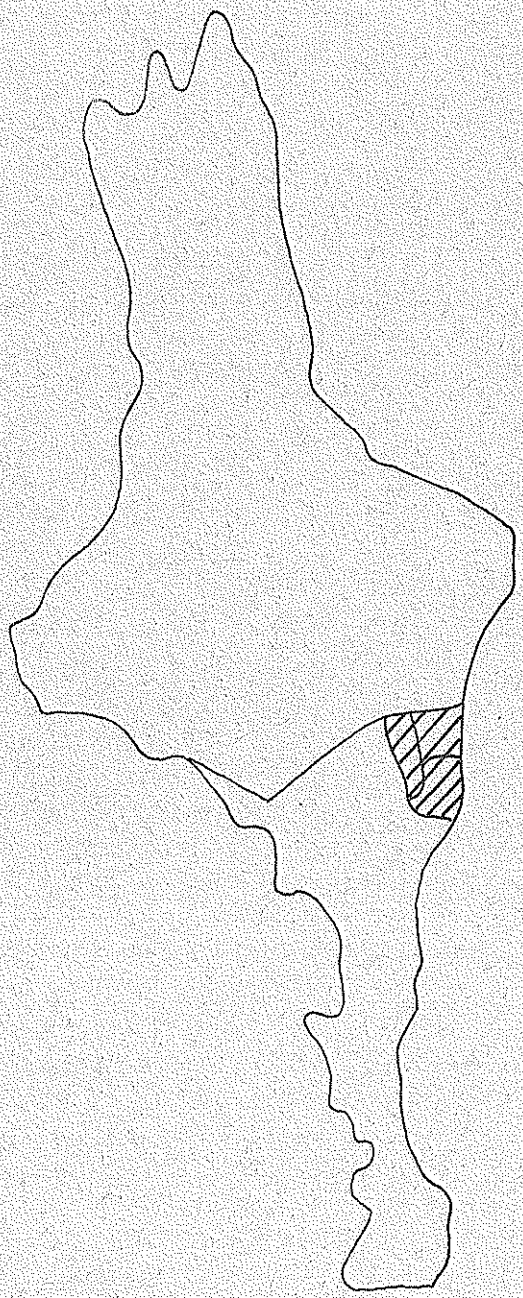
Locational development profile for Endo, Mokoro & Embobut Locations, Elgeyo Marakwet

Dietz, A.J.; Haastrecht, A. van; Moore, H.

L O C A T I O N A L D E V E L O P M E N T P R O F I L E



E N D O M O K O R O A N D E M B O B U T L O C A T I O N S

E L G E Y O M A R A K W E T D I S T R I C T

K E N Y A

Regional Development Research for the Arid and Semi-Arid Lands Programme Elgeyo Marakwet
P. O. Box 381 Iten

Ton Dietz and Annemieke van Haastrecht
(University of Amsterdam/Dept. of Human Geography - University of Nairobi/ Institute for Development Studies)

Henrietta Moore
(University of Cambridge/African Studies Centre - University of Nairobi/ Institute of African Studies)

Research Assistants:
Sally Sebinot Kipkore and
Raymond Suter

With Assistance from Mirjam Schomaker, Jan Cappon, William Critchley, Anke van Heur and Boudewijn Surie

May 1987

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0 INTRODUCTION AND SOURCES

This combined Locational Development Profile for three locations of Elgeyo Marakwet District is part of a group of Profiles about locations in West Pokot and Elgeyo Marakwet Districts*, produced for the Arid and Semi-Arid Lands Development Programme. The profiles give a summary of the recent history of the locations (administration, population, economy, and social infrastructure) and they present a description of the area and its people.

The various Profiles are written for people working in the location and for government employees at the district and divisional level. The information presented will not be 100% complete nor 100% reliable. Readers are asked to use the text as a work edition and to make as many additions and corrections as they like. It will be very useful if you present your comments to the ASAL Programme Coordinator, P.O.Box 381 Iten.

SOURCES

There is quite a lot of historical material in various government documents, some of which are available in the National Archives, and some in the District itself.**
Compared to other parts of Elgeyo Marakwet Endo and Mokoro Locations are probably the areas with the highest 'density of researchers', especially anthropologists, in the past. The following publications are results of the various research activities:

1941: R.O.Hennings: 'The Furrow Makers of Kenya', Geogr.Magazine, 12, pp. 168-179.

1951: R.O.Hennings: 'African Morning', London.

1959: E.Huxley: 'African Water Engineers', Geogr. Magazine, Vol. 32, pp. 170-175.

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* For Elgeyo Marakwet Profiles have been written for Mon Location and for Soy-Kocholwo Locations. For West Pokot Profiles have been written for Alale, Kasei-Chemorongit, Kapchok, Suam, Riwa and Lower Mnagei, Sook, Sekerr, Mwino, Lelan, Weiwei, Masol and Lomut-Cheptulel.

** The District Annual Reports, Political Record Books, District Annual Reports from the Ministry of Agriculture, The District Gazetteer (about 1956), the District Development Plans, Minutes from the District Development Committee, County Council (and Area Council) Annual Reports, and various Census documents.

