4.7 Calorific Terms of Trade

In general, more metabolised energy can be purchased in the form of grain than in the form of meat, for an equivalent amount of money. The ratio of energy that can be purchased in meat to the energy that can be purchased in grain represents the CToT. This value, which is dependent upon the costs of meat and grain and the metabolizable energy yields of each, can be important in deciding whether to purchase grain or meat. The ratio is high with a combination of low grain costs and high meat costs and, in contrast, is low with high grain costs and low meat costs. Maize is usually the grain used for comparison in Kenya, as it is the most common one traded, and it yields approximately 3200 kcal/kg. For smallstock, that is sheep and goats, it is assumed that

Table 4.15 *Calorific Terms of Trade by Location and Type of Livestock*

	Cattle/Grain			Smallstock/Grain		
	Gar.	Dad.	Ija.	Gar.	Dad.	Ija.
mar'96	5.4	3.9	1.4	17.5	5.9	3.7
jun	5.9	4.1	1.8	11.8	7.2	2.9
sep	4.7	2.4	1.8	9.8	4.4	3.2
dec	5.7	3.3	1.7	13.2	5.6	2.6
mar	5.3	2.2	2.5	7.2	4.5	2.4
jun	6.4	2.1	1.7	7.1	3.6	2.2
sep	4.3	2.2	1.4	7.9	3.8	1.9
dec'97	4.9	3.3	1.5	7.9	5.8	1.9
average	5.3	3.0	1.7	10.3	5 0	2.5

* Gar.=Garissa; Dad.=Dadaab; Ija.=Ijara

an average animal yields 13 kg of meat and 2000 kcal/kg. This takes an average of about 1600 kcal/kg for goats and 2500 kcal/kg for sheep. For cattle, it is assumed that an animal yields 150 kg of meat and 2000 kcal/kg.

Prices of cattle and smallstock were similar in Garissa and Dadaab and lowest in Ijara (Table 4.12 and 4.13). The price of maize, however, was highest in Ijara, intermediate in Dadaab and lowest in Garissa (Table 4.14). There was no trend of livestock prices over the study period but the price of maize increased steadily during this period. As a consequence, there was a tendency of the ratio to decrease in all three districts over time, most so in Ijara and least so in Garissa (Table 4.15). In Ijara, the cost of energy obtained from maize approached the cost obtained from cattle. Overall, the highest ratios were in Garissa where they averaged 5.3 and 10.3 for cattle and smallstock, respectively. Apparently, Somali pastoralists preferred smallstock to cattle for slaughter and, as a consequence, there was a higher price demanded per kg of animal.

PART V

MAASAI PASTORALISTS IN KAJIADO DISTRICT

PART V MAASAI PASTORALISTS IN KAJIADO DISTRICT [1]

5.1 Introduction

Kajiado District

Kajiado District covers an area of 21,105 km^2 and borders the Republic of Tanzania to the south. Kajiado, the district capital, is situated about 125 km from Nairobi along the tarmac road to Tanzania. The area has considerable relief from the salt pans of Lake Magadi to the Ngong Hills and slopes of Mount Kilimanjaro. The area is generally hot and dry with an average annual rainfall between 500 and 600mm, often falling in showers. Kajiado District had a projected population for the end of 1994 of about 337,500 people (RoK 1993c). The mean population density is about 16 people/km^2 but there are considerable differences between the divisions in the north of the district (Ngong: 28/km^2 and the divisions in the south of the district (Magadi: 8/km^2)

The Maasai living in Kajiado District have specialised in livestock production, have a long and well documented history, and are located near the main consumption centres in Kenya. There is severe pressure on resources, as increasing number of people from highly populated areas migrate into the district to buy land, settle there and start cultivation. At the same time, the Maasai population and their herds grow in number as well, and the number of animals in the herds have probably never been so huge. This increases pressure on livestock resources (grazing and water), which is expected in other areas of Kenya in the near future as well. At the same time, markets for meat and milk are improving due to population growth in the district itself, and due to increasing demand from consumer centres nearby and further away.

Social and Economic Importance of Livestock

Social and economic life of the Maasai is strongly defined by the (livestock) transactions taking place within the household, between households, and between households and outsiders (such as traders and retailers). Whether an animal can be sold on the market depends partly on the alternative claims that are put on that particular animal, and potential conflicts that may exist between ownership rights (and disposal rights) and user rights.

Ownership of animals in a herd is usually spread among several people. Furthermore, herds are not a fixed entity, but a constantly changing number of animals, being kept, sold, given away, bought, received, being born, and lost to disease and predators. Buying and selling of animals is a 'recent' phenomenon, as money was virtually absent in the beginning of the century. Also, the Maasai production system is not fully modern in the sense that only cash transactions take place. Discussing incomes and

[1] Part V contains a summary of the Maasai studies. Detailed findings are reported in Zaal (1997a, 1997b, 1997c; 1998a)

expenditure by men and women necessitates a description of which animals are owned by whom, and what type of animals is given to whom and for what purpose.

The herd may mostly belong to a man who obtained most of his animals as a young man, and, often, most when inherited from his father. However, his wife (or wives) has (have) usually been given a number of animals, both cattle and smallstock, for her use. Every 'house', constructed and owned by the women and the dwelling for her and her children, needs enough cows to supply milk for the people living there. Usually, six or seven cows are considered enough, but not everyone has so many cows in milk. Sons in the household have a number of animals as well, in pre-inheritance or acquired through various jobs. Young men are very active usually in (retail) trade and in particular in the brokering and livestock trade. A small number of animals may have been given by age-mates or friends who want to spread their herd to avoid diseases in their own area. Or they may have animals, usually young cows, who have been given by friends who want to breed them to a particular bull. Giving an animal for traditional reasons still plays a role, but is of limited importance in relation to the herd size as a whole, and in relation to the actual number sold and bought. To give an animal away, or to sell it and use the proceeds to buy something or pay for a service, depends on the type, sex, age and particular breed of animals in the herd.

Men give away cattle for a variety of reasons. Mature males are seldom given away, and are used only for breeding as part of a dowry payment to the father of the bride. Cows, both Zebu and improved breeds, are given much more often. The most important reasons are dowry to the father of the bride, and to the women for her milking herd and for herding to increase the herd's milk producing and breeding capacity. Other reasons for giving and receiving cows include breeding (mostly in the case of crosses given to men), and trade (for a son to start on his trading business or to increase the scale of that business). There are yet other reasons why someone gives or receives a cow. For example, as a fine for stealing goat or sheep. Cows are also returned upon divorce. Similar reasons apply to exchange of heifers though herding and breeding is more important than potential milk production. Sometimes, heifers are used to pay for circumcision services. Young bulls are most often used for herding and breeding when it involves crosses or improved breeds, and for trade when it involves Zebu bulls. Bulls are also given as part of a dowry and to the newly-wed couple. Animals for slaughter are given rarely, only for special occasions.

Smallstock are exchanged in considerable numbers. As the value of smallstock is much less and the exchanges more frequent, the reasons for giving an animal are more diverse. Goats play an important role in this respect. Goats of improved breed are predominantly given to men for breeding, herding and trading purposes. Dowry and gifts to newly wed couples appear as well, but not often. A variety of less important uses are found. For example, to pay school fees, goats are given to schoolchildren or to wives with schoolchildren, as a fine for stealing an animal, and to make peace after a disagreement. Goats are given as well for sacrifice, during a party, for the arrival or departure of an important guest, and for *moran* to eat. Sheep are given less often, but

for similar reasons as goats. Improved breeds are given more often for herding and breeding than for trade; the reverse is true for local breeds. Sheep meat, in particular, is prepared for sick people (to make 'soup' of the fat and bones, to which various herbs and tree bark are added), and for women who have just delivered to increase their strength. Maasai women eat relatively little during pregnancy to avoid a heavy baby and a difficult delivery, and therefore, they need extra energy after child birth.

There are only a few occasions for a woman to be given animals – the most common is during the wedding ceremony. Afterwards, animals are given for very specific purposes only, usually when she or a family member is ill, when she is in need of milk for the family, or when she needs cash for expenses for herself or her school children. Most animals are given by men for purposes related to production, breeding and trade.

Barter trade was the usual way of obtaining food in the past, but maize meal, being the staple for Maasai after milk, needs to be bought. For this, and to buy dry goods (including tea and sugar) and livestock inputs, cash is needed. For all purposes related to livestock production and maize meal, men are responsible. They control most of the sales and most of the purchases. Women have limited options to acquire money. They can sell animals which they acquired for that purpose, they can sell hides and skins given to them by the men who slaughters animals (traditionally the prerogative of the women), and they can sell milk. In times of drought, women produce charcoal for sale as well. With this, they buy household (food) supplies mostly.

Livestock Production and Trade

On a district basis, Kajiado District has one of the highest livestock populations in Kenya. It was estimated that in 1987, there were over 600,000 heads of cattle, 500,000 sheep and almost 450,000 goats (Appendix 2). Estimates of peak levels for earlier years are of similar level, with sharp declines in between peaks caused by the effects of droughts in the early sixties, mid-seventies and early eighties (Zaal & Dietz 1995). Since then, the number has increased despite short droughts in the early 90s. Total small stock figures have probably never before been at the present level.

Of all livestock in Kenya, Kajiado District was estimated to have 7% of all the beef cattle, 8% of all the sheep and 5% of all the goats. Garissa District was estimated to have more cattle in 1992 (almost 700,000 heads), and Turkana District to have more goats (1,080,000), but in livestock biomass, Kajiado was the District with the second highest livestock population[2]. Apart from this livestock population, large numbers of wildlife roam the district. Livestock estimates for recent years are staggering, but seem relatively reliable as they are based on a livestock census (RoK 1993a): more than 880,000 heads of cattle in 1995, almost 970,000 sheep and almost 900,000 goats. With a Maasai population of almost 160,000 [3], this would mean an *average* number of more

2 The district with the highest livestock population in cattle and smallstock is Narok, the neighbouring Maasai district.

3 Based on the population census of 1989, and assuming a growth rate of 3% since then. This is

than 6 Tropical Livestock Units per person[4]. This indicates that an average Maasai household could be self supporting in livestock based foods, which is rather unique in Kenya and elsewhere. In reality, livestock ownership is unevenly distributed, and many Maasai have inadequate numbers of animals for this type of self-sufficiency (Zaal & Dietz 1995).

With these herd and flock sizes, the growth of herds and flock and the net off-take (both commercial and non-commercial) should be high in absolute numbers. Theoretically, with offtake percentages of 12 for cattle and 30 percent for smallstock, more than 100,000 heads of cattle and more than 560,000 smallstock are available for consumption and sale. Alternatively, they may be used to increase the herd. In our survey among households, we found that relatively large amounts of meat were consumed in the household (Zaal & Dietz 1995). But large numbers were sold as well. Traditionally, animals were sold to Kamba to the north, Chagga to the south and Taveta to the east, both for consumption and animal traction (Kerven 1992. See Map 5.1). With the important markets of Nairobi and Mombasa, and the now unfavourable market of Tanzania, trade flows out of the District are redirected to Machakos and Makueni Districts to the north (for consumption and animal traction), to Nairobi and to a lesser extent Mombasa (for consumption). But local trade among producers, between producers and local butchers, and between producers and traders for resale within the District is lively as well.

Emali and Bissil livestock markets are the most important in the district, attracting animals from a wide area, and supplying important consumer markets in and outside Kenya. However, the relative importance of a market usually changes over the years, the seasons and even over weeks. Table 5.1 gives an overview of the numbers of animals found on the markets surveyed by the Ministry of Livestock Development.

Table 5.1.
Volumes of cattle at major livestock markets, per market day, period 1991-95

	market day *	daily volume 1991	daily volume 1992	daily volume 1995
Kisamis	4	nil	30-50	n.a.
Mile 46	3	20-50	nil	n.a.
Sajiloni	2	10-40	150-200	130-280
Bissil	1-5	100-500	80-150	310-848
Magadi	5	60-150	150-350	150-550
Namanga	1-5	80-300	10-20	n.a.
Mile Tisa	1-5	n.a.	100-250	70-370
Emali	5	300-1200	400-1300	350-1100
Mbirikani	3	30-100	30-50	n.a.
Rombo	1-5	30-200	100-400	75-560

Source: MALD/MIS, various years; MALD/LMD, various years.
* 1=Monday, 2=Tuesday, etc. 1-5 indicates daily market.

probably too low; with a growth rate of 4% the number should have reached about 185,000.

4 The unit most widely used in Kenya (Peden 1984). One TLU is 1.42 heads of cattle, and 10 hair sheep or goats.

5.2 Study Methods

Data consist of own surveys and data lodged with the Ministry of Agriculture and Livestock Development (referred to as MALD/MIS; MALD/LMD), notably on livestock marketing and grain prices. The most important source among them was the Market Information System on agricultural (crop) products. A number of surveys on markets in Kajiado district were done in March-April 1994.

The first series of surveys was among livestock traders, brokers and butchers (N=100) in 10 livestock markets in the central and eastern part of the district. Namanga (11 persons interviewed), Mile Tisa (9), Bissil (16), Sajiloni, near Kajiado town (5), Kiserian (9) , Ewaso Kedong (10), Rombo (7), Illasit (11), Mbirikani (8) and Emali (17) were visited.

A second series of surveys was done among grain traders (N=106) in 10 market centres, selected on the basis of number of trading licences in each centre. Kiserian, Ewaso Kedong, Sajiloni, Bissil, Mile Tisa, Namanga, Emali, Illasit, Rombo and Mbirikani were visited. Every second or third shop was selected, depending on the size of the market centre.

Furthermore, monthly household surveys were done in three group ranch areas between April '94 and April '96: Olkarkar, Osilalei and Partimaro. Details on sampling procedures and data collection are given in Appendix 4. In all, 153 households were included. Average household size, including members temporarily away (less than one year), was 7 with a range of 5 to 13 in Osilalei, 7 with a range of 3 to 15 in Olkarkar, 6.5 with a range of 3 to 14 in Partimaro. Rutten (1992: 333) reported average household sizes between 6 and 10.6 and White & Meadows (1981) reported averages between 10.8 and 15.2.

5.3 Livestock Commercialisation

Commercialisation has been a feature of the Maasai economy since the early twentieth century. Before the period of monetary trade, barter trade had been taking place for a long time and livestock and livestock products were exchanged for ironware, beads, and various other goods (Kerven 1992). The main hypothesis of this study assumed that (semi) commercial pastoralism (the selling of a limited part of livestock production), should allow pastoralists to improve their food security through favourable terms of trade, i.e. the caloric terms of trade. However, increased commercialisation would also introduce greater risks in the household economy and livelihood strategy, as food security becomes increasingly dependent on factors external to the local and regional social, economic and cultural environment. In many cases, this situation of increased commercialisation is not a matter of free choice, but is forced upon pastoral society through decreasing possibilities for subsistence production. In other cases, increased commercialisation is the choice of the most wealthy pastoral producers who have started producing for the market explicitly and have adapted various parts of their production system accordingly (Zaal & Dietz 1995).

A determinant of commercialisation, other than wealth, is the necessity for pastoralists to maintain strategic alliances with other individuals, such as sharing of animals, pre-inheritance pledges of animals, loans of animals from (and to) people in potential drought refuge areas, and placement of animals in disease-free areas. For these reasons, quite a number of animals in the herd cannot be taken and simply sold off. Distance to the market is an important determinant of degree of commercialisation of agriculture, if only because more high-value-added production takes place closer to the market centres. This may certainly be true for Maasai pastoralists in Kajiado District, though Maasai generally walk their animals over considerable distances to bring them to the market, traders do likewise (Zaal 1997a). High-performance breeds are less able to walk over large distances, and for this reason have to be kept near the markets, or taken to nearby markets which may be remote from consumers' centres and where lower prices for animals are offered. The time delay as the animals take more time to reach the market is an added risk.[5]

Table 5.2 *Livestock ownership per household by type of animal and location*

	N	cattle		goats		sheep		donkeys		TLU		
		total	per hh	total	per hh	total	per hh	total	per hh	total	per hh	per cap.
Olkarkar	34	2410	71	1093	33	1740	53	53	2	2020	59	8.1
Osilalei	78	5767	74	2824	36	2771	35	237	3	4788	61	8.9
Partimaro	38	1796	47	1613	42	1778	46	86	2	1664	44	7.2
Total	150	9973	66	5530	37	6289	42	380	3	8487	56	8.3

Livestock ownership

Characteristics of the livestock ownership among the study groups are given in Table 5.2.[6] The absolute figures are high by most standards and so are the ratios of TLU/capita. If we assume an average household size of 7, we arrive at a TLU/capita of 8, or twice the number theoretically needed for a purely pastoral life, based on consumption of pastoral foods only (Zaal & Dietz 1995).[7] Rutten (1992) reported figures of between 43 and 82 TLU/household for group ranches. With average household sizes between 6 and 11 people, the number of TLU/capita was between 6 and 9, which is also above the minimum number of 4 TLU/capita. White & Meadows

5 However, distances are not comparable to those in West Africa, where animals are sometimes taken on the hoof over distances of up to 1000-1200 km (though even here, truck transport is increasing).