1969: R.Arap Chellal: 'Human Problems associated with the Kerio River, Kenya'; E.African Review, no. 7, April, pp. 53-60.
1973: B.E.Kipkorir (and E.B.Welbourn): 'The Marakwet of Kenya, a preliminary report' , Nairobi.
1973: W.Ostberg and A.Lilljequist: 'The social impact of population growth', Nairobi IDS 1973, 7 pp, Working Paper no. 99.
1979: W.Critchley: 'Chesongoch Agricultural Project, 1977-1979, final report' Chesongoch.
1983: B.E.Kipkorir, R.C.Soper and J.W.Ssennyonga, eds. : 'Kerio Valley, Past, Present and Future, Proceedings of a seminar held in Nairobi, at the institute of African Studies, University of Nairobi, May 21-22, 1981', 172 pp.
Especially relevant are :
R.Soper: 'A survey of the irrigation Systems of the Marakwet' pp. 75-96.
J.W.Ssennyonga: 'The Marakwet Irrigation System as a model of a systems-approach to water management,' pp. 96-111.
W.Critchley: 'Agricultural Development in Marakwet, some controversial issues', pp.19-26.
K.Kurita: 'Marakwet at Chesegon Village: a preliminary report on economic activities of the Pokot and the Marakwet', pp. 61-74.
H.Moore: 'Anthropology and Development: some illustrations from the Marakwet of Kenya', pp. 132-138.
1983: H.L.Moore: 'Men, women and the organization of domestic Space among the Marakwet of Kenya, unpublished Ph.D.Cambridge.
1984: A.Welbourn: 'Endo Knowledge, Technology and Power: the Social construction of Endo Material Culture through Age, Gender and Authority'. Unpublished Ph.D.Thesis, Cambridge, 1984.
1984: W.Ostberg: Paper about Soil Conservation, for the ASAL Development Programme.
1984: J.C.Cappon: 'Report on Survey of Irrigation furrows in Tot Division' EM District, Iten.
1985: H.L.Moore: 'Space, Text and Gender: An Anthropological Study of the Marakwet of Kenya', Cambridge University Press.

Part of the Socio-Cultural Profile of Elgeyo Marakwet District, made by the Institute of African Studies (ed. B.E.Kipkorir and J.Ssennyonga) for the Ministry of Finance and Planning is very relevant too.

All this information is summarized in this Locational Development Profile. We add results from our own surveys, done in 1981-86:

- an analysis of CBS cluster household listings,
- a survey among 30 farmers in the area above Tot,
- a survey among 104 labourers at the new KVDA farm in Tot,
- interviews and statistics from the various government departments at Iten and Tambach,
- a physical geographical description and a land potential analysis using recent publications of the Kenya Soil Survey (M.Schomaker),
- a description of cultural characteristics, using participant observation techniques in 1981-82 (H. Moore),
- a survey among 101 households in Kacheturgut and Kasang villages.