6 Breeds of cattle are local zebu, Boran and Boran crosses, Sahiwal and Sahiwal crosses. Crosses were considered to belong to the category of improved breed. Breeds of goat are local hair goat (Maasai), Galla goat and Galla crosses, and other types of improved goat breeds (Somali, Isiolo). Breeds of sheep are local hair sheep (Maasai), Dorper and Dorper crosses and other types of improved sheep breeds. Camels were introduced in the district in 1989 and none were owned by the survey households.

7 The figures, especially those of Osilalei, are influenced by extreme cases. The household with the largest number of animals is in Osilalei owning more than 1000 head of cattle, 350 head of goats, and almost 500 head of sheep. In all, it owns more than 800 TLU, which is well above average. Without this household in Osilalei, the figures would be 61 cattle, 32 goats, 30 sheep and 3 donkeys per household or 51 TLU per household, which is between the figures for Olkarkar and Partimaro.

(1981:16) studying the group ranches of Poka, Olkarkar, Kiboko, Elang'ata Wuas and Lorngosua in 1980 found TLU/capita ratios of 6, 11, 6.5, 15 and 7.2 respectively. The average was 8.4, which was similar to our findings.

Figures for the district as a whole are lower, and have been much lower during recent years, though not for all periods of Maasai history. In 1912 the ratio was 20 TLU/capita, in 1943 it was 15 TLU/capita, in 1960 it was 10 TLU/capita, in 1962 after the disastrous droughts it was 3 TLU/capita. In 1975, after the drought of the early seventies, it was 4 TLU/capita, in 1979 it was 4.5 TLU/capita, in the late 1980s it was slightly less then 4 TLU/capita and in the early 1990s, a ratio of about 6 TLU/capita was assumed.[8] This means the Maasai have successfully gone through periods of decline during which droughts and diseases decimated the herds and through periods of rapid and continued growth of the herds. This is rather remarkable in view of the situation of general stagnation that seems to be found in so many other parts of the country, and other countries with pastoral populations (Zaal & Dietz 1995).

Homewood (1982) suggests that the distribution of livestock wealth in Kenya is more skewed than in Tanzania. White & Meadows (1981) mention a 'highly skewed' ownership of livestock, with the 20% above average wealth households owning 69% of the cattle and 49% of the smallstock. However, as the more wealthy households were also larger, per capita distribution was less skewed, with twice the number of household members in the top wealth bracket as in the bottom wealth bracket. Rutten (1992) also found a skewed distribution, though less pronounced than a study in 1980 by the International Livestock Centre for Africa in the same area (ILCA 1983) .

Herd Composition

There are few data on the numbers of improved breeds in the herds of Kajiado pastoral producers. The only district-wide figures available are found in the Kajiado District Livestock Survey (RoK 1988a). Though it is stated in the report that 45% of the district's cattle is upgraded, based on these data, the Kajiado District Atlas (RoK 1990b) states that 24,360 animals (or only 4%) is improved or graded cattle. This latter figure, however, primarily denotes improved dairy animals. Most upgraded animals are crosses between local types of Zebu and Sahiwal which are multi-purpose animals with improved milk and meat production characteristics, but are more susceptible to diseases, and less resistant to drought and migration. Boran are also found in considerable numbers, mainly in the drier areas. Simmental, Ayrshire, Friesian and Guernsey cattle are found in high potential areas. Improved cattle breeds and crosses between breeds and local Zebu were found in all group ranch areas. Improved breeds of smallstock were also found in all areas, though not in all households. Table 5.3 gives some details for each of the group ranch areas.

8 All figures with the assumption that the Maasai population are the principal owners of cattle.

Table 5.3.
Livestock herd composition per household by location (1994/5; number and herd composition).

	Hhlds	Cattle				Goats + Sheep		
	(N)	Herd (N)	Zebu (%)	Sahiwal (%)	Boran (%)	Herd (N)	Maasai (%)	Improved (%)
Olkarkar	34	71	25	27	48	86	10	90
Osilalei	78	74	23	38	39	71	68	32
Partimaro	38	48	94	4	2	88	64	36

Note: Sahiwal, Boran, improved goats and sheep includes crosses between Zebu and these improved breeds, and between Maasai and improved breeds of goats and sheep. Improved goats are mostly Galla (Somali), while improved sheep are usually Dorper or crosses between Dorper and Maasai hair sheep.

The figures show that large changes have occurred in herd composition in the northerly Olkarkar, an area generally taken to be more geared to the markets and more commercial in outlook. This is so because it is located near the main road between Nairobi and Mombasa, and because of its long established relationship with colonial and independent government institutions. It also shows the influence of distance: from the relatively 'traditional' southern part of the district towards the more commercial northern parts, the share of improved breeds in the herds increases. The herds in Osilalei seem to have changed in a similar direction as far as cattle are concerned but the flocks of smallstock seem to be mainly of traditional breed.

The investments that go into upgrading the herds are considerable. Apart from the capital to buy an improved breed (often from places at considerable distance from Kajiado District such as Naivasha breeding station), these animals have to be better maintained, and need regular access to water. This means increased costs such as for veterinary care. Improved breeds are generally less capable of walking distances, so a nearby source of water is necessary.

Table 5.4 *Annual net commercial offtake per household by location (1994/95).*

	House	Cattle				Goats + Sheep			
	holds	Herd	Sold	Bought	Net Offtake	Herd	Sold	Bought	Net Offtake
	N	N	N	N	N (%)	N	N	N	N (%)
Olkarkar	34	71	16.8	7.4	9.4 (13)	86	21.0	5.0	16.0 (19)
Osilalei	79	74	9.6	7.0	2.6 (04)	71	11.3	8.7	2.6 (04)
Partimaro	38	47	8.5	3.9	4.5 (10)	88	4.0	1.2	2.8 (03)

Livestock sales

The commercial activities of pastoralists in the survey are presented in Table 5.4. The more northerly group ranch area has the highest number of (gross) sales from the herd (24%). The differences among the various group ranch areas are large, and the way in which they differ reflects the wealth differences in improved breeds among group ranches. Gross off-take rates in the range of 12-13% are generally assumed to be normal for pastoral herds. This would mean that either too many cattle are being sold for the herds to remain stable in size or animals are bought and resold. In the case of small stock, 5-25% is not very high. This is somewhat below what is generally assumed

to be a normal off-take rate for smallstock in pastoral systems, namely 30%. Smallstock are given away or slaughtered by the owners more often than cattle.

Certain individuals buy and sell animals, using their herd as a temporary stage for animals they want to sell later. In the meantime, the animals may be fattened as well. Another aspect of commercialisation, therefore, is the number of animals bought by producers. This is rarely done in most pastoral societies, and animals are rather exchanged to improve the structure of the herd or selectively sold. Usually, young bulls are exchanged for heifers. Heifers seldom appear on the market, and often there are hardly enough transactions on one market day for a price to form. Heifers presented on the markets are often either in poor health or the owner is compelled to sell for other reasons. Table 5.4 also gives data on the numbers of animals bought by the livestock producers.

The net offtake in absolute figures was 319 heads of cattle and 444 goats/sheep in Olkarkar; 208 and 204 in Osilalei, and 177 and 108 in Partimaro, respectively. Considering that the herd sizes for the three group ranch areas differed, commercial offtake in Olkarkar was relatively high. In percentages of the herds, commercial offtake figures for cattle and goats/sheep were 13% and 19% in Olkarkar, 4% and 4% in Osilalei, and 10% and 3% in Partimaro, respectively.

Herd size and commercial off-take may be influenced by other developments as well. For instance, loss caused by diseases may reduce commercial off-take, partly because fewer animals are available for selling and partly because these animals are often eaten. This reduces food needs and, thus, lessens the need for money to buy food. Also, commercial off-take was reduced in Osilalei but particularly in Partimaro following the distribution of food aid through the government and through churches.

5.4 Economic differentiation

Earlier calculations (Table 5.2) have shown that for all households together, TLU/capita is 8, or twice the number theoretically needed to live a purely pastoral life, based on consumption of pastoral foods only (Zaal & Dietz 1995). After an extensive review of the literature (Zaal 1998a) it was decided to use this ratio for a wealth categorisation as follows: a TLU/capita up to 4 (or 28/household) denotes a poor family, 4-10 TLU/capita a middle family, and 10 TLU/capita and above (or 65/household) a rich family.

In Olkarkar, the middle wealth category is larger in number than the poor and rich category of households (Table 5.5). The distribution of animals in all areas is skewed, mostly in Osilalei and less so in Olkarkar. Within the wealth categories in the survey population as a whole, Partimaro households are the poorest (12.1, 42.2 and 103.1 TLU per household), while the other two group ranch areas do not differ very much with the exception of the richest category of households in Osilalei, which are very rich, with a small group of extremely wealthy herd owners having more than 200 TLU per household.

Apart from the few extremely rich households in Osilalei, wealth is more skewed in the group ranch areas of Osilalei and Partimaro. Further north, in Olkarkar, the wealth distribution is less skewed. This is in contrast with earlier studies (Zaal & Dietz 1995, Dahl & Hjort 1976, Homewood 1992) and points at a possible development in a commercialising pastoral society. After a period of increasingly unequal distribution, there may again be a new phase in which wealth is more equally distributed, or at least more normally distributed.

Table 5.5
Characteristics of the household herds by location and wealth category, in TLU.

	cat.	N	Total (TLU)	Cattle N	Cattle %	Female %	Improved %
Olkarkar	1	07	19.4	15.2	78.4	69.7	67.8
	2	18	46.7	38.7	82.9	61.8	74.7
	3	09	116.1	99.3	85.5	63.8	75.5
Osilalei	1	40	15.6	11.2	71.8	66.1	72.7
	2	23	43.6	35.3	81.0	63.7	71.7
	3	15	210.5	186.7	88.7	53.7	79.9
Partimaro	1	16	12.1	8.5	70.2	48.2	1.2
	2	13	42.2	31.6	74.9	52.2	7.3
	3	09	103.1	80.1	77.7	47.7	4.1

Note: Female cattle and improved breeds are calculated as percentage of cattle herd (in TLU), cattle is calculated as percentage of total herd (in TLU).

Most of the data in Table 5.5 support the idea that wealthier households have relatively more cattle in the herds, and that of this cattle, a larger percentage is formed by male animals, and by improved breeds. However, Partimaro households are exceptional: though they have smaller herds, and very few improved breeds, a large part of the herds is formed by male cattle. The richest and poorest Osilalei households generally have a higher percentage of improved breeds than those in Olkarkar, which was unexpected. This may be due, at least in part, to the lower disease risk in this area, which favours improved breeds. The richest and poorest Osilalei households have lower percentages of female cattle in their herds, which again was unexpected. The differences are not large, but are consistent with differences in ownership of improved breeds. One conclusion is that Olkarkar (perhaps even most Kaputei) Maasai are no longer unique in their supposed orientation to the market. Another conclusion is that both the richest and poorest households in Osilalei are more oriented to the market (as far as their herd structure and the types of animals are concerned) than the equivalent groups in Olkarkar, while the larger middle range group in Olkarkar also seems to have this orientation. On the other hand, households in Partimaro are quite exceptional in that they have very few improved breeds and very low percentages of females, which seem to be contradictory.

Table 5.6.
Monthly number of cattle transactions by location and wealth category (average/household)

	cat.	N	Commercial transactions					Transact. in kind		All transactions	
			Selling	Buying	Turn over	Net Offtake	Net/yr (%)	Out*	In	Turn over	Net
Olk.	1	07	0.4	0.1	0.5	0.3	17%	0.2	0.3	1.0	-0.26
	2	18	0.6	0.2	0.8	0.4	9%	0.3	0.2	1.3	-0.57
	3	09	1.7	0.7	2.4	1.0	9%	0.3	0.4	3.1	-0.93
Osi.	1	40	0.4	0.2	0.6	0.2	15%	0.2	0.4	1.2	-0.01
	2	23	1.0	0.8	1.8	0.2	5%	0.5	0.2	2.5	-0.45
	3	15	1.7	1.2	2.9	0.5	2%	1.2	0.3	4.4	-1.50
Par.	1	17	0.4	0.0	0.4	0.4	40%	0.2	0.1	0.7	-0.52
	2	13	1.1	0.7	1.8	0.4	11%	0.6	0.0	2.4	-0.95
	3	09	1.3	0.6	1.9	0.7	7%	0.8	0.0	2.7	-1.47

* Given away, slaughtered, lost.

Cattle transactions

Table 5.6 gives details on numbers of animals sold, bought and involved in transactions in kind, per category of household. The net result of all transactions in this table is negative in all cases. Animals are sold, given and slaughtered by the Maasai livestock producers, and animals are lost through disease and predators. Still, some are bought, which is uncharacteristic of truly pastoral societies. Richer households consistently sell more animals. Also, commercial transactions are more important in determining the off-take from the herd than non-commercial transactions in all group ranches, and all wealth categories. The same does not apply to animals being bought in relation to animals being given. In the latter case, the relationship is reversed; the poor households receive more animals than they buy and the rich buy more animals than they receive. Selling instead of giving animals away would increase incomes generally, but not by very much, and mostly for the wealthier categories. This would cause a decline in the number of animals received by the poor livestock holders, and would probably increase the unequal distribution of animals.

If these figures are representative for the district, and some 26.400 Maasai households are living in the district (based on the total estimated population of 185,040, and an average household size of 7), we arrive at 171,070 head of cattle bought, and about 266,100 head of cattle sold by the Maasai (also assuming the livestock herds are still exclusively in the hands of the Maasai). The difference, a net commercial off-take of about 95,000 heads of cattle, would relate well with the estimated number of cattle in the district, between 900,000 and 1 million (based on figures presented in RoK 1993). A net commercial off-take of 10% is high for pastoral conditions.

The animals sold are usually the young and full grown bulls (above three years of age) and the old cows. Especially the full grown bulls fetch higher prices than the animals bought, which are generally young animals, either heifers or young bulls. But assuming the weighted average price of an animal to be 9,000 Kenya shillings (based on averages

at the Kajiado District market (MALD/MIS), the commercial off-take from cattle alone would mean an income of sh.855 million for the district's Maasai population as a whole.

Table 5.7.
Monthly smallstock transactions by location and wealth category (average/household

	cat.	N	Commercial transactions					Transact. in kind		All transactions	
			Selling	Buying	Turn-over	Net Offtake	Net/yr (%)	Out*	In	Turn-over	Net
Olk.	1	07	0.8	0.2	1.0	0.6	17%	1.8	0.3	3.0	-2.26
	2	18	1.4	0.5	1.9	0.9	14%	1.7	0.2	3.8	-2.39
	3	09	1.5	0.1	1.6	1.4	10%	2.3	0.4	4.0	-3.48
Osi.	1	40	0.8	0.8	1.6	0.0	0%	1.2	0.4	3.1	-0.89
	2	23	1.0	0.6	1.6	0.4	6%	2.5	0.2	3.9	-2.68
	3	15	1.3	0 7	2.0	0.6	3%	2 8	0.3	5.1	-3.06
Par.	1	17	0.6	0.2	0.8	0.4	13%	0.6	0.1	1.5	-0.83
	2	13	0.1	0.1	0.2	0.0	0%	1.3	0.0	1.5	-1.27
	3	09	0.6	0.0	0.6	0.6	3%	1.3	0.0	2.1	-1.62

* Given away, slaughtered, lost

Smallstock transactions

Table 5.7 provides similar data for smallstock. Smallstock play an important role in the commercial relationships of households, but even more in non-commercial relationships. As with cattle, wealthy households sell more smallstock than poor households, though poor households sell a relatively high number (relative to their wealthier neighbours in Partimaro). A rather small number of smallstock are given away and slaughtered. The smallstock lost because of disease and predators is even higher than the number of animals slaughtered and given away. However, contrary to what occurs with cattle, the number of non-commercial transactions with animals and the number slaughtered and lost is higher than the number sold (weighted averages of 1.3 against 0.9 for the population as a whole). The net result in terms to the flock is negative for all wealth categories and higher in absolute terms, as was the case with cattle, but not as high as expected.