1 THE AREA OF ENDO, MOKORO AND EMBOBUT LOCATIONS

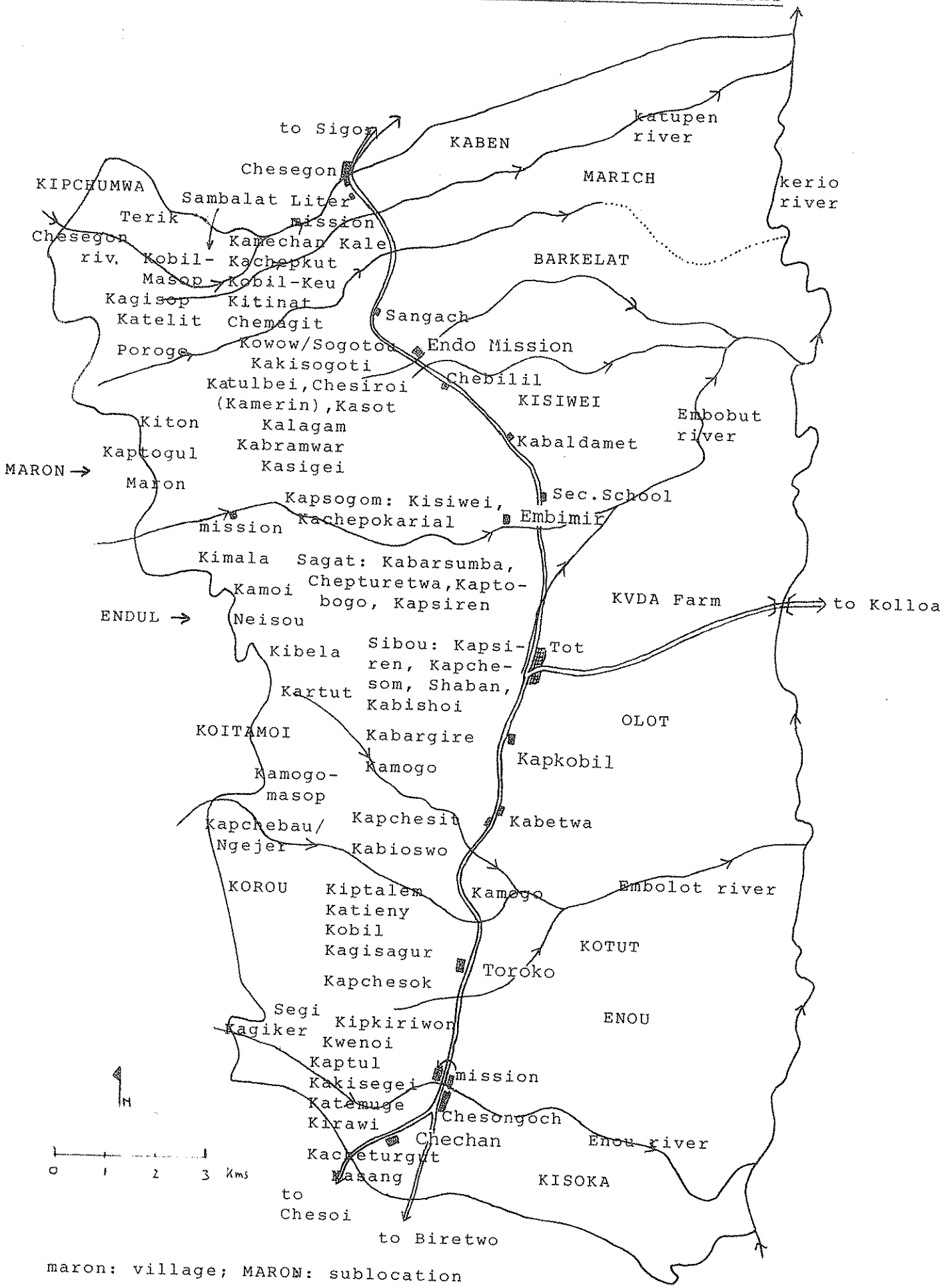
1.1 Situation

Endo, Mokoro and Embobut Locations are situated in the extreme Northern part of the valley and escarpment sections of Elgeyo Marakwet District, bordered by West Pokot District in the North, Baringo District in the East (the area of the East Pokot, on the other side of the Kerio River), Mon Location in the South and the highlands of Lelan Location in the West. Before 1980 the area was part of Northern Division, with its headquarters in Chebiemit: far away and very difficult to reach. The road from Chebiemit via Kapsowar to Chesongoch was, and still is, called the 'staircase'. It is very steep, difficult and dangerous. The only other road connecting Endo and Mokoro with the District Headquarters is the 'Valley road', another very difficult and tiresome road going South and, via another very steep road through Tambach reaching Iten, 100 Kms. away from Tot.

To encourage more government attention for the Northern Valley, a separate Tot Division was set up in 1980. Connections, however, are as bad as before. Recently Chesongoch was proposed to be the new Divisional Headquarters.

The area is also connected to the outside world via roads to Baringo (Tot-Marigat is at least four hours driving and Marigat-Nakuru, the Provincial Headquarters, another hour) and to Sigor and Kapenguria, two respectively four hours away with a car. There is an irregular matatu service up North but there is no public transport yet from Tot to Chesoi from where a matatu goes to Chebiemit and to Iten. It is not impossible to find people who regularly walk the 24 hours to the District Headquarters. Isolation and very expensive transport are two sides of the same coin for this area.

Map 1: The Area of Endo, Mokoro and Embobut Locations

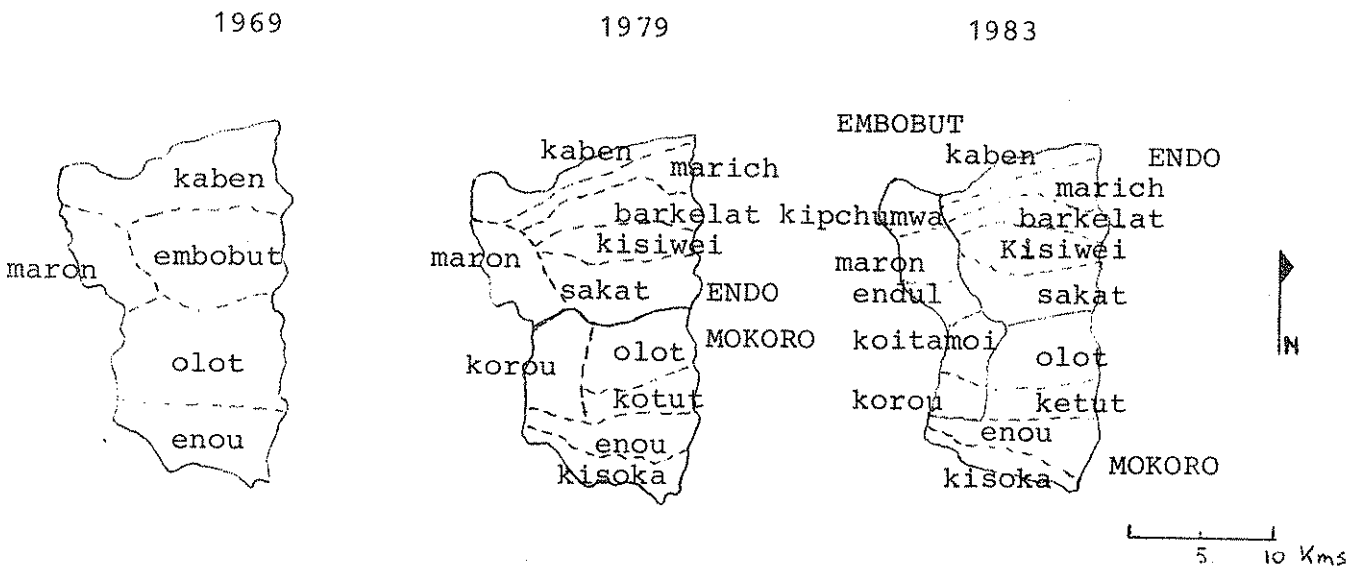


maron: village; MARON: sublocation

1.2 ADMINISTRATIVE HISTORY AND BOUNDARIES

The administrative history of this area is rather complicated. In the very early days of Colonial rule there were three locations: "Mokorro", "Endo" and "Kaben". Soon Kaben and Endo were combined and in 1948 Mokorro also was added to this united "Endo Location". In 1980 Endo and Mokorro were separated again and in 1985 the higher areas ("Masop") formed the new location of Embobut. Sublocational names and boundaries changed frequently.