Assuming the weighted average price of an animal to be sh.1,200, we arrive at an estimated income of sh.482 million. This points again to the importance to look at both cattle and smallstock when considering trade for pastoral production systems. Total off take of smallstock was about 400,000 head of a total of 2 million in the district. This would mean an off take percentage of 20 percent, which is somewhat lower than the 25-30 percent considered to be possible under pastoral conditions.

Buying and selling margins

The total income is even higher because the difference in prices of cattle sold and bought should be added. Tables 5.8 and 5.9 present details on the prices for the various

Table 5.8.
Average prices of cattle by type and breed reported by survey households 5/94-4/95 (sh).

	Mature males		Immature males		Cows		Heifers	
	improved	Zebu	improved	Zebu	improved	Zebu	improved	Zebu
selling	11,372	12,032	8,617	n.a.	7,768	7,235	7,931	7,416
buying	9,598	10,432	5,277	4,912	7,835	5,910	5,821	4,845
difference	1,774	1,600	3,340	n.a.	-67	1,325	2,110	2,571

Note: The negative result for cows is caused by high buying prices for certain breeding cows in Bissil, (Partimaro group ranch members paid high prices) and the low selling prices at Emali (where Olkarkar group ranch members sold most of their cows). Olkarkar respondents bought few improved breeds of cows.
n.a = not available

types and breeds of livestock paid and received by the households respectively. The margin between animals bought and sold is between sh.1,600 and 3,340, except for improved breeds of cows. These margins increase the estimated income. Interestingly, mature male Zebu generally received slightly higher prices than mature males of improved breeds. This was due to high prices paid and received by Partimaro producers for Zebu breeding animals. They paid even higher prices for improved breeds, and received higher prices as well, but the numbers exchanged were lower. In Partimaro, prices paid and obtained were as high as sh.24,000 and 20,000 respectively. In Osilalei, producers paid between sh.8,700 and 9,083, and obtained between sh.10,066 and 12,318 for mature male cattle of improved breed.

Table 5.9
Average prices of smallstock by type and breed reported by survey households, 5/94-4/95 (sh)

	Goats		Sheep	
	improved	Maasai	improved	Maasai
selling	1,432	1,275	1,281	1,088
buying	1,087	941	1,378	822
difference	345	334	-97	266

Note: The negative result for improved sheep is due to the extremely high prices paid for some improved breeds in Olkarkar group ranch which were used for upgrading the flock. Prices of sh.2,500 to 3,500 for a ram were not uncommon.

The difference between bought and sold smallstock is smaller in absolute terms than for cattle, though as a percentage of the prices paid, they are comparable at between 31 and 35 percent (Table 5.9). An exception was improved sheep for breeding which were bought at high prices. Animals were bought by the middle range and rich producers in Olkarkar for prices of up to sh.3,500. In Partimaro, producers even paid sh.4500 for breeding animals. The rich producers paid the highest prices for the best breeds.

The poorest category of households shows a very simple pattern: sales are just below an average of 0.5 TLU per month, except for September and April, when they average 0.18 animals. Both these months fall within the rains in the Kenyan bi-modal rainfall pattern (Pratt & Gwynne 1978). The rainfall periods are usually March to May and

October to December and within a few days to a few weeks, grazing improves. Traditionally, sales decrease as soon as cow milk production increases with the rains and the growth of grass. Sales climbed very slowly until the third month of 1995. The middle range households showed a pattern which was in between the poor and rich households. There are fluctuations when there are none in the line depicting the poorest category, sales go up in June and December and again in March. The wealthy households in this group ranch area had higher average sales, and showed a pattern unrelated to rainfall conditions. Various peaks were evident, especially a peak in May 1994. However, much of the development in sales followed the pattern of the other categories, but much more extreme in amplitude. It can be concluded that the commercial activities of these groups differs, and that the richest categories of households no longer follow the basic pattern of a rather constant level of sales with low levels whenever there are rains.

Table 5.10 *Average prices of mature males of improved breed by wealth category reported by survey households (Osilalei; sh)*

	Selling price	Buying price	Margin
1	10,066	8,700	1,366
2	11,805	8,987	2,818
3	12,318	9,083	3,235

Poor producers obtain lower prices for their animals as shown by the prices of mature male animals of improved breed, sold by producers in Osilalei (Table 5.10). Apart from the fact that they buy breeding animals at lower prices, they also sell more regularly relative to wealthy producers, and do not make good use of opportunities for profit in the market place. Therefore, on average, their selling prices are lower as well, and so is the margin. From poorer to middle range to richer households, the average margin on mature male cattle of improved breed increases from sh.1,366 to 2.818 to 3,235. In percentage of the buying price, the margins differ as well: 15, 31 and 36 percent respectively. Not only do poorer households sell fewer animals at lower prices, they also earn less from sales.

5.5 Household Income

Incomes

Since the livestock associated income of men forms the bulk of the income they are reviewed first (Table 5.11). The value of cash transactions from livestock is derived from the sale of animals and the price obtained for these animals. Other incomes in cash include the sale of manure, milk, hides and skins (very little, as this is usually a women's source of income), honey and beer from honey (again, very little is earned this way by men), meat (very little) and gifts.[9] Osilalei is the only area where honey and

9 Figures on household incomes and expenditures in Table 5.11 and 5.12 refer to cash transaction.

manure is sold. Honey is sold locally, manure is sold to Kamba mostly, who purchase it for sale in Machakos and Makueni.

Expenditure on livestock can be considerable, as outbreaks of diseases require veterinary medicines and pesticides against ticks and worms. Dipping is rare as most households either own their own spray, or borrow one from a neighbour or a friend. Spraying is less effective than dipping, especially since only the most important animals are usually sprayed. However, dips are often in disrepair and, therefore, are even less reliable. Herd boys sometimes have to be hired and, increasingly, payment is asked for grazing on land of a private ranch. Finally, salt is a regular expense.

Table 5.11 presents figures on the monthly livestock income and livestock expenditures of the men in the households. Gross cash incomes increase - not surprisingly - with wealth in all areas. Similarly, expenditures on livestock increases with wealth, that is livestock purchases and livestock inputs. The net cash incomes from livestock show a similar picture. The differences between 'poor' and 'wealthy' are consistent and large, but there are variations particularly as regards the 'middle' group in Partimaro which seems to have unreliable data.[10] The net income of men from livestock varies from sh.933 among the poor group in Osilalei to sh.9,243 among the wealthy group in Partimaro.

Table 5.11 *Average cash incomes and expenditures of men from livestock (sh/month)*

	cat	N	Gross income	Liv. purchases	Liv. inputs	Net income
Olk	1	07	3740	968	1200	1572
	2	18	6078	3014	1557	1507
	3	09	17018	5134	2823	9061
Osi	1	40	3987	1455	1599	933
	2	23	92929	3954	3141	2197
	3	15	16754	5163	5436	6155
Part	1	17	5318	346	2505	2467
	2	13	12355	6316	5664	375
	3	09	23665	7345	7077	9243

Table 5.12 shows the income of men and women combined. The income from men largely consists of livestock income as already discussed. Women have very limited control over household cash resources. While income of women in the wealthier categories of Olkarkar and Osilalei group ranches is higher, those of wealthier women in Partimaro is lower. Partimaro is a particular case: incomes from other sources than

Income and expenditures in-kind are not included in this report but are presented in the calculations in Zaal (1998a).

10 The middle groups in Olkarkar and Partimaro do not quite fit the pattern. In Olkarkar this group has about the same income as the 'poor' which is confirmed by the expenditure figures. In Partimaro the middle group has a very low income because of very high expenditures on livestock and livestock inputs but the net income does not tally with the reported expenditures and should therefore be considered wih caution.

milk sales (for which there is a very small market in Ilpartimaro and Ilmarba itself, and a slightly better market in Ngatataek) were relatively high. A severe dry season in the year of the survey caused a number of women to seek additional income from a variety of sources. For example, sales from hides and skins increased from poorer households to richer households in all group ranch areas, but in Partimaro, the poorest category of women obtained high incomes from the sale of charcoal, usually a sign that there is a severe problem in incomes. Incomes from charcoal decreased from 552 to 21 to 0 sh/month from poorest to wealthiest category in that area.

Table 5.12. *Average cash incomes of households by location and wealth category 5/94-4/95 (sh/month).*

	cat	N	Men			Women			Grand total
			net liv. income	other	total	livestock	other	total	
Olkarkar	1	07	1572	329	1901	308	80	389	2290
	2	18	1507	673	2180	613	37	651	2831
	3	09	9061	3011	12072	497	118	615	12687
Osilalei	1	40	933	512	1445	13	22	35	1480
	2	23	2197	611	2808	38	27	66	2874
	3	15	6155	747	6902	112	18	131	7033
Partimaro	1	17	2467	1046	3513	147	629	777	4290
	2	13	375	783	1158	201	182	383	1541
	3	09	9243	1034	10277	119	81	200	10477

Apart from cash income, women have an important source of income in kind, milk, which they control and use for the family's food consumption. Total milk production per day per household varies throughout the year, and depends on a large number of factors. The result in terms of production per day for each wealth category was computed. The poor households had an average production of 3.4 litres per day. In terms of calories, this is enough to feed one person, a very low level of self-sufficiency if this would be the only source of food. The other categories had more milk, with 11.5 litres and 8 litres for the middle range and wealthy households. These amounts are enough to feed four and three people respectively. These figures seem to be high. Firstly, almost half the people in the households have to rely on bought food and, secondly, the wealthy households rely on purchased foods more than the middle range category.

Milk, the most important source of food, is still controlled by women when they have their own animals. In poorer households however, not all women have access to an adequate number of cows of their own, and they rely on animals owned by men. This may seem a trivial difference, as it is supposed to be in the interest of the men to have adequate supplies of milk as well. However, it is precisely the process of increased commercialisation which changes their production goals and consequently their perception of milk production as a source of food. If maize can be bought from the proceeds of animal sales, and animal production (that is, bulls of adequate quality and

weight) becomes important, milk is increasingly seen as a means of raising calves of marketable quality. Conflicts occur between the use of milk for human consumption and for calves. In those areas where there is a market for milk, women may not use milk as they wish. Milk is used for consumption first, for the calves second, and for sale third. This deprives women of one of their main sources of cash.

Another development resulted in women's incomes to diminish. As land is privatised, and group ranches are split up, *bomas* split up as well and families shift to their own private ranches. This usually means that the distance to the market increases for quite a number of families (usually the poorer families) which has a number of consequences for the women. One is that richer households may split up, with one woman (or more women) living on the ranch, taking care of the family and the herd of young cattle and smallstock. Another woman may shift to live near a trading centre where schooling for the children is available, so that she can take care of them. In that case, her autonomy increases somewhat, as she is given animals or food aid or any other source of food and income by the man. However, the woman living on the ranch may be more isolated, and in Olkarkar and Osilalei group ranch areas, this complaint was quite often voiced. Another consequence is that the other traditional source of money for women, the sale of hides and skins, is now partly dependent on itinerant traders who come to the *bomas*. The prices offered by these traders are usually less than market prices. Though gifts from the husband may compensate for these losses of income, control over the amount received is no longer in the hands of the wives.

Table 5.13.
*Average expenditures * of households by location and wealth category 5/94-4/95 (sh/week).*

	cat	N	Men			Women			Grand
			household needs	other	total	household needs	other	total	total
Olk.	1	07	500	283	783	177	39	216	999
	2	18	494	336	830	198	50	248	1078
	3	09	2588	1009	3597	256	49	305	3902
Osil.	1	40	593	314	907	67	17	84	991
	2	23	594	727	1321	166	93	259	1580
	3	15	897	1047	1944	121	44	165	2109
Part.	1	17	1209	402	1611	225	36	261	1872
	2	13	2668	928	3596	123	38	161	3757
	3	09	2421	935	3356	202	13	215	3571

* Excluding livestock purchases and livestock inputs.

Expenditures

After the purchases of livestock for production purposes, next important for the survival of the household are expenditures on food (Table 5.13). Apart from milk production and consumption of meat from slaughtered animals, maize meal is the most important staple food. Other foods include beans (very rarely), rice (on special

occasions), and tea, usually drunk with a lot of sugar and milk. Non-food expenses include cooking oil, an important item, clothing, petroleum ('kerosine') for lighting, soap and detergents, medicine, tobacco, transport, schooling, and taxes. Gifts are very important as well. Food and drinks can be bought in restaurants, and expenditure on these can be considerable.

Expenditures in absolute terms are considerable, in particular when compared with average incomes in the formal sector in Kenya.[11] The differences between the various locations and categories are quite large, with a ratio of 1:4, but the wealth ratio between these categories and group ranches are much greater. In terms of stock ownership in TLU, the most extreme ratio between richest and poorest category of household is 1:14, found in the Osilalei group ranch area. In all cases, the wealthier the household, the higher the expenditures, with one minor exception. The poor households were expected to have high expenditures because they have to buy food they need, the rich because they need more inputs and labour to invest in an increasingly productive livestock sector. The middle range wealth category seems to invest more money in livestock production than expected, and have higher expenditure on gifts, taxes, restaurant and food.

The expenditures of the women are extremely low, at between 4% (Partimaro) and 18% (Olkarkar) of what men spend; the higher percentage in Olkarkar is due to the low expenditure of men. Household needs take up most of the money women earn, spending it mostly on clothing, food in small restaurants, sugar, transport, and kerosine (in that order). Other items include tea, soap and detergents, cooking oil and gifts to (school) children. Livestock inputs rarely appear as items women spend money on, and cultivation even less. In Olkarkar there are no expenditures at all on these items, and very little in the other areas. Also, the differences between the various wealth categories in the three group ranches are not very large in absolute figures. Women in the middle range wealth category spend more than women from the wealthy households, while the poorer women spend least of all. This indicates that the complaints voiced by women on their reduced control over milk sales and their isolation from the market, may have influenced the wealthier group most.

5.6 Livestock Trade Sector

Historical sources indicate that pastoral groups played a prominent role in pre-colonial trade. Animals were taken from Samburu towards Meru, for example, and towards Somalia in the east. Rift Valley pastoralists took their animals to important consumer areas such as the Nandi plateau. Maasai traders took animals to markets frequented by

11 It should be noted that the expenditures are given in weekly figures - because collected over a weekly period - but that the earlier income figures were presented in monthly figures- also because collected in this way. On this basis, the estimated monthly expenditures are higher than the incomes and this is mostly the case among the poor groups. This phenomeneon has also been observed elsewhere in household income/expenditue surveys – figures must be read in relative rather than absolute tems. In addition, the figures for the middle group in Partimoro are suspect (see note 9)

Kikuyu, Kamba (who brokered between Maasai and caravan traders and coastal consumers), and Tanzanian groups such as the Chagga and Arusha. During the colonial period, livestock trade was partly in the hands of agents of the Kenya Meat Commission (KMC) and African Livestock Marketing Organisation (ALMO), partly by 'free' traders, mostly Somali, Indian and Kikuyu (Kerven 1992; RoK 1959). After independence, livestock trade often returned to the pastoralists themselves, as it was one of the quickest ways for young men to accumulate capital to start a herd. Young Samburu and Maasai now play a prominent role in livestock trade in their areas.

Local trade is characterised by the short distance the animals are usually taken. Livestock producers who want to sell animals go to the nearest market place and give the animal to a broker or sell directly to a trader. Traders buy from producers, brokers and other traders, and sell to either traders or butchers in the consumer markets, using their own money to buy animals. There does not need to be a personal relationship since animals change ownership. Often, however, owners sell to traders who visit them at the *boma*. Traders try to obtain animals for a relatively low price, relieving the owner of the need to go to the market. The producer's lack of information of prices prevalent in the market system offers traders the chance of a higher profit. Traders may buy animals for resale at the same market place either the same day or at a later date. Brokers also operate at markets, obtaining animals with the promise of paying the price obtained later, minus a commission which is negotiable. Most often this involved returning the money after the sale had been concluded. Characteristic for this group was that animals were mainly given in trust to them, and they operated without much capital of their own. Also, there was usually a relationship between the broker and the producer, since the producer would want to minimise the risk of theft. Both would be age-mates or belong to the same neighbourhood.[12] Butchers are also involved in local trade as they buy animals in markets to sell meat in the course of the market day. Livestock producers may also buy from each other, for example, when one offers a heifer, or when someone needs a certain animal that he wants to give in a ceremony. Usually however, these animals are obtained through exchange with neighbouring producers.