Map 2: Locational and Sublocational Boundaries- 1969, 1979, 1983



Here we will first deal with the establishment of Colonial Administration. Further we will present a summary of the boundary changes, boundary problems and changes in the administrative sub-units.

According to Mungeam (*) in 1912 almost the whole of Kenya was under British Rule, with the exception of the Northern Frontier, Jubaland and the area of the Marakwet, which "remained entirely uncontrolled."

(*) G.H.Mungeam: "British Rule in Kenya, 1895-1912; the Establishment of Administration in the East Africa Protectorate." Oxford 1966, p.238.

In 1912 this changed: the British organized a punitive expedition because of the killing of a white Uasin Gishu farmer in 1911 (the punishment was 22 Marakwet killed or wounded, 110 huts burned down and 347 sheep and goats confiscated as well as a few head of cattle...). A garrison of the K.A.R. (*) was kept in the area and in 1913 the first headmen were chosen a.o. responsible for taxation. Also a first census of huts was done.

Before 1912-13 however there were some earlier attempts to establish some sort of British rule over the Marakwet (**).
In 1900 a safari group camping on the East bank of the Kerio River was short of food and sent a group of Nubian askaris to get it. It seems that this group misbehaved themselves terribly: all were massacred by the Endo and even the safari group was besieged by the Endo, assisted by the Mokoro and the Pokot from Cheptulel. After driving them off, the first British punitive expedition in the area burned huts and seized stock.
In 1906 a tax collector from Baringo also went to Cheblil and Endo and collected 100 taxes in the form of sheep, goats and grain.
In 1907 this was tried again, in an area south of the Embobut River,but this time the tax messengers did not return...
In 1909 the situation in the area seemed to change slightly in favour of the British. In 1908 the British intervened in Pokot-Marakwet raids and prevented them; there was an official inquiry into the 1900 massacre and the Marakwet were no longer exclusively blamed for that. The result was that a group of people from Kaben (nearest to the Pokot) said they "would welcome a visit of the Government" and in 1910 some tax was collected from this area. The Endo further south refused to provide taxes and in 1911 the Kaben were again reported to be showing opposition to the Government, culminating in the 1911 difficulties and the harsh British reaction.

(*) King's African Rifles

(**) In the Archives there are a number of accounts in the Political Record Books, the most interesting one a "Short Summary of Events Leading up to the Administration of Marakwet", written somewhere between 1911 and 1919.

By 1918, however, British rule seems to have been established and accepted. A new census was held (for military purposes, to find the number of 'moran') and in 1918-19 enthousiastic British officers started to tell big stories about the agricultural potential of the northern Marakwet Valley (see 3.2) and they started a number of agricultural development activities, which were soon frustrated by transport and marketing difficulties, and by the "uncooperative" attitude of the people. Already in the beginning of the 1920s Colonial attention for the area became marginal, only to flare up at the end of the 1940s (again for only a few years), in the period 1959-62 and in the years after 1980.

Even taxation and labour recruitment were done in a slapdash manner. The only occasions when the Government (Colonial and Post-Colonial alike) worried about the area, were during heavy Marakwet-Pokot tension on the northern boundary. In 1915 the District (and Tribal) boundary was the Chesegon River. In 1921, during a pieceful period, Cheptulel-Pokot and Endo-Marakwet made an arrangement whereby the Pokot would bring extra water into the Chesegon River (by a furrow from the Cheptulel or Kabaron River) in exchange for a furrow coming from the Chesegon River and used by the Pokot (in practice mainly for watering their cattle, but in principle also for irrigation purposes).

In 1938, however, the main river had changed its course at the expense of some Endo families who found themselves on the 'wrong' side of the boundary. These were forced - in 1939- to abandon cultivation rights north of the new river course. Combined with increased Pokot-Marakwet cattle raids, the tensions were festering all the time and they exploded in the 1960s , almost creating a situation of total tribal warfare. During the 1960s the people of Kaben had succeeded in using more and more Chesegon water for irrigation into their maize, millet and sorghum shambas in the valley (*) which were considerably enlarged. For the Pokot, watering their cattle from the lower Chesegon River, there was hardly any water left. (see Arap-Chellal).

(*) The northeastern part of the present day Endo Location was only regarded as part of Marakwet since 1933. Before it was part of Baringo District and used now and then by the Pokot as a reserve grazing area.

On top of that the lower Chesegon River continuously changed its course. In 1967 again a new boundary was made and again there were a number of Marakwet on the 'wrong' side. These Marakwet were forced to leave. (According to Arap Chellal because of their 'notorious indulgence in stock thefts'). The Marakwet reaction was fierce: they planned to lead off all the Chesegon water into their area. In 1968 they had to be forced to release the water into the Chesegon River by police action.