Regional trade occurs over somewhat larger distances but still within the region of production. There is a number of traders who have specialised in buying animals in one market, and bringing the animals to markets more closely located to the main consumer markets. For example, animals bought in Rombo or Illasit may be taken to Emali, where more nationally operating traders can be found, and where prices are usually higher. The direction in which these animals are taken depends on the type of animal and their quality and weight. For example, certain types fetch high prices as meat animals and are taken to Bissil and Emali, while younger types of Sahiwal bulls may be taken to market places in the interior of the district where they may be used as breeding bulls.

12 The broker does not mediate between seller and buyer, as in West Africa. Mediators in that sense can be found in other regions of Kenya (Somali and Gabbra areas, for example)

National trade takes place over longer distances, across district boundaries between producer areas and consumer areas. A number of traders specialises in taking animals to the larger markets outside the district located around Nairobi and near Mombasa. With the recent liberalisation of the livestock and meat marketing systems, slaughterhouses have been established along the main roads in Kajiado District, and some traders have shifted from buying in the district and bringing live animals to the market places near Nairobi to slaughtering them in the district and taking carcasses to the butcheries near Nairobi. Small pick-up trucks (meat matatus) can be seen speeding along the Namanga-Athi River road with carcasses in a container in the back.

There is little livestock export from Kenya to neighbouring or overseas countries. The export that does exist hardly reaches official statistics, since it is assumed by traders to be illegal. It is not illegal in itself, but an export permit, a traders' licence and health certificates are needed; very few traders have these. Most of the time, there are more animals imported than exported. An import flow exists from Tanzania into Kenya, since the high-priced consumer market of Nairobi is relatively nearby, prices in Tanzania are relatively low, and the border relatively easy to cross.[13]

Trade Actors

Trade actors belong to four categories, although the categories are not exclusive: livestock producers, brokers, traders and butchers. There was usually little doubt among the people interviewed as to the group to which they belonged. A person who considers himself a trader, usually has the capital to buy animals for sale later. A butcher has a shop from where he sells meat. A broker usually does not have enough money for trade, and sells animals entrusted to him. Of the people interviewed, 53 were active on the market as brokers; they were given animals in trust by producers and sold at the nearest markets. Another 28 were traders in the stricter sense of the word; they bought from producers, brokers and other traders, and sold to either traders or butchers in the consumer markets, using their own money to buy the animals. There were 22 butchers, who were mostly involved in local slaughter, but also in slaughtering animals destined elsewhere, for example the hotels or university institutions in Nairobi.

Apart from cattle, smallstock form an important part of livestock production in Kajiado District. There is almost no donkey trade on the markets. Camels have been only recently introduced in the District and are not sold. Of the people interviewed, 53 specialised in cattle trade, only 10 in smallstock, and 40 traded in both cattle and smallstock (Table 5.14).

There are many brokers in the markets, so many that in Bissil, for example, their large number was blamed for the demise of that market. Consequently, animals change hands too often between producer and butcher, resulting in price increases to levels

13 Between late 1993 and early 1994 export was taking place to Tanzania, since the inflation in Kenya was high at the time and the Tanzania shilling was slowly recovering, conditions attractive for livestock trade to Tanzania.

Table 5.14 *Type of animal and specialisation of livestock trade actors (N/%)*

	Broker N=53	Trader N=28	Butcher N=22	Total N=103
Cattle	26 (49%)	18 (64%)	9 (41%)	53 (51%)
Smallstock	7 (13%)	1 (4%)	2 (9%)	10 (10%)
Both	20 (38%)	9 (32%)	11 (30%)	40 (38%)
Total	53 (100%)	28 (100%)	22 (100)	103 (100%)

where competition from other market places make it profitable for traders to shift to these markets. Mile Tisa, some thirty kilometres south of Bissil, was slowly taking over Bissil's position.

The difference between brokers and traders can be small. Brokers generally trade without their own money, although sometimes, when the price is particularly low and potential profit high, they buy animals with their own cash. Pure traders buy from producers near their homes, or at markets, and sell at the same or other markets. The trade distance for both categories of participants can be considerable, distances of 200 to 300 kilometre are regularly covered by traders and brokers in a few days, walking the animals along old and established routes within the district, or by trucking them to other destinations.

Butchers are more easily identifiable. Butcheries consist of a small shop in the centre of towns where carcasses are hung. In most towns, there are between one and six butcheries. Often, small restaurants are annexed to the butchery, to capture that trade as well. The meat in butcheries usually comes from smallstock, since it is less risky to sell. There are few butchers selling whole cattle carcasses, so that some butchers buy beef from other butchers to be able to sell beef to their customers. However, butchers who see an opportunity for livestock trade do buy animals for resale later.

Also, there seems to be less segmentation between smallstock and cattle market systems than was previously expected. Though traders generally started in the smallstock market and later shifted to cattle, they often continue to be involved in smallstock trade as well, even though these market systems operate on a different spatial scale, and serve different customers. In conclusion the roles of the various categories of participants on the markets overlap considerably when one considers that the individual brokers also trade, traders herd and butchers trade.

Characteristics of Trade Actors

Unlike the wholesale and retail business in Kenya, livestock trade in Kajiado is very much in the hands of the Maasai. In the past, and in some other parts of Kenya still today, Somali traders dominated. Presently, nearly all the trade actors in Kajiado District are Maasai; brokers, traders, and butchers alike.

Brokers are almost exclusively Maasai (100% of the sample). This is partly because of the trust that is needed between producer and broker. One or more animals are given to a broker, and usually the broker is a the son of a friend from the area, well known by the producer. But partly this is because young Maasai have few other options to start a herd these days. Men and women usually get animals from their fathers and mothers on special occasions, but trade is an attractive additional source of money and animals.

The trading business in Kajiado District is also dominated by Maasai (over 90%), but a few are from other ethnic groups. A Maasai trader from Tanzania, and a Chagga from Tanzania were met as well. During the time the survey was done, the flow of animals had been in the direction of Tanzania for some months, and therefore we found Tanzanian traders buying in Kenya for sale in Longido, and places identified by the traders as Merugoi, Ilongua, Malampo (south-west of lake Natron), and even Mbulu, south of lake Manyara.

Among butchers, there are more non-Maasai (35%). Kamba and Kikuyu are important as entrepreneurs in this business who are mostly found at the intermediate markets. On occasion, women butchers, Kamba from Machakos, come to Kajiado to buy both smallstock and cattle. Usually, their business is restricted to a few smallstock or cattle, but the distances involved can be considerable. Women traders form less than one percent of market participants, however.

The trade actors – brokers, traders and butchers – differed little in age: on average, they were 29 years, 31 years and 33 years, respectively. The few non-Maasai butchers tended to be a few years older than their Maasai counterparts. Young people, without their own funds, have to start as brokers. Slightly older people, still with limited amounts of capital, can start a business as traders, and usually start with smallstock. When Maasai traders get older, they often focus on herd production again. To start a butchery, one needs more capital (though there are usually some young men near the market who sell meat and offal from tables, most butchers have a shop), and there is no need to abandon the business with age. In the case of non-Maasai, cultivation is often a second activity generating income, and thus there is no need to abandon the butchery to manage a herd.

Some of the trade actors had other businesses as well; herding, wage labour, the building trade, a hotel, a shop, and a bar, among others, were mentioned as generating income for the people interviewed. For some persons, the livestock marketing activities were not even the main source of income. About half the brokers depended primarily on brokering, and secondarily on having a herd. For the other half it was the other way around. Some cultivated as a minor source of income. Two-thirds of the traders depended primarily on trade, but some had a herd as the major source of income. For most traders, the herd came second. The largest variety of other incomes was among the traders. Some cultivated, but activities in town such as a shop, a bar or hotel were mentioned as well. Butchers focused primarily on their business, and since most non-

Maasai were found among them, it is not surprising that ownership of a herd as a secondary source of income was less prevalent. Of the butchers who mentioned a herd as their major source of income (their business being of secondary importance), only one was non-Maasai. Apart from these two sources of income, cultivation was mentioned.[14]

Trade network

Table 5.15 presents figures on the exchanges between various categories of trade actors. Brokers buy mostly from producers and traders from brokers. In general there is a producer-broker-trader-butcher-consumer sequence but there are quite a few exceptions to this rule. Not all animals are meant to be consumed, as is the case with bulls, but also because there are networks of brokers and of traders which supply animals to people specialising in the same type of work. For example, quite a few brokers sell animals to their colleagues. The money is passed on (minus a small commission) to the original broker. Brokers see the advantage of this arrangement, where trust is extended through the network. They also sell to others than traders. Butchers regularly buy directly from brokers which keeps prices low and supplies reliable. Even slaughterhouse owners and individual customers buy animals from them. Other customers are hotel owners, both local and Nairobi based.

Table 5.15 *Exchanges between trading partners (%)*

	Brokers N=53	Traders N=28	Butchers N=22
buying from producers	75	49	34
brokers	23	49	47
traders	2	2	19
total	100	100	100
	Brokers N=53	**Traders N=28**	**Butchers N=22**
selling to producers	4	11	0
brokers	3	0	0
traders	48	33	0
butchers	35	50	39
slaughterhouse owners	8	6	35
customers	2	0	26
total	100	100	100

Note: For this table, the scores are weighted for the participant's trading partners in order of importance: the most important trading partner is given more weight (3) than the second (2) and third (1).

14 However, it should be noted that the phenomenon of non-pastoralists owning much of the pastoral herds, as in West Africa, is not found in this part of the world.

Traders buy from producers (usually heifers and young bulls) as well as from brokers, depending whether brokers increase prices substantially or not. They sell to a large variety of people including other traders.

The third group of participants in the livestock trade, butchers, were generally more tied to their shops. They buy in a number of nearby markets, to have fresh meat every day. Usually, the larger markets they supply are weekly, with neighbouring markets having different market days. Butchers have the most evenly distributed network as far as buying is concerned. They buy from producers, brokers (mostly) and traders, partly dependent on where they have their business, partly dependent on prices offered by these categories of people. They sell to customers, but interestingly, to other butchers as well. This occurs when a small butcher does not anticipate selling a whole carcass. For example, a butcher may sell beef in small amounts, and thus buys from a colleague who slaughtered one. One often sees small kiosks, especially in the residential areas, where small amounts of meat are sold. Slaughterhouse owners also buy meat from butchers especially when they act as butchers as well, and need specific cuts for their customers. Under the heading of customers are traders and producers no doubt, but they appear to the butcher as customers only, not in their role as traders or producers.

Traders operating in the regional and national markets cover considerable distances up to 200-250 km, to seek the best price for their livestock. They do this usually in a step-wise process, trying to find customers in markets increasingly distant from the production areas. Others buy on the basis of a contract with butchers, institutions or government agencies and transport the animals on the hoof or by truck. Brokers mainly operate on the local markets but sometimes cover long distances as well.

The spatial distribution of livestock trade in Kajiado District is shown in Map 5.2. The various areas from where animals are taken towards the markets within these areas are indicated as A, B, etc. Important areas are marked 'A', 'B', etc. Areas that appear as major production zones with markets in or around them are:

- A, between Namanga and Bissil, and a wide area to the east and west of this axis;
- B, between Lake Magadi and Elangata Wuas, with Oldoinyo Onyokie as a centre;
- C, the area between Sajiloni and Isinya;
- D, the area between and around Rombo, Illasit, Kimana and Mbirikani; and
- E, Taveta and the neighbouring area in Tsavo, with Murka as a centre.

All these areas functioned as transitional zones as well.

Areas that appear to be mainly transitional zones are:

- F, between the Tanzanian border and Bissil, with Lorngosua and Torosei as centres; and
- G, around Sultan Hamud and Kiboko, with Emali as the most important centre,

but with smaller places in Kajiado and Machakos/Makueni as well. The end-markets are located in the area near the Ngong Hills, marked with

- H (Kisamis, Kiserian and Ongata Rongai) and
- I (Kibiko, Ewaso Kedong, Suswa and Empash).

The former area mainly serves Nairobi which is located slightly north of this area, the latter both Nairobi and Nakuru markets, and the densely populated rural areas in between.

Animals from Tanzania cross the border at Torosei, Meto, Amboseli, Illasit and Rombo. They come from Tanzania through Narok as well. They appear on the market places in zones A (Namanga-Bissil) and D (Rombo-Mbirikani). Locally produced animals are also taken there.

Brokers play an very important role in cross-border trade. In fact, brokers as owners of a (small) herd are at an advantage here. A favoured method for brokers was to take one's own animals across the border for grazing, take over animals brought there by a colleague, and walk them back across the border with the herd to Kenya (or vice versa). Following this first stage, animals were taken by brokers to practically all markets where traders took animals. This type of relatively long distance trade can go on with hardly any capital input by the brokers themselves. Brokers also dominated the trade towards and from Narok District. Their small scale and low-profile activities, and the fact they have herds with which they can fool potential government monitors, make them especially suited for this type of cross-border trade operations. But as far as the distance of trade is concerned, brokers do not operate on a smaller spatial scale than traders.

Distance from the Tanzanian border was important for traders. The further into Tanzania, the lower the purchase prices. The difference in price of an animal between the nearest border market town of Tanzania (Lumbwa or Ilompua, some 30 km from the Torosei border) and the region of Mbulu (at 200-250 km distance) may be up to Tsh.10,000 , or roughly Ksh.1,000.[15] But the greater the distance; the higher the risks of losing animals as a result of weakening, diseases, and predators. Also, the greater the distance the higher the risk of finding oneself at a market which has changed from offering good prices to offering prices which are too low for cost price recovery. Demand may change within a week. And finally, the greater the distance, the higher the costs, even to those who take the animals themselves.

The traders who succeeded in getting their animals across the border took them to Mile Tisa or Bissil, since both places are close to the border and prices are generally good. In case they are not, they go on to Ongata Rongai or Kiserian in search of higher prices. Any estimate of the number of animals taken across the border must be a wild guess. The traders themselves estimated the numbers to be between 100 and 700 a week in the area around Meto and Namanga. In the dry season this could be more, but an average they gave of 500 may be close. Of these animals, about 200 were taken to Mile Tisa, the remainder to Bissil.

15 Information on price and quality differences between animals in Kenya and Tanzania are given in the background report.

Supply and profits

Over the period 1992-1995, between 69% (immature female cattle of all qualities) and 74% (mature female cattle of all qualities) of animals supplied in Bissil were sold. These are relatively high percentages, indicative of the interest brokers, traders and butchers alike have for this market. Emali market had even higher figures of between 76% and 87%, indicating the important role this market plays in supplying the consumer markets. The highest percentages were found for male cattle, as this market is specialised for meat, while in Bissil both male and female animals are sought, as this market supplies both the local slaughterhouses and the producers in the region.[16] Most of the time, mature male cattle fetch the highest price on the markets, immature females usually the lowest. This indicates that the preferences of the buyers on the markets in Kajiado District may now have changed from stressing reproductive capacity of the herd (high value on heifers) towards commercial production (low value on heifers, higher value on young bulls, highest value on mature males).

There were two peaks in the numbers of smallstock offered and sold on the markets, of which both are linked to the dry periods shortly before the long and short rains (the long rains from February or March to May or June, and the short rains from October to December), and the end of Ramadan in the first half of the year (January-April for the years of study), the latter therefore a supply response to higher prices. Both peak periods occur when milk production is lowest, and increasing numbers of families have to depend on the sale of animals for their purchase of food. As the dry period between June and October is longer than that between December and March, sales in September and October are generally higher. Higher prices due to increased demand may have come at the same time when the need to sell increased in the first period of high supply on the market. Supply and numbers of animals sold follow each other quite closely. For the period as a whole, it varies between 66% in November and 80% in June-July, with an average of 76%. These are high percentages and indicate that there is a high demand for Kajiado smallstock, and that markets can handle adequately seasonal increases in supply. This is important, since it means that conditions for marketing in general are good compared to many other areas, both in Kenya and in other African countries.

Table 5 16
Number of animals bought by trade specialisation and type of animal. (N, 1995)

	Broker N=53	Trader N=28	Butcher N=22	Average
Cattle	360	510	237	399
Smallstock	75	210	228	183
Both	390	903	294	498
Average	366	639	264	432

16 Average percentages for cattle in the Sahel province of Burkina Faso were between 20% and 71%. In Benin, figures for cattle were between 30% and 50%, which is relatively low (own data and data at UvA).

The number of animals handled by the various actors differed considerably (Table 5.16). Traders handle about twice the number of animals as brokers, with cattle being handled in higher numbers than smallstock, while butchers handle animals within a very specific sort of business. Apart from those butchers who send meat to hotels, the University of Nairobi, and other butchers in Nairobi, local butchers handle between one and three animals a day on average, more during markets days, fewer during the rest of the week. The butchers who have a contract in Nairobi sell between 300 and 900 animals a year.

Brokers sell more animals than they buy. However, they were reluctant to disclose information on the cross border trade between Tanzania and Kenya. Also they sold animals they had in their own herds, since the prices were favourable. Some of these brokers have small herds which they use as a trading stage for later sale. Traders, however, bought more cattle than they sold, but sold more smallstock, thereby upgrading their herds in the process. Butchers hardly keep any animals, though on occasion they do for a certain period of time to have stock for sale.

Traders handling both types of animals do so apparently in very large numbers. In fact, as cattle traders handle larger number of animals than smallstock traders, they can be considered to concentrate on cattle, but it seems likewise probable that they are a step beyond the average specialised cattle trader, handling animals in such numbers.

There are high profits to be made in some specialised livestock trade. But generally, profits are good even when not taking the risk of crossing borders. There was little difference among the average incomes in the month prior to the interview. Butchers had the lowest profits on average, sh.6,600 per month, brokers had slightly higher incomes with sh.7,700, and traders the highest with sh.8,500. For comparison: the average wage in the formal private sector in the trade, hotels and restaurants were around sh.8,600 per month for 1995.[17] The relationship between profits and number of animals handled proved weak, positive in the case of brokers (r=.16) and butchers (r=.14), and negative (r=-.35) in the case of traders, but none of these relationships was significant.

The number of animals handled also shows that border towns are important markets, while end-markets, where these flows of animals converge, are of considerable importance to the traders. More important and more reliable are figures collected from the markets themselves. These are presented in a separate report (Zaal 1997b). From those figures, Emali and the end-markets appear as major livestock markets as well.

Brokers found near the border do better than those at the end-market towns of Kiserian or Ewaso Kedong (Table 5.17). For traders, a similar result is found; their profits exceed those of the brokers even in the border markets. At the other markets the

17 This was well above the averages in the formal private and public sector with sh.5,870 and sh.5,430 respectively (RoK 1996a: 59).

Table 5.17
Average profits prior to interview by type of specialisation and type of market (sh/month)

	Broker N=53	Trader N=28	Butcher N=22	Average
Border market *	8,972	10,340	5,620	8,450
Flow-through market **	8,140	9,750	6,555	7,800
End-market ***	3,875	7,100	12,000	6,567
Average	7,723	8,510	6,606	7,692

* Namanga, Mile Tisa, Illasit and Rombo ** Bissil, Sajiloni, Mbirikani and Emali
*** Kiserian and Ewaso Kedong

traders earn less and least of all at the end-markets, but their profits always exceed those of the brokers. The best working environment for a butchery is the end-market; the closer to the border, the lower the profits.

5.7 Grain Trade Sector

Grain production

Kajiado District is one of the dryland districts of Kenya, and consequently, crop cultivation is restricted in scale. It is so limited in fact, that the Ministry of Agriculture, Crop Production Division in the district has only very general ideas of maize and beans crop acreage and production. Most of the maize and beans are produced as dryland crop, and thus production fluctuates with climatic conditions. The Ngong hills and the area around Loitokitok are located at a higher elevation and receive more rain. Maize and beans are grown here with higher chances of success. Irrigated agriculture takes place on a limited scale in the riverine areas around Loitokitok, and in Magadi Division. In the latter area, irrigation has probably taken place since the beginning of the century, since the irrigated area of Nguruman was mentioned even in the period of the caravan trade as a source of food along the way (Rutten 1992). In other places in the district, small scale irrigated agriculture has started since the 1973 drought, and has been stimulated by the dry weather of the last few years.

Maize production in Kajiado District was estimated to have risen from 25 to 50 thousand tons in the period 1983-1993 (RoK 1993b). This is 2-3% of the national maize production. Potato production in Kajiado District varied between 3,000 and 10,000 tons, which is marginal compared to national figures. Estimated beans production varied between around 25,000 tons and 80,000 tons. The latter figure may be an over-estimate, since it would mean that about 15 to 35 percent of national production as presented in graph 1 would come from Kajiado District. However, production of beans is very important in Loitokitok and Ngong (in that order), and it is the number one income earner in the district as far as crops is concerned (RoK 1990b).

Land under crop production in Kajiado District has increased considerably in the last few years. In 1978, the area for maize and beans was given as 6,839 and 5,600 hectare respectively. As maize and beans are often interplanted and sometimes double cropped

when the rainfall allows, the real acreage may be lower. In 1987, an estimated 19,000 hectare was used for maize and beans. In 1995, maize production took place on 28,845 hectare, while beans were grown on 54,320 hectare (RoK 1997b).

Average maize yields are not high in the district. In years of low and erratic rainfall, yields may be 10 bags (900 kg) per hectare, while in years of favourable rainfall, they may be 20 to 25 bags, or 1800 to 2250 kg per hectare. Irrigated areas are used mostly for vegetables and fruits, but if used for maize and double cropped, yields can be double the amount indicated above. Average bean yields are between 450 kg and 1500 kg per hectare, depending on the weather. In 1991 and 1992 (but also most recently in 1996/7) droughts have played an increasingly important role in causing extremely low yields.

An added impetus has come from the process of individualisation of land ownership that has taken place in the past decade. Former group ranches have been subdivided, and individuals have sold parts of their land in some areas, where now crop production is taking place. This is especially so in the area around Kitengela and neighbouring former group ranches in the centre-north of the District (Rutten 1992). Even flower production for the American, European and Japanese markets is now established in the District.

Grain consumption

As long as people have animals – preferably cattle – which produce milk, they buy only small amounts of maize or maize meal. Consequently, the consumption of maize by pastoralists is almost entirely dependent on the absence of this preferred food. Not all Maasai residents however have enough milk during the rainy seasons, let alone during the dry season. Yet, a sizeable portion of the population should still be able to live from the herd completely if they would prefer to do so (Zaal & Dietz 1995).

Table 5.18 gives an idea of the food balance in relation to maize with estimates of total population figures, and estimated consumption of maize, set off against local production. The figures show that the dependence of Maasai producers on the market is still rather limited and that the deficit of maize is small.

However, most maize in the district, as indeed in all Kenya, is consumed in the form of maize meal or *ugali*, a stiff porridge. Most of the maize produced by non-Maasai is sold to traders, and NCPB, who sell it to millers in Nairobi and Nakuru (In the period 1989-93 the NCPB managed to buy an average of 10,000 tons/year of whole maize in the District). The milled product is then sold to wholesalers, who sell to retailers and the public, who may be the same persons who produced the maize. Traders and retailers not only import the maize, they also play an important role in the process of converting maize grains to maize meal.

The Maasai still derive most of their energy intake from livestock. Assuming no maize is grown by Maasai (although they do, but only in small quantities), all 8,375 tons of

Table 5.18
Estimated maize production, maize consumption and maize deficit in Kajiado District, 1995.

	Maasai		non-Maasai	notes
Sub-population size	185,040		173,450	1
Maize consumption (as % of total consumption)	15		85	
Maize consumption/ yr	8,375		45,790	tons, 2
Total consumption of maize/ yr		54,165		tons
Total production of maize/ yr		50,000		tons, 3
Total maize deficit/ yr		4,165		

1. Based on the population census of 1989 (RoK 1994) assuming annual growth rates since then of 4% (Maasai) and 7.5% (Non-Maasai).
2. Estimates based on findings by Nestel (1985) and Homewood (1992).
3. Estimated production for 1993.

maize theoretically needed will have to be bought from the proceeds of livestock sales and other income. However, as livestock ownership in Kajiado is unequally distributed (see White & Meadows 1981, Homewood 1992; Zaal & Dietz 1995), a large group of relatively poor people may have to rely heavily on the market for their food, while a small group of rich people may want to consume maize out of preference. As this maize is not covered by production in the district itself, it will have to be brought in.

Wholesale and retail traders

Maize trade has a long history in Kajiado District, and some of this history is documented. Swahili and Arab caravan traders purchased grains in the Nguruman area well before the colonial period. A long tradition of trade existed between Maasai livestock producers and Kamba, Kikuyu and Chagga grains producers (Kerven 1992). Usually, Maasai women bartered milk for grain in areas north and south of present-day Kajiado and Narok District, or Kamba women bartered grain for milk in the Maasai areas. The almost universal 1:1 ratio was used: one calabash of milk for one of grains.[18] But other animal products to which Maasai women had access, such as skins, hides, and ghee, were traded as well. Donkeys were sold by Maasai women for grains and other items such as beads, cloth, and salt. Maasai men bartered smallstock for tobacco, and for metal to make weapons and other items.

During the colonial period, fundamental changes took place in the barter trade. After the first and second displacements of Maasai by the colonial government from the highlands to the present-day districts of Narok and Kajiado, the link between Kamba and Maasai populations became shorter and much more secure. More Kamba women traders would enter Maasai territory for this purpose. But as the administrative centres founded by the British expanded, small shops and wholesale shops were established by Asian and Somali businessmen. In Kajiado, they monopolised the wholesale trade of grains, as they were the only channel through which grain was transported from the

18 This implies a ratio in terms of calories of between 1: 6 and 1:8, depending on grain size and humidity, and fat content of the milk which varies with the season.

production areas (Ngong, Loitokitok, Machakos and other areas) into the interior of the district. In Kajiado town, Maasai Stores was one of the first and still well-known wholesale shops. One Asian wholesaler worked in Kajiado Town, one Somali trader in Loitokitok, and a Somali and an Asian trader in Ngong in 1965. Prices were controlled closely, as were producer prices, commissions, fees, transport costs, profits, taxes, and consumer prices. Illegal (or rather, unofficial) trade probably continued on a massive scale as, in almost every report in the archives, complaints are voiced over unofficial trade with Machakos District, and with Tanzania. Maize was imported at this time from the Arusha and Moshi areas, and livestock was exported to present-day Tanzania.

Some shops and wholesale businesses are still in the hands of the long-established Somali and Asian retail traders although various ethnic groups have also established themselves in the retail business. In the study sample there were Kikuyu (38%), Maasai (26%), Kamba (21%) and Somali (14%). In the bigger trading centres, Kikuyu and Kamba dominate the retail sector and the larger the trading centre, the smaller the number of Maasai retailers who are mostly found in the smaller remote trading centres. In the tradition referred to above, about 20% of the Maasai, Kamba and Kikuyu retailers were women who exchanged milk and other animal products for grains, household utensils, decorative materials, and cloth. There were no Somali women traders operating independently in the market towns. Also, the larger the business, the less likely it is to find Maasai as owners. But also, and perhaps not surprisingly: wholesalers are male, retailers predominantly male (60–80% vs. 20–40% women) and small grains sellers on the markets almost exclusively women. The latter sold whole grains, not maize flour. Thus, the smaller the trading centre, the smaller the scale of business, the more informal the trade, the more likely for women to be involved.

Grain prices

Livestock producers have relatively easy access to staple foods, in this case maize meal, or *posho*. The trading system that has developed in Kajiado and many other places in Kenya has proven to be effective, since maize meal can be found in remote shops in small trading centres to which cars do not have access (Kroef 1996) . Whether the trading system is efficient, that is, whether it brings maize meal to these areas against low costs, is another matter since the prices have been fully liberalised.

Table 5.19
Prices of food products by location, March-May 1994 (sh/kg).

	Nairobi	Kiserian	Kajiado	Bissil	Namanga	Emali	Illasit	Rombo
maize whole	17,5	18	20	17-25	15-20	20	10	12-13
maize meal	20,5	21-22	20-24	18-22,5	24-25	24	25	24
beans	33,3	30	n.a.	38-40	35	31	30	28
sugar	37	40-45	44-50	35-40	40-45	38	40	38-48
tea	19	21-22	20-22	18-22	20-22	22	22	22-24
cooking fat	76	80-92	80-100	80-95	85-100	90-96	90	90-96

Sources: RoK 1995, 1996b, MALD/MIS, own survey.
Notes: Prices are per kg, except for tea: 100 gr. package.
Cooking fat: range of prices for the cheapest and most expensive brands are given.

Table 5.19 presents prices for selected foodstuffs in different trade centres spread over the District, at further and shorter distances from Nairobi, Kajiado and the Tanzania border. The price differences are rather small. Apparently, there is not one single gradient in the costs of living for each of the trading centres from Nairobi to these centres.[19] For example, as was expected, the prices of maize grains are lowest in Illasit and Rombo, near the production areas. The prices of maize meal, in contrast, are lowest in Nairobi, Kajiado and Bissil, which are locations where wholesalers influence market prices, and where the product has come from millers in Nairobi and Nakuru at relatively low prices. Tea is cheapest in Nairobi and again in Bissil, and most expensive away from these places, in Illasit and Rombo.

The price difference for any one product among markets are largely caused by transport costs. In addition, some retailers have higher costs or lower turnover and have to ask higher prices. Some retailers hire labour for example, while others ask younger brothers to help in the shop. Some retailers ask higher prices because they are Maasai: many Maasai customers prefer to go to shops owned by Maasai, even if they have to pay for that privilege.[20]

The trading system seems to be efficient most of the time, but when there is a high transport demand, costs of transport are set at monopolistic levels. This makes it imperative for traders who use these means of transport to increase their prices, and therefore prices can differ considerably over short distances.

However, there are more considerations here. When livestock producers need maize meal, they sell either animals or animal products, preferably at the market. They then buy maize meal at the market. Very often however, a broker meets the producer near the latter's home, takes the animal for sale, and returns with a relatively low price for the animal for which he has to be given a commission as well. The producers then have to buy maize meal in the area where they live for higher prices. In other words, the terms of trade at the market are better than near the house.

Households with few members, older people and those people living further away from the market centres are most often the ones who depend on brokers and retailers for their sale and purchase of animals and grains. Either they lack the strength, the labour or the time to go to the market place. On the other hand, though long distances are walked by Maasai as a matter of course, they will have to transport larger supplies of

19 With the exception of one or two retailers who obtained their supplies from millers, they all obtained their supplies from wholesalers (see map 1 for the location of the trading centres mentioned).

20 Assuming a retailer buys a monthly batch of maize meal of 240 kg in Nairobi, and sells it in his shop with a price difference of six Kshs per kg (sh.3 for transport, sh.3 for his own profit) and no other costs, he has a net profit of less than sh.750 per month on the sale of maize meal only. Average amounts of maize meal sold in Namanga for example were generally higher, at 540 kg per month, which means an average income of more than Kshs 1,600 per month on the sale of this product alone. This is about the national minimum wage level, though well below average incomes in the agricultural sector in Kenya. However, most shop owners have other merchandise as well, and average incomes (profits from trade) in the various trading centres were between Sh.2,500 (the average level of income in agriculture) and an income four to five times that amount

maize meal by car, thus incurring transport costs. This reduces the difference in terms of trade experienced by the group which depends on brokers and local retailers, and the more mobile people who can go to the market for sale of animals and purchase of maize meal.

The combined result of these price differences between trading centres of the various products for consumers, is that it depends on the specific products and the amounts bought what the actual costs of living are for an individual. The trading centres away from Nairobi (Namanga and Illasit/Rombo) do not necessarily experience higher costs of living. Even when considering that the boundaries of the district, whether near Nairobi or the Tanzanian border, are the point of entry of most products, cultivation within the district may change the terms of trade for specific products quite drastically. Also, complete liberalisation of trade, and the introduction of milling companies near or even within the district may change the situation. In that respect, the recent occupation of land by cultivators of some parts of the district need not be judged all that negatively. In fact, it is an old tradition among the Maasai to invite cultivators to live among them (as in the case of the Kamba villages visited in the area of Oloontulugum, near Mashuru), with which maize was exchanged for milk and meat.

Generally, the prices asked for maize meal in the various trading centres are near the cost price mark, which would indicate the efficiency of the system for this product. The conclusion should be that the marketing system is relatively efficient. The profit seems small or even absent in some cases, but it must be remembered that apart from maize meal, other products such as sugar, tea, cooking fat and soap are sold by most shopkeepers in the district, and this makes for quite reasonable profits, though competition can be stiff in the bigger trading centres.