2. NATURAL RESOURCES

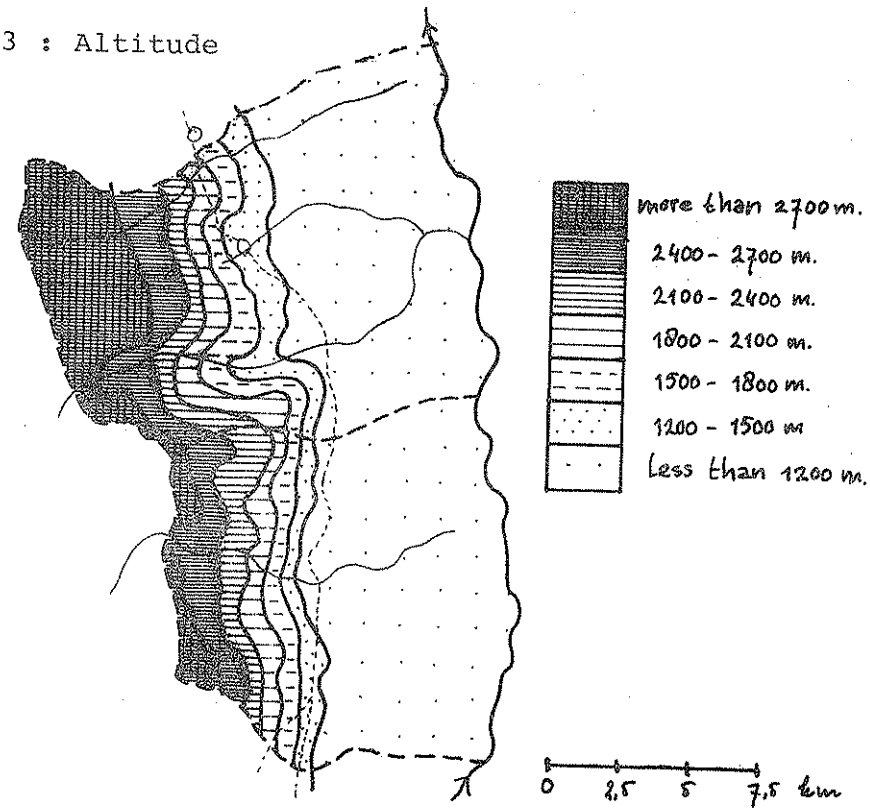
2.1 Geology

The higher area (the escarpment and the lower part of the Cherangani Hills) is occupied by the oldest rocks found on the Earth's surface all over the world: the Precambrium Basement System Rocks. The rocks are metamorphic: formed during a situation in which existing rocks are changed because of high temperatures, high pressure and chemically active fluids. This occurs during tectonic movements in the Earth's crust. Metamorphic rocks have a relatively high resistance to erosion/denudation (more than their originating rocks) and are characterized by flowing layers. The geological map does not show any differentiation in mineral composition.
The lower area (the valley floor) is covered with alluvial and colluvial deposits (deposited by water and by mass movements respectively).
In the centre the Elgeyo Escarpment stretches out from North to South. The escarpment originates from a major fault which runs all through the Kerio Valley and is part of the great Rift Valley Faulting System.
There is no information available about mineral deposits with a significant interest, although there is some alluvial gold in the upper river areas, which is mined locally.

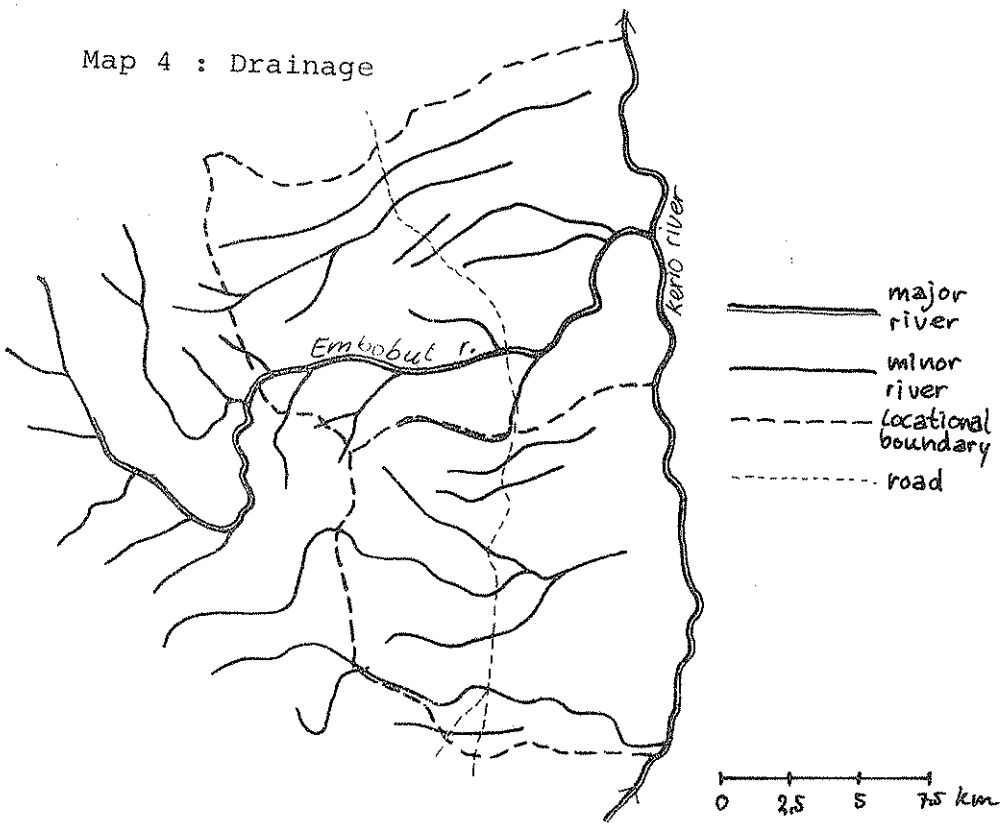
2.2 Relief

The eastern part of the locations is situated in the Kerio Valley (less than 1200 m.a.s.l.) with its footslopes bordering the Elgeyo Escarpment and its flat, alluvial zone along the Kerio river. The centre of the locations is mainly occupied by the Elgeyo Escarpment (that rises from 1200 m. to 2400 m.a.s.l.) and in the west the locations cover a zone in the Lower Cherangany Hills (from approx. 2400 m. to 2900 m.a.s.l.).
The high and steep escarpment is a very dominating feature of the whole of Elgeyo Marakwet.