5.8 Calorific terms of trade

In general, more metabolised energy can be purchased in the form of grain than in the form of meat, for an equivalent amount of money. The ratio of energy that can be purchased in meat to the energy that can be purchased in grain represents the CToT. This value, which is dependent upon the costs of meat and grain and the metabolizable energy yields of each, can be important in deciding whether to purchase grain or meat. The ratio is high with a combination of low grain costs and high meat costs and, in contrast, is low with high grain costs and low meat costs. Maize is usually the grain used for comparison in Kenya, as it is the most common one traded, and it yields approximately 3200 kcal/kg. For smallstock, that is sheep and goats, it is assumed that an average animal yields 13 kg of meat and 2000 kcal/kg. This takes an average of about 1600 kcal/kg for goats and 2500 kcal/kg for sheep. For cattle, it is assumed that an animal yields 150 kg of meat and 2000 kcal/kg. Taking smallstock as an example with a CToT of 10:1, and to feed a family of 7, a household has to sell about 20-25 smallstock from a flock of 100 at an offtake rate of 20-25%.

In 1990, the situation was as follows. A head of cattle, on average was sold for sh.3,000, for which 600 kg of maize could be bought. In caloric terms, this comes to a ratio of 7:1. In 1980, it was a head of cattle for 800 kg of maize for a CToT of 9:1. In 1975, it was a head of cattle equivalent to about 300 kg of maize meal for a CToT of only 3:1, one of the lowest in the last decades.

Table 5.20 *Caloric Terms of Trade by Location and Type of Livestock*

	Cattle/Grain			Smallstock/Grain		
	Em.*	Saj.	Bis.	Em.	Saj.	Bis.
09.93	5.8	3.4	7.7	n.a.	4.8	5.2
12.93	10.3	4.6	6.8	n.a.	11.1	6.2
02.94	6.4	4.4	5.1	n.a.	4.3	4.8
05.94	8.7	4.7	4.8	n.a.	6.4	8.4
09.94	8.6	6.9	8.0	n.a.	7.6	n.a.
12.94	9.5	6.2	7.6	n.a.	8.3	n.a.
03.95	n.a.	7.0	n.a.	n.a.	9.4	n.a.
06.95	n.a.	7.2	n.a.	n.a.	8.9	12.6
09.95	16.0	10.7	14.5	n.a.	15.3	19.0
12.95	17.5	11.6	15.9	n.a.	18.9	15.0
Average	10.3	6.7	8.8	n.a.	9.5	10.2

* Em.=Emali; Saj.=Sajiloni (near Kajiado town); Bis.=Bissil

The quarterly CToT over a two-year period (1993-95) are given in Table 5.20. There are considerable variations between markets, between livestock and over time. Over time there is a general increase in CToT (favouring the pastoralists) with a rapid rise at the end of 1995. The time series of Garissa only starts in 1996 but the CToT in Kajiado are more favourable than in Garissa. The three Kajiado locations are all situated on tarmac roads within 2-3 hours of Nairobi. Their geographical accessibility is better and differs less than in Garissa District. Consequently the variation in CToT at different markets is less than in Garissa. The CToT are most favourable in Emali which is situated on the Nairobi-Mombasa road. They are more favourable in Bissil than in Sajiloni although the latter market is next to Kajiado town and nearer to Nairobi. Possible reasons are the fact that the number of livestock traders in Bissil was very high and that the demand for production animals (in contrast to animals for slaughter) was higher in Bissil. Smallstock generally have more favourable CToT than cattle as was also found to be the case in Garissa although the difference in CToT in Kajiado (25-30%) was less than in Garissa where the differences was twice as large.

PART VI

DISCUSSION

PART 6 DISCUSSION

6.1 Bedouin Study

It has to be acknowledged that this was a four-year study, in which data of two years are presented. As such, in terms of time scale, it represents two annual cycles of a small number of households followed in great detail. In reality, the raising of sheep by Bedouin is a dynamic process with long term perspectives on their part. For instance the average positive balances, were only $1993 and $1753 per annum, respectively, for 1995/96 and 1996/97. If we take into account the lambs estimated to have been used for socio-economic purposes and for home consumption, the above net incomes could have been less. Ginguld (1994) studied nine flocks over one annual cycle and came to the same conclusion. Why then do today's pastoralists persist in raising sheep for their livelihood?

A reason given by the married sons of the household heads was that their fathers had no other expertise and, because of their age, no other occupational options. For their part, the married sons unanimously stated that they would not continue to raise sheep after their father's demise. This would indicate that the number of sheep should be declining. However, demographic logic and the official and unofficial statistics of long term Bedouin sheep holdings does not support this. Demographically, elders are dying and being replaced by some of their sons but the number of sheep is increasing by 2-4% per annum. Therefore, either sheep holdings are increasing per household or more households are raising sheep. The Bedouin, however, insist that it is now more difficult to hide the actual number of sheep they possess from the authorities and that is the main reason for the increase.

It is true that two household heads sold their flocks for approximately $15,000 each during this study. They claimed that they could no longer afford to maintain them. This money was not banked but kept in foreign currency (dollars or Jordan dinars). The future disposal of the money was not discussed but there is evidence from two other households that they might invest the money in sheep again at some later date. Respondent B stated he would prefer to sell his flock at a favourable price and, at a future date, buy a flock composed of mainly one and a half year old ewes ready for breeding. Respondent D increased his flock from 54 in 1995/96 (a bad pasture year) to 101 in 1996/97 by buying ewes opportunistically.

Another reason for raising sheep given frequently by Bedouin elders, researchers and officials is that continued agro-pastoralist activities enhance Bedouin claims to land ownership by their continued land occupancy. This inherent attitude of the Bedouin was reinforced by the Land Procurement Act of 1980 which resulted from a dispute over land expropriated from the Bedouin within the *siag* by the state for the building of a military airbase. To do so, the state forcibly evacuated 500 families from an area of 30,000 ha.. and settled them in Ksifa, a newly established town, and indirectly (Bedouin dissatisfaction with Ksifa) caused the earlier than scheduled establishment of Aroer (Fenster 1995). Under the terms of the Land Procurement Act, the government

acknowledged, for the first time, the need to compensate the Bedouin for expropriated land. Furthermore, due primarily to Bedouin protest, the initial area in dispute contracted from 30,000 ha to only 6,500 ha (Meir 1997), that is, Bedouin were given compensation for 23,500 ha. Meir (1997) states that "The fact that the state began to recognise Bedouin as land claimers was significant in itself. . . . This did not imply that all Bedouin land disputes (about 6,000 claims for a total of 70,000 km^2) would be solved or were approaching solution. But the significance of the above evacuation case was that it became a land-mark in the gradual process of settlement of Bedouin land ownership issues either by allowing them formal ownership and residence on the land they claimed, or by evacuating them in return for compensation".

According to the latest estimates, 40% of the total Bedouin population live in the spontaneous hamlets. Given the stated reluctance of sons to continue the pastoralism of their fathers and that 75% of the inhabitants of the spontaneous hamlets obtain their livelihood from sources other than agro-pastoralism, it is difficult to explain why these non-pastoralists do not appear to be relocating to one of the seven existing municipal localities and in fact may be resisting this form of urbanisation. Leaving aside awaiting the land ownership claims, dissatisfaction with the urbanisation alternative, may have arisen from the following factors existing in the municipalities: high unemployment rate of Bedouin youth, drug abuse among youth, high crime rate, liberalisation of women, the low standard of public services (e.g., schools, medical clinics, sewerage that are marginally better than those available for spontaneous hamlets) and few alternative employment opportunities.

That this might result in permanent settlement in some hamlets was recognised by Meir (1997): "Recently, demands for the legalisation of many of these unrecognised settlements (i.e., spontaneous hamlets) have grown. In attempt to contain the conflict with the Bedouin, the state has gradually began to yield to these demands, a policy which has resulted in more selective court orders, recent tacit recognition of one of these settlements (Abu-Rabia, personnel communication), and state readiness to consider recognising more. Plans are underway for establishing an additional four towns and seven agricultural villages". The integration of many spontaneous hamlets into the national water supply network further illustrates the recent changing state-policy towards the spontaneous hamlets. Some of them are in the process of being organised into 'Water associations', similar to other settlements in Israel. The Bedouin associations will purchase water rights from the national supplier (*Mekorot*), distribute water and collect fees from its clients and maintain the local infrastructure (*Mekorot*, personnel communication).

Furthermore, there has been a change in the state's previous negative attitude of reducing the Bedouin's agro-pastoral economy to one of slowly recognising it as a positive national economic resource. This positive attitude may be a result of the Bedouin's persistent maintenance of livestock holdings not only by the inhabitants of hamlets (agro-pastoralists and small holders) but also by urban dwellers (Ben-David, 1988). It has been realised that these holdings are not a drain on the national economy

in that they are not subsidised but are in fact being maintained by market processes that today include those of the areas under the control of the Palestine Authority in the former occupied territories. As such they are an important economic factor in the peace process presently under way. It is no secret that the sharing of the region's water resources will entail radical changes in Israel's agricultural policy in the near future. Of paramount importance to this issue is Israel's blue-print planning to use recycled sewerage water for irrigating the Negev's industrial crops and to restrict sweet water irrigation to edible crops grown under 'protected-agriculture' conditions (glass and polyethylene structures). This will entail a huge increase in the area dry-land (rain-fed) winter cereal crops and, with it, a corresponding massive increase in straw and aftermath availability that can be utilised only by Bedouin livestock.

Depending on market conditions (demand and supply, costs of inputs and prices of outputs), there will be different degrees of intensification and modernisation of flock management (e.g., fattening of lambs and hormone controlled multiple and out-of season lambing, respectively). The future of most of the Bedouin would appear to be integration into the Israel urban economy while maintaining many of their cultural traditions. However a relatively small but stable number of households will continue to practice agro-pastoralism as a means of livelihood.

6.2 Somali Study

The ASAL of Kenya account for about 80% of the country's land area, with over 50% of the nation's livestock population and 20% in human population. The main economic activity in these areas is pastoralism, usually nomadic, and this is also the basic livelihood of the Somali of north-eastern Kenya. The question of the future for livestock commercialisation of the Somali pastoralists has been approached from three angles. The household economy of groups of households in outlying divisions were followed at great effort. Different actors in the livestock trade were interviewed. A group of grain traders was also interviewed. The combination of approaches allows insight in matters of livestock production and livestock takeoff and sales. It also gives insight in the matter of household incomes and expenditures and the supply and purchase of grains.

For commercialisation of livestock to occur and be successful certain preconditions have to be met. The size of the herds should be large enough to allow sizeable offtake. Livestock markets should be efficient in terms of accessibility and prices. Grain markets should also be efficient in terms of distribution and price setting. In the case of Garissa District, these conditions are not present. Although the reported district numbers of almost half a million cattle and the same number of small stock are high, household figures give a different picture. In fact, the foremost feature of this research is that the current livestock resources of the Somali pastoralists are meagre - in contrast to the Maasai - and insufficient for households to subsists. The average ratio of 20-30 TLU per household falls below the minimum requires for subsistence and, moreover, more than half the households fall even below this figure and live in sufferance.

The reasons for the low stocks are a series of droughts in 1980/82, 1991/93 and 1996/97 and persistent problems such as lack of security and cattle raids, wildlife, livestock disease, diminishing rangeland, poor pastures and insufficient water. There has been a scramble for farm plots near the river banks that can be irrigated so as to secure rights to land that can ensure survival in the event of herd less (Baxter 1993; Nunow 1994; Zuppan 1994). Trading centres have increasingly been established generally near existing watering points. Formerly, grazing close to wells was restricted to dry seasons when animals were relatively weak and could not travel long distances to water. This is no longer possible and the pastoral lands continue to diminish. Because of the low animal stocks increased offtake could even undermine the very basis of survival by reducing the herd further.

Income sources other than livestock keeping are scarce. Some pastoralists have taken up crop farming, charcoal burning, firewood collection, casual labour and cottage industries. But the extra incomes do not seem to lead to wealth accumulation as has been observed elsewhere. That is, with the exception of the poorest group (i.e. with less than 10 animals) who also take less than their share of outside resources and this will accelerate the growth of a class of impoverished households. In fact, this groups already exists namely the many households on the outskirts of Garissa and in refugee camps elsewhere. Half of the displaced households have no plans for the future and the large majority considered themselves better off than during the previous years. This is a depressing situation and it is likely that the 20-25,000 households currently settled around Garissa have seen their last days of pastoralism.

The above gives a rather bleak picture; on the other hand, such conditions could theoretically accelerate any trends towards livestock intensification and commercialisation described in the earlier review. Sadly, this appears not to be the case for a number of reasons.

- Most of the impoverished households no longer have any livestock left and are not in a position to partake in any livestock improvement of any form. The number of these households, apparently, is already high.
- Of the households with livestock, the majority has such low numbers that both the absolute offtake as well as the percentage offtake remains low. The net offtake rates for cattle were 6% and for small stock 8%. This is only half, or one third of the offtake rates generally considered feasible – and much less than realised by the Maasai in Kajiado.
- For the households that are in a position to sell substantial numbers of animals the marketing infrastructure for livestock and livestock products is poor. This is shown by the small number of divisional centres where livestock markets are organised - intermittently – and the fact that there are large differences in livestock prices between markets. The number of livestock traders is a small although this could easily change if livestock trade were to take off. There is little flow of market information into the remote areas. The number of grain sellers is scattered and widely distributed. This substantially increases the costs of transports for both

livestock going out and grains coming in. In general, excepting special conditions, this depresses the prices of livestock in outlying areas (certainly of small stock - less of cattle) while it raises the prices of grain in the same areas.

Although the calorific terms-of-trade are still positive they are sometimes nearing 1 (one) in remote areas at certain times of the year. At such times, there is little advantage in livestock-grain exchange, the more because of imperfections of the market and the physical efforts that are needed to effect exchange. It would appear that the Somali will have to include irrigated agriculture to supplement livestock production to buffer fluctuations in livestock numbers.

6.3 Maasai Study

The study in Kajiado had the same basic design as the study among the Somali in Garissa. Households in different locations were followed - in this case - for 2 years. Different livestock trade actors were interviewed together with grain traders. As mentioned, for livestock commercialisation to occur and be successful certain preconditions have to be met. The size of the herds should be large enough to allow sizeable offtake. Livestock markets should be efficient in terms of accessibility and prices. Grain markets should also be efficient in terms of distribution and price setting.

Contrary to Garissa, these conditions are by and large present in Kajiado. Kajiado District has one of the highest livestock populations in Kenya. In 1987, there were 600,000 heads of cattle, 500,000 sheep and almost 450,000 goats. Since then, the number has increased despite short droughts in the early '90s and are now estimated at 880,000 head of cattle, almost 970,000 sheep and almost 900,000 goats. Wit a Maasai population of almost 160,000 this means an average of more than 6 TLU per person. This indicates that the average Maasai household could be self-supporting in livestock based foods, which is rather unique. In reality, livestock ownership is unevenly distributed, and many Maasai have inadequate numbers of animals for this type of self-sufficiency.

Still, livestock wealth in Kajiado District is considerable and greater than in Garissa District. Wealth is also apparent from the high percentages of cattle within the herds and flocks, the high percentages of improved breeds found in many parts of the district. Still, female cattle form about 65% of most herds, typical for pastoral systems. Different wealth categories also show this pattern of increased numbers and percentages of cattle in the herds, improved breeds in the herds and flocks, and at the same time often a 'traditional' high percentage of female animals, with some noteworthy exceptions.

With increasing wealth, greater numbers of cattle are sold though the smallstock sales show a pattern of its own. Commercial off-take from the smallstock flocks are relatively low, and non-commercial uses are important. For cattle, sales and purchases are more important than the more 'traditional' uses. The fact that both cattle and smallstock are purchased by households in relatively large numbers is uncommon for pastoral production systems. Incomes from livestock are considerable, both in cash and in kind.

Wealthy households earn more per animal, obtain higher prices as their animals are of better quality, and have both a higher total income as well as a higher net cash income from livestock.

From the previous it already follows that marketing infrastructure for livestock is by and large in place. Livestock trade in the Kajiado District is very much controlled by the Maasai. Brokers are almost exclusively Maasai (100% in our survey), traders are dominated by Maasai (90%) and butchers are mainly Maasai (65%). Emali and Bissil are the most important livestock markets supplying consumer markets in and outside Kenya. In total, About 171,000 head of cattle are bought and about 266,000 head of cattle are sold annually by he Maasai. The difference between them, 95,000 head of cattle, is the commercial offtake and this represents about 10% of the total number of cattle in the district, which is high for pastoral conditions. Net offtake of smallstock is about 400,000 head, about 20% of the total which is lower than the 25-30% considered possible for pastoral conditions. A brisk trade takes place over the border with Tanzania - the direction of trade depending on the currency exchanges between the two countries.