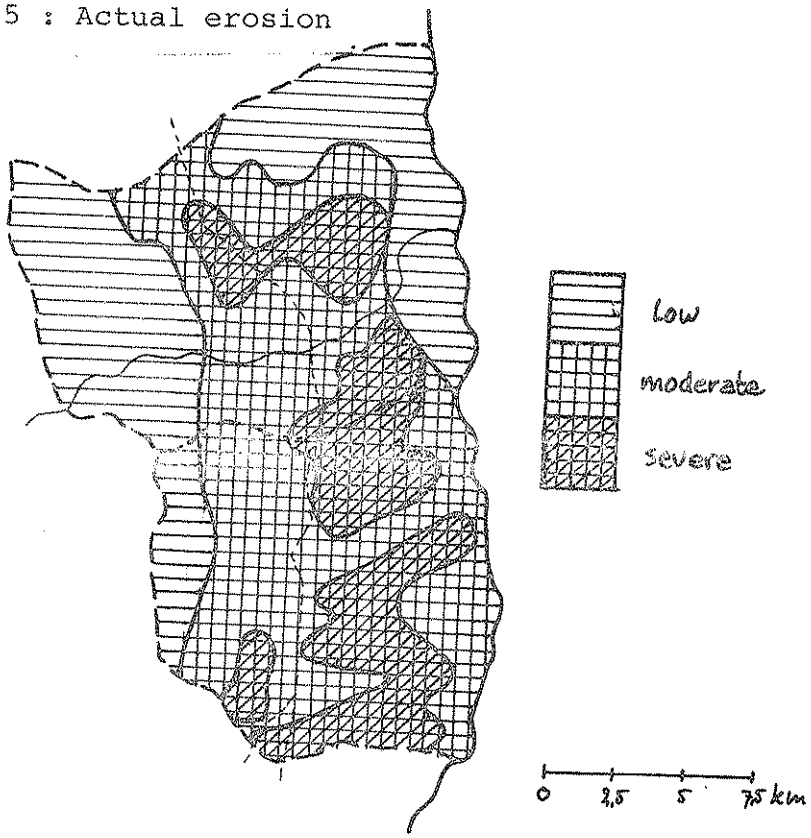
Map 3 : Altitude



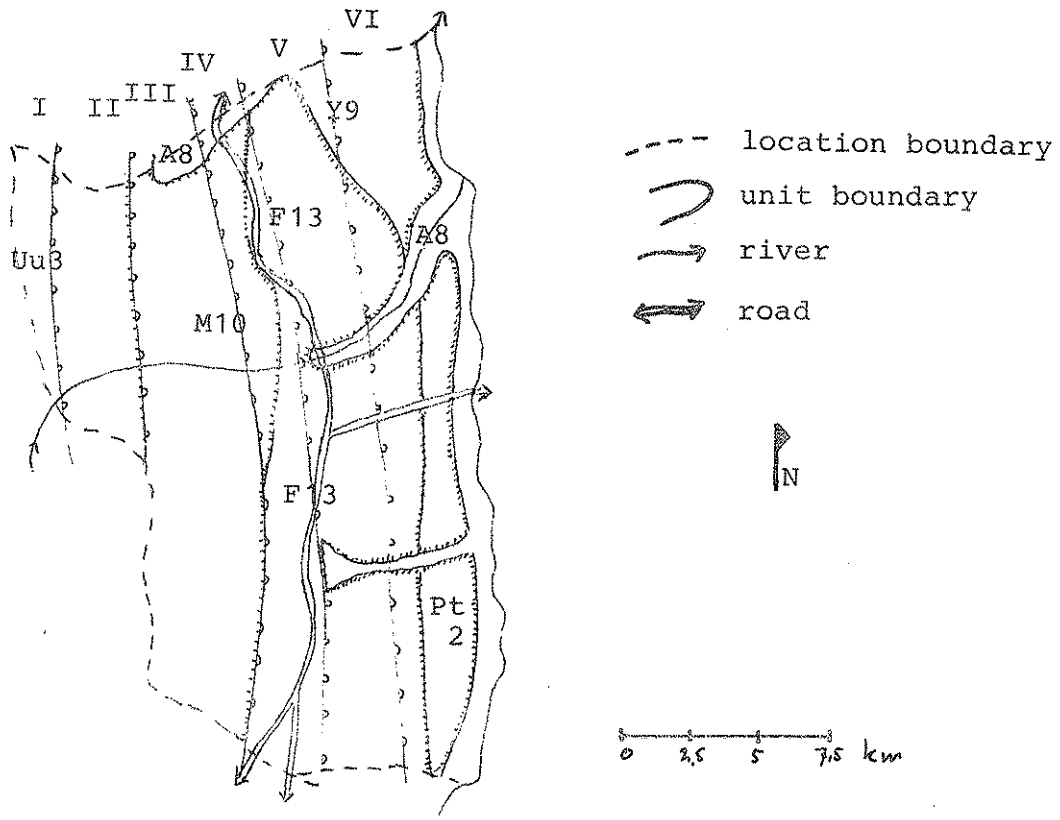
Map 4 : Drainage



Map 5 : Actual erosion



Map 6: Combined soil- and agro-climatic zone map



2.3 Erosion/Vegetation

From a Landsat (Satellite)image (1982) we made an interpretation for the actual erosion status in the area (map 3) . The original scale of the image is 1:1 million and consequently our map can only give a general impression.
Especially in the valley itself erosion is severe in many places. Due to overgrazing and to the semi-arid to arid conditions, the natural vegetation cover is sparse and so sheetwash and run-off through gullies can be severe after heavy showers: processes during which the water removes a lot of material. Often the grass cover (both perennial and annual) is poor and all that is left for livestock is the Acacia spec. bush/shrub. Also on the escarpment the erosion hazard is high: human influences (like cultivation, livestock keeping, fuel wood gathering etc.) can easily destroy the sensitive equilibrium.

2.4 Hydrology

All the rivers drain into the Kerio river which finally drains into Lake Turkana. Most of the streams have a small catchment area and consequently carry little water. Besides, in most of the minor streams, the water has penetrated into the loose material cover of the valley floor/footslopes and/or has evaporated before it even reaches the Kerio river.
The only perennial rivers in the locations are the Kerio river and the Embobut river. The latter has a large catchment area in the Cherangani Hills. However, also in these rivers the dry-season discharge is much less than in the wet seasons.
In the latter periods the rivers (also the minor ones) may flood locally in years with a high amount of rainfall. These rivers will be impassable in the wet season.
Especially in the dry season (when the chemical concentration of the water is relatively high), the water of the Kerio river may be rather polluted, due to industrial waste of the Fluorspar Mine near Kimwarer in the south of Elgeyo Marakwet.

2.5 Soils

According to the'Exploratory Soil Map of Kenya', scale 1:1 million (Kenya Soil Survey, 1980) six soil group units can be distinguished. More specific information can be found in Siderius' study about the soils of the Kerio Valley (Siderius, 1978, scale 1:100,000). We combined both sources to get map 6, in which also the Agro-Climatic Zones are presented. The agro-ecological codes are those of the Kenya Soil Survey publication: the first symbol stands for a certain agro-climatic zone (see section on Climate; 2.6); the second symbol for the soil group. The information must be interpreted with care.

I Uu 3 and II Uu3

Soils developed on sloping areas at high altitude.

It is a complex of two main soil groups:

- well drained, black to very dark brown soils, that are rocky in places. These soils have an acid humic topsoil (KSS code UuUu, rankers)
- well drained, moderately deep, dark brown soils with a very thick acid humic topsoil (KSS code UuUbh: humic cambisols).

The acidity can become a problem for plant growth. Because of the sloping character of the area the erosion hazard is rather high and conservation measures are recommended if cultivation is executed.

III M 10 and IV M 10.

Soils developed in the mountainous areas.

The soils are well drained, which means that water is removed from the soil readily but not rapidly. These soils commonly retain optimum amounts of soil moisture for plant growth after rains or addition of irrigation water. It is an area with a complex of shallow (0-50 cm. deep, which causes problems for plant roots), rocky and stony (can cause problems while working on them) to deep, non-rocky and non-stony soils. Natural fertility is moderately good, but fallow periods should be sufficiently long. Erosion susceptibility is rather high; conservation measures (strip cropping, bench terracing etc.) are recommended if cultivation is practiced on these slopes of the escarpment.

KSS code MFbc: chromic cambisols-partly with lithic phase; with eutric regosols and rock outcrops.

IV F-13, V F-13 and VI F-13.
Soils developed on the footslopes.
These soils are well drained, very deep (more than 120 cm.) and the structure is rather loose. Natural fertility is moderately good, though again, proper fallow periods are necessary. Erosion can be a severe problem in these areas - especially when the vegetation cover is poor - despite the fact that the soils are situated on almost flat surfaces and have a good infiltration capacity.
KSS code FUlc: chromic luvisols; with rhodic ferralsols and luvic/ferralic arenosols.

V-Y9 and VI-Y9.
Soils developed on almost flat to flat areas.
These soils are well drained, deep (80 to 120 cm.) and have a sodic deeper subsoil. This sodium is toxic for plants and the soil structure can decrease dramatically (becomes hard and massive) when the soil is used. It is the soil material that contains relatively much sodium. By applying special (expensive) chemicals the sodium can be replaced (detached from the soil materials). Non-saline water has to be added then to wash out the now sodium containing soil water (drainage has to be very good for this).
KSS code YUbk.

VI Pt 2
Soils developed on the upper river terraces.
These soils are dark brown, deep and well drained to moderately well drained. The latter means that water is removed from the soil somewhat slowly so that the soil is wet for a small but significant time of the year. For certain plants these soils may be too wet (too little oxygen - of vital importance to plant growth - is available). The soils are slightly calcareous, chemical fertility is moderately good. Erosion is not a real problem on these flat areas (though gullies may occur); occasional flooding can cause damage to young plants.
KSS code PtUbe : eutric cambisols.