Nonetheless, land constraints and grazing restrictions, as a consequence of nationalising lands and privatisation, will necessitate changes in order for cattle production to continue in the manner it is being done today. In essence, the number of cattle will have to be reduced. The wealthy Maasai are coping with the situation by undertaking a program of upgrading their herds and thus improve productivity. This will allow more production from fewer animals. The poor Maasai do not have the means to upgrade their herds and eventually will be forced to decrease productivity.

6.4 Conclusion

The CToT was favourable in the three groups of pastoralists. It was highest, but most variable, among the Bedouin ranging between 29:1 and 99:1. This fluctuation was due mainly to grain price changes - livestock prices remained relatively constant. It was lowest among the Somali ranging between 1:1 and 13:1 and intermediate among the Maasai ranging between 3:1 and 19:1. The number of tropical livestock units (TLU) per capita, indicates the wealth of the household and whether the household can survive on livestock only. It has been suggested that a TLU/capita of 4 is the minimum number required. Approximately 58% of the Maasai are above this minimum, 17% of the Somali and none of the Bedouin. In fact, the Bedouin average less than 2, however, the very favourable CToT may compensate for the low TLU/capita in this group.

Land constraints and grazing restrictions are being felt by the three pastoral groups which will necessitate changes in order for livestock raising to continue. It is envisaged that the Bedouin will turn more towards rain-fed agriculture below the 220 mm isohyte and incorporate different degrees of intensification and modernisation of flock management. The future of most of the Bedouin would appear to be integration into the Israel urban economy while maintaining many of their cultural traditions. A

relatively small but stable number of households will continue to practice agro-pastoralism as a means of livelihood. The wealthy Maasai are undertaking a programme of upgrading their herds and thus improve productivity. This will allow more production from fewer animals. The poor Maasai do not have the means to upgrade their herds and will eventually be forced to decrease productivity. The Somali neither have the option to decrease TLU/capita because of low productivity of their livestock nor upgrade their animals because of the expense. The solution for this group appears to be the inclusion of irrigated agriculture to supplement livestock production.

PART VII

APPENDICES

Appendix 1

Method Bedouin Study

Six Bedouin families were selected for intensive study using the criteria mentioned in the text (p.35). Each household was visited at least once, and up to three times, per week over the two years that data were collected. Visits were made either to the hamlet or the grazing area, depending on where the sheep were being kept.

Initially, a questionnaire was used to record the size of the family (wives, children), status of each member (married/non-married, employment), number of livestock (sheep, goats, camels, cows, poultry, donkeys, horsese), who worked with the livestock (family member, hired shepherd), material possessions (pick-up truck, tractors) and whether there was access to land and size of land for sowing and/or grazing. Once this was established, all management practices and transactions related to sheep production were recorded. Among management pratices, the breeding program used, feeding regime, milking and milk products produced, shearing and wool production and method of watering animals were noted. The changes in sheep numbers and the reasons given for these changes (births, deaths, sales, gifts – given and received) and costs related to sheep production (veterinary costs, land rental, grain and fodder purchases, tractor and fuel costs, sowing expenses, water costs, shepherd wages) were recorded.

Evidence that friendly relations were established with the families in the study was shown by repeated invitations to the investigator to attend household festivities (marriages, births, circumcision) and religious festivals. The investigator, because of his position at Ben Gurion University of the Negev and on-going collaboration with the Veterinary hospital and the government veterinary services, was often asked to be and acted as an intermediary with those institutions and with other government authorities on behalf of the household heads. Nevertheless, there were occasions when it was felt that quantitative information was not always freely given by the Bedouin and when given, not always accurate. To a large extent these problems were solved by the weekly visits made when, for instance, the number of each class of sheep was determined and the household head questioned about the reason for any variation from previous counts.

Financial transactions involving sale of sheep and feed purchases were more difficult to verify. The method employed was to ask the respondent at the time of sale and/or purchase and to question other household heads and traders with whom the investigator had established relationships during the study. A figure shown to be fairly accurate was used as the mean selling price. In general, the information given by the household heads when questioned at the time of selling was found to be accurate.

None of the household heads acknowledged income from any other sources. However, this could have been strictly correct as their wives were in fact the recipients of all National Insurance benefits and not the husbands. For this reason, National Insurance benefits are not included in the calculations. As for lambs that were used for gifts, festivities and festivals and the aged ewes slaughtered for home consumption, it

was estimated that 20 and 5-10 lambs were expended and received, respectively, for these purposes. About 10 lambs were expended for socio-economic reasons such as maintaining or establishing good relationships with people that might in the future act, amongst other things, as intermediaries on their behalf in obtaining grazing permits and other transactions necessary for managing their flocks.

Appendix 2
Livestock population, Kenya, 1987 (x1000)

	Beef cattle	Sheep	Goats
Meru/ Tharaka-N	263	106	96
Machakos/ Makueni	388	96	249
Kitui	304	68	535
Embu	61	26	106
Narok	801	436	423
Elgeyo Marakwet	101	137	146
Baringo	103	129	649
Kajiado	608	500	449
Laikipia	217	297	267
Kilifi	169	23	160
Lamu	44	8	15
Taita Taveta	140	50	155
Kwale	223	67	131
Tana River	444	159	293
West Pokot	170	190	120
Marsabit	315	401	425
Isiolo	203	178	119
Turkana	208	720	1080
Samburu	155	163	253
Mandera	126	110	714
Wajir	25	180	220
Garissa	693	100	678
total ASAL	5761	4144	7283
elsewhere, non ASAL	3310	2300	1245
Total National	9071	6444	8528

Source: RoK 1992a: 22.

Appendix 3

Method Garissa Household Survey

Household surveys were conducted in Dadaab and Ijara Division between January '96 and January '97. In each division 55 households were selected and essential characteristcs listed. From these households, 40 were selected in each division with aview to livestock (cattle) ownership and physical accesssibility for interviewers. Further details of the household selection are given in Table 6.1. All results have been weighted to correct for the sampling procedure, resulting in a total of 88 weighted households on the baisis of 80 cases (Table 7.1). Subsequent interviews covered a wide range of household and livestock characteristics such as household composition, herd size, grazing patterns, water rights and social norms relating to livestock production

Table 7.1 *Sampling and weighting procedure by location and wealth category*

	Sample listing			Sample studied			Weighting	
	Dadaab	Ijara	total	Dadaab	Ijara	total	factor	N
0-20 cattle	44	34	78 (71%)	32	22	54	1.14	62 (70%)
21-80 cattle	10	19	29 (26%)	07	16	23	1.00	23 (26%)
81+ cattle	01	02	03 (03%)	01	02	03	1.00	03 (04%)
total	55	55	110 (100)	40	40	80		88 (100)

Households were revisited every two month, half the cases one month, half the other month. In all, 5 folow-up visits were realized in the course of the year. Folow-up inofmrtaion mainlky concerned herd dynamics (i.e offtake and additions), income, expenditures, and prices of livestock and grains.

Among the households included in the study 73 households (83%) were male-headed while only 15 households (17%) were female-headed. The majority of the household heads (66%), were over 40 years with only 13% below 30 years of age. Most of the pastoralists do not have any formal education but only the informal *koranic* knowledge, 82 heads of households (93%) had no formal education while 6 (7%) had minimal primary education. All those who had some basic education were from the young heads of households below the age of 30 years.

The average Somali pastoral household consists of 7-8 members. From the households studied, almost 50% had more than 7 members while some households were found to have as many as 14 members. Although Somalis are known to practice polygamy, in this study only 17 households (19%) were polygamous. Of these, the majority , 9 men had two wives, the remaining had three or four wives.

Appendix 4

Method Kajiado Household Survey

Both men and women were asked to provide data on income and expenditure. Details on income were colected for the month prior to the interview and on expenditure for the week prior to the interview. Apart from monthly recall questions, single round surveys were done to obtain information on household size, characteristics and wealth, income sources and migration history in 1993, 1994 and 1995. Open interviews were held with various people on their life as a pastoralist, on the structure and performance of the market system in the district, and the role of the market in household livelihoods.

The selection process of households followed a two-step procedure. Firstly, existing and former group ranches [1] were characterised in terms of environmental conditions (eco-climatic zone) and livestock pressure on natural resources. Group ranches were selected where the pressure on resources was relatively high: near the lower end of the range of available land per group ranch member, and significantly more stock units per member than officially recommended.[2] The group ranch areas chosen were the following (Table 6.2).

Table 7.2

Selected group ranches and their characteristics in terms of the criteria, 1984, 1990, 1995. *

	group ranch member** N=1136	ha/ member yr:1984	ha/ member0 yr:1990	ha/ member yr:1995	actual/ recom. TLU	household s sampled (13%) N=153	no. of people*** N=1024
Olkarkar	95	111	111	108	1.64	34 (35%)	249
Osilalei	763	92	70	51	1.67	80 (10%)	522
Partimaro	445	61	44	44	1.64	39 (14%)	253
Range		23-298	23-296	23-298	0.31-4.16		

* For the district, average ha/ member in 1984 was 104, in 1990 it was 87. Data for 1995 are not complete, and no averages could be computed. Actual/ recommended TLU per group ranch is in percent Average in this case in 1984 was 117, for 1990, based on district livestock figures, it was 222. Data for Partimaro are estimated for 1995.

** Group ranch membership as of 1995. Estimated for Partimaro.

*** household members of the households in the survey

Source: MALD, Rutten 1992; Ministry of Lands; own survey.

The selection of households was based on a transect of each group ranch, as one of the assumptions was that distance to the market would influence marketing behaviour and related production characteristics (at least for some households and individuals). Every second household along this transect was included and this household was visited every month on the same day. Both men and women were asked about their recent marketing activities, in terms of livestock and non-livestock related incomes, and of expenditures. Quite a number of households consisted of more than one woman (more than one house, inhabited by that women and her children and dependants) and a husband, which again added to the size of the database.

Table 7.3. *Sample composition.*

	former group ranch members N (%)	households sampled: No.(%) N (%)	number of people ** N (%)
Olkarkar	095 (07)	34 (22)	249 (24)
Osilalei	763 (59)	80 (53)	522 (51)
Partimaro	445 (34)	39 (25)	253 (25)
	1303 (100)	153 (100)	1024 (100)

Not surprisingly, mobility caused a problem as well, but not as serious as was anticipated. Households in Osilalei and Partimaro did not migrate every year and, when they did, they went to nearby areas for short periods. Some households could be tracked, some were met later. Households in Olkarkar migrated more often, often to distant locations, and for long periods. A universally acknowledged problem with pastoral studies is the reluctance of those interviewed to disclose the number of animals in the herds. This difficulty was met by choosing enumerators from the group ranches that were studied, so that there was a basis of trust between the interviewer and interviewee. In addition some discussion partners were asked to estimate the number of animals needed for the household members to survive, to live comfortably, and to live wealthy, and to assess their wealth and that of others in these terms. This method, a kind of simplified wealth ranking, proved very useful, as it became clear that quite fixed boundaries exist between these categories which were recognised by many producers.

1 Quite a number had been subdivided, and individual title deeds had been issued to the former members of these group ranches, they had effectively ceased to exist. However, people still refer to the group ranches when they indicate the location where they have their ranch.

2 Other considerations were the availability of base line data for the previous 10 years for at least one selected group ranch. Also the establishment of the group ranch during various phases of the World Bank funded Kenya Livestock Development Programme (as an indication of early or late change in the production environment). Finally, logistics limited the choice of group ranch areas to those within half a day's access from Kajiado town.

PART VIII

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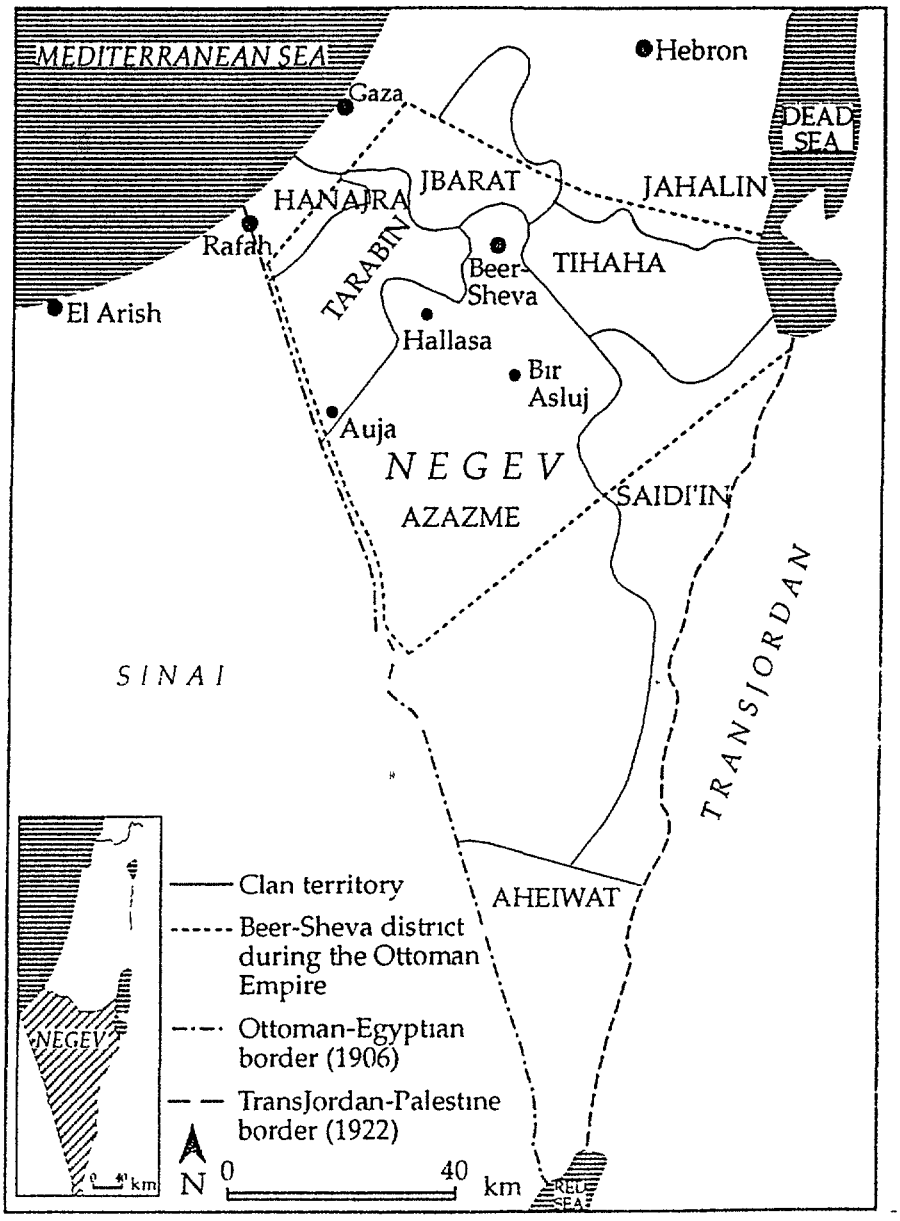
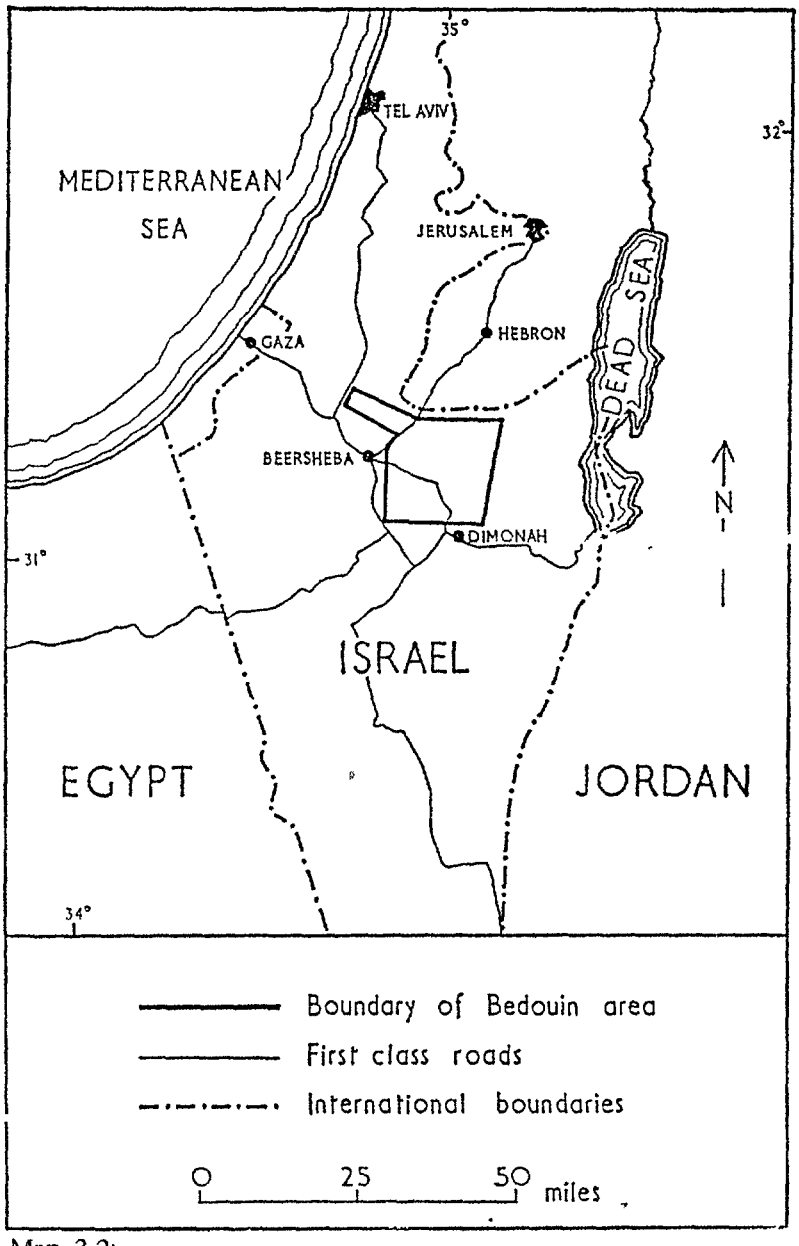
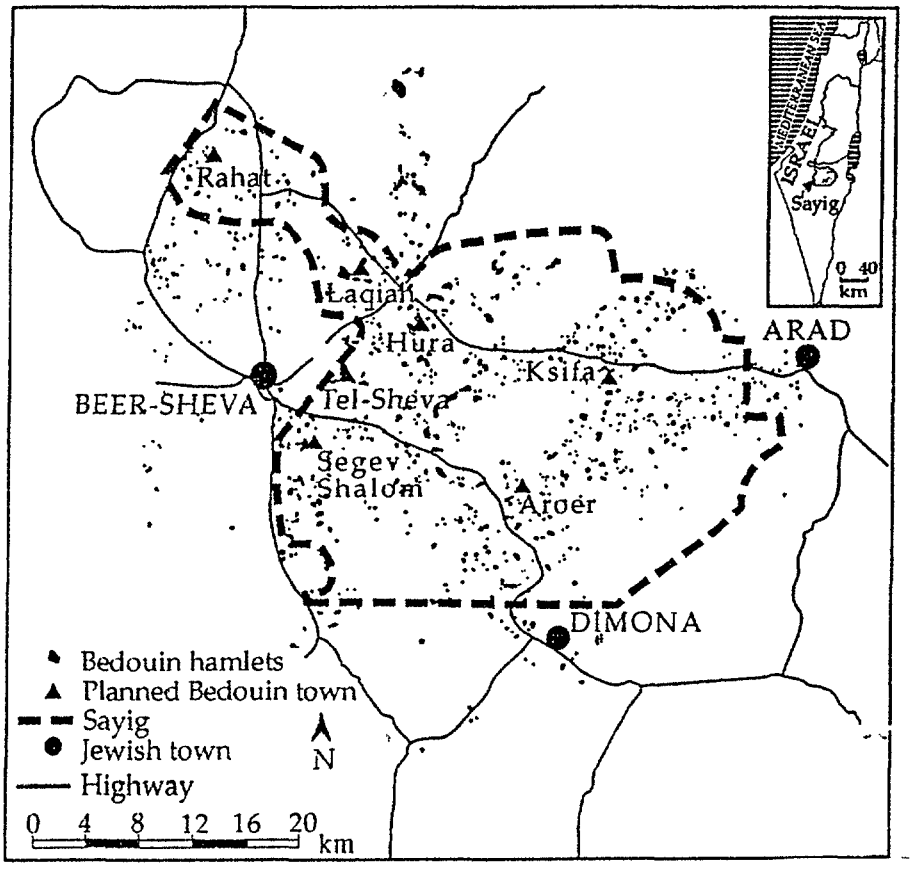


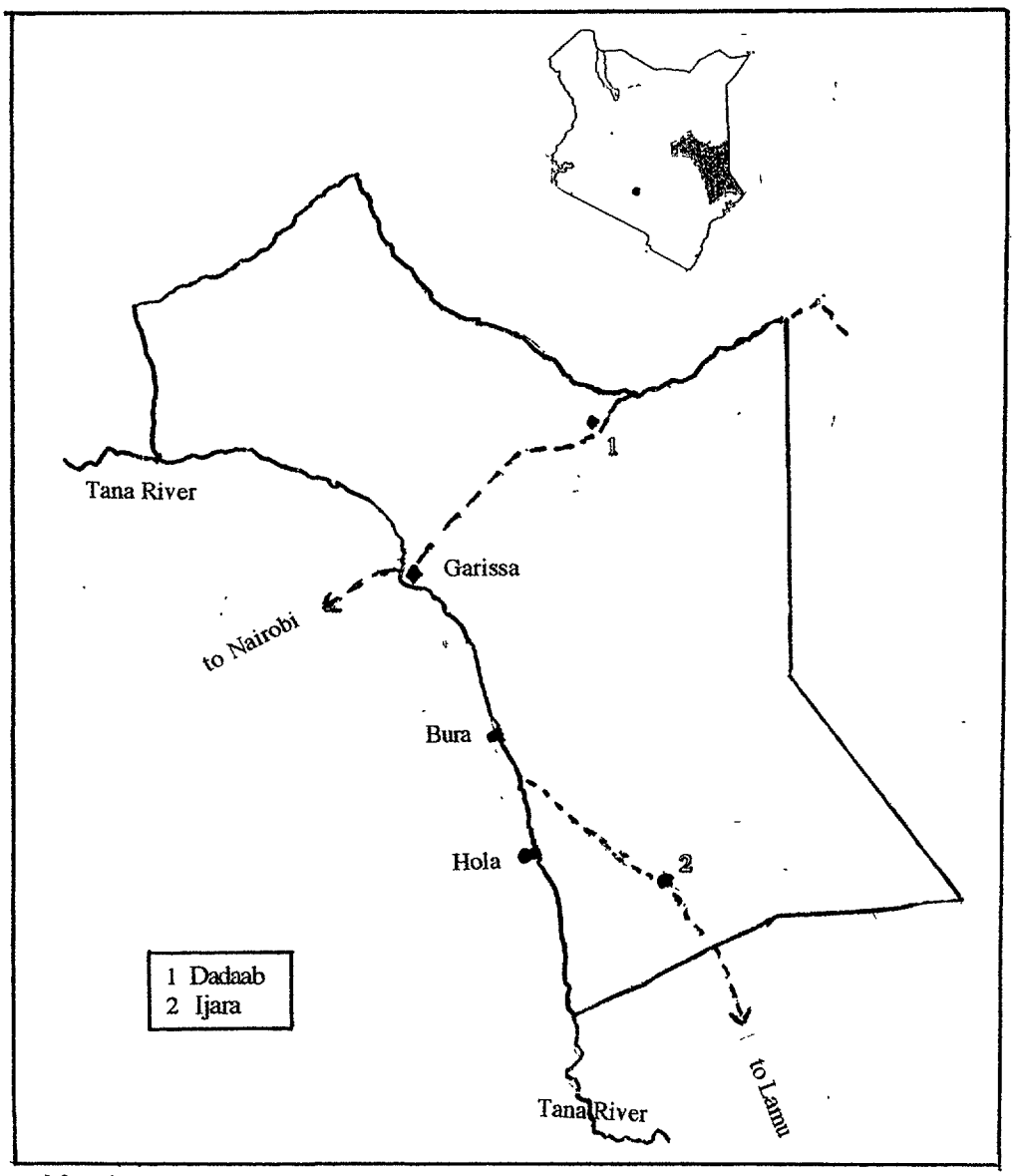
Map. 3 1
Clan, administrative and international borders in the Negev in the early twentieth century (From Bar-Zvi & Ben-David, 1978).



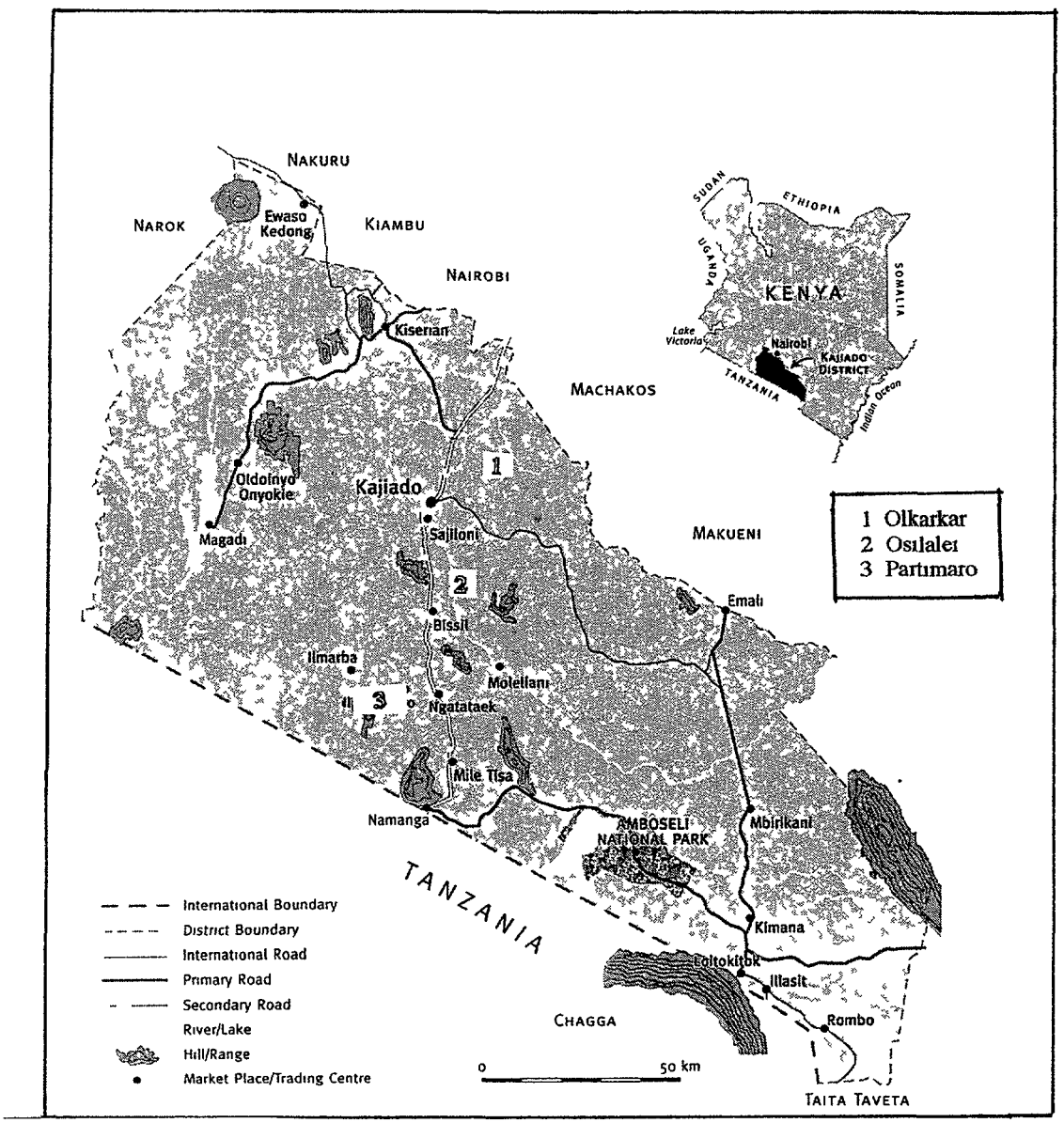
Map. 3.2:
The Negev showing the approximate area of the siag, the area occupied by Bedouin (From Marx, 1967).



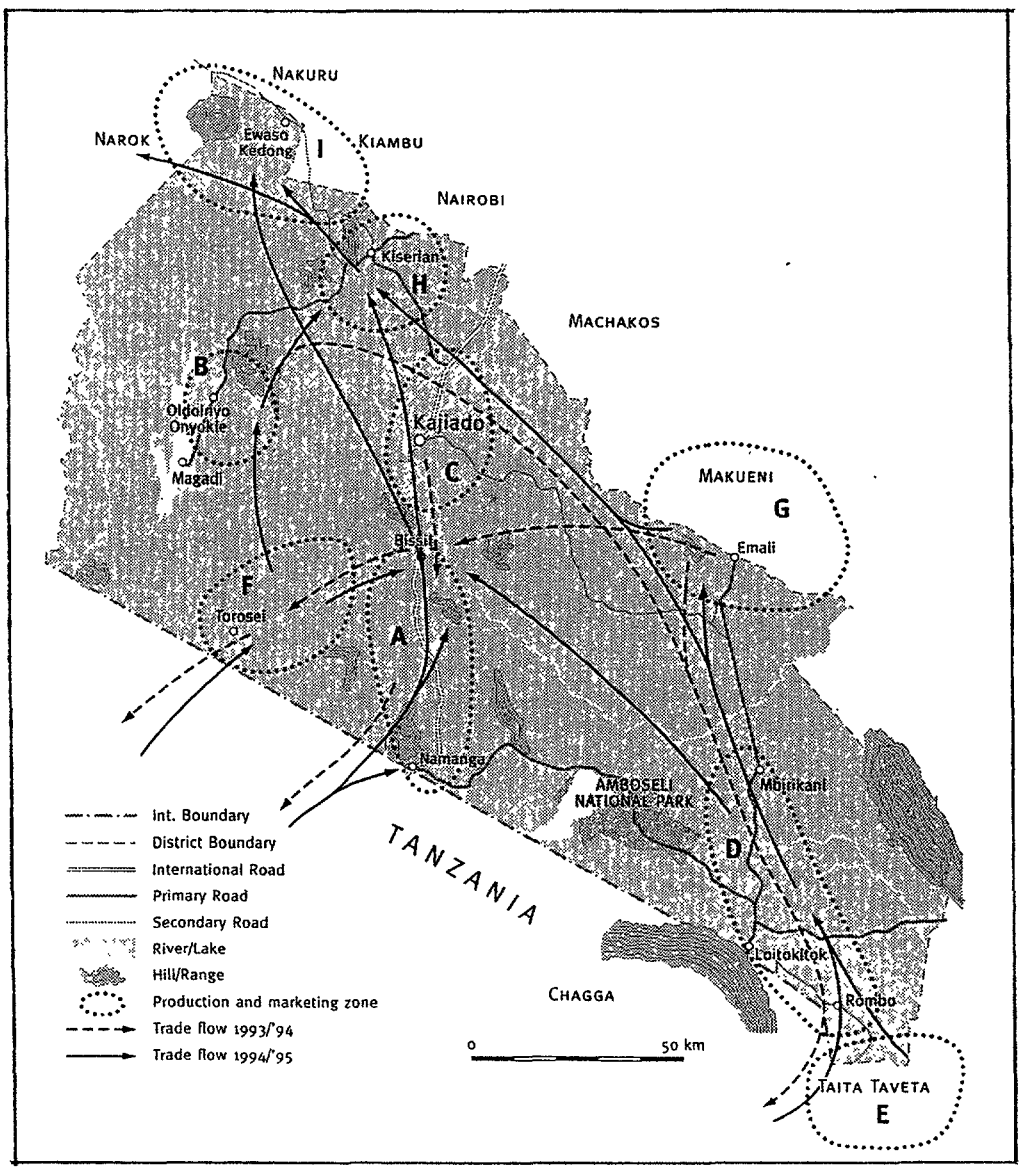
Map. 3.3:
Spatial distribution of spontaneous hamlets and planned settlements in the siag (From Amiram *et al.*, 1979; Stern *et al.*, 1987).



Map 4.1.
Garissa District and research locations.



Map 5 1
Kajiado District and research locations



Map 5.2
Livestock flows in and around Kajiado District