III-A8, IV-A8, V-A8, VI-A8
Soils developed on the flat areas along the rivers (alluvial deposits).
The soils are well drained to imperfectly drained. The latter means that water is removed from the soils slowly enough to keep it wet for significant periods. This can result in a shortage of oxygen, while that - as said before - is of vital importance to plant growth. The soils are very deep and they show stratification due to sedimentation processes (finer and coarser material is deposited on top of each other by the flooding river). The soils are calcareous and have good natural fertility, the cultivation factor for these soils is high. Erosion usually is no problem in these flat areas, but flooding may damage plants. Under really arid conditions (zone VI) these soils can have saline properties.
KSS code AAjc: calcaric fluvisols.

2.6 Climate

The ecological potential depends- apart from soil and relief characteristics and erosion status - largely on the prevailing climatic conditions; particularly on the annual and seasonal balance between rainfall and evaporation (the latter is mainly determined by temperature and turbulence).
Chesongoch is the only place in the location with a climatological station. Rainfall has been recorded from 1973 onwards. The monthly figures for these years are plotted in graph 1. The total annual figures and the long term mean are given in graph 2. The long term mean (926 mm/yr) is rather high. However, temperatures and consequently evaporation are very high. This is the reason why in the valley the climatic condition is semi-arid (even arid in the very East).
Form the graphs one can see that there is a large variation in the amount of rainfall: the monthly figures vary much over the years, the variation in one year is large and the variation of annual totals is considerable over the years. In other words: the low rainfall reliability and poor predictability cause problems for the farmers. Besides, also geographical variations are large: this station is situated in the valley, the higher areas will receive more rain.

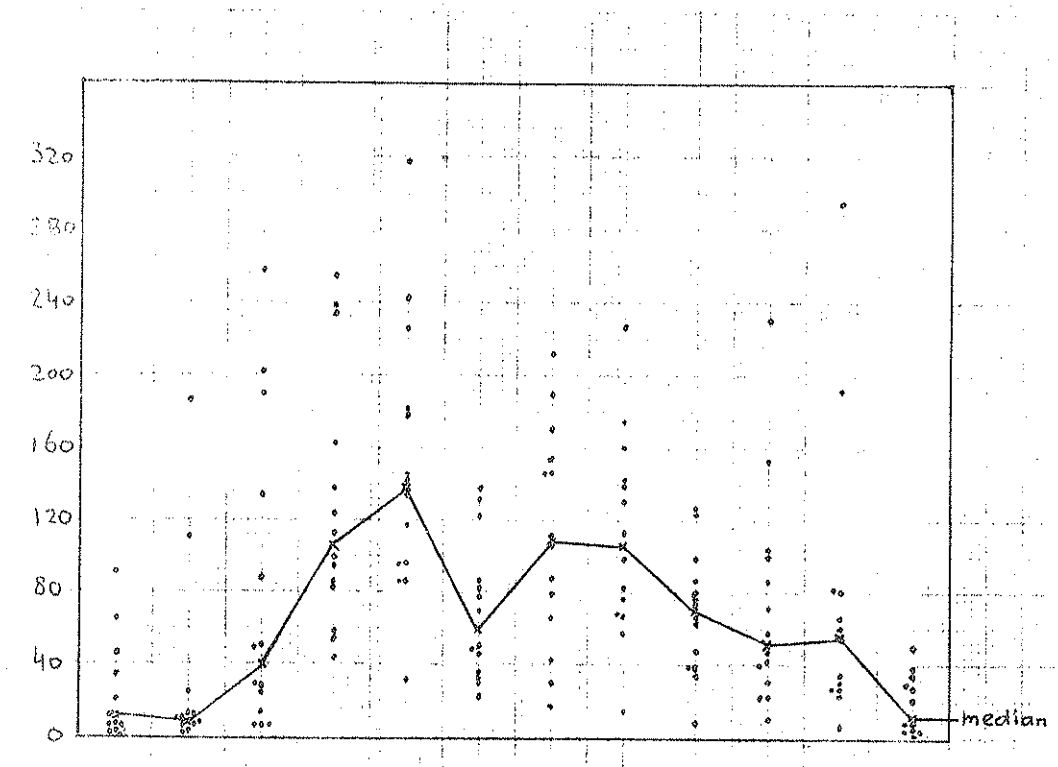
Table 1 : Agro-Climatic-Zone Characteristics

zone	r/E_0^*-ratio in %	climatic designation	mean annual temperature in C	climatical designation	average number of growing days	major limitations to maximum production in approximate order of importance
I	more than 80	humid	less than 10 to 12	very cold to very cool	365	soil fertility, farm management, drainage
II	65 to 80	sub-humid	12 to 16	cool to fairly cool	290 to 365	soil fertility, farm management, drainage
III	50 to 65	semi-humid	14 to 20	fairly cool to warm temporate	235 to 290	soil fertility, farm management, rainfall
IV	40 to 50	semi-humid to semi-arid	18 to 22	warm temperate to fairly warm	180 to 235	farm management, rainfall, soil fertility
V	25 to 40	semi-arid	20 to 24	fairly warm to warm	110 to 180	rainfall, farm management, soil fertility
VI	15 to 25	arid	22 to 30	warm to very hot	75 to 110	rainfall

* r = rainfall, E_0 = potential evaporation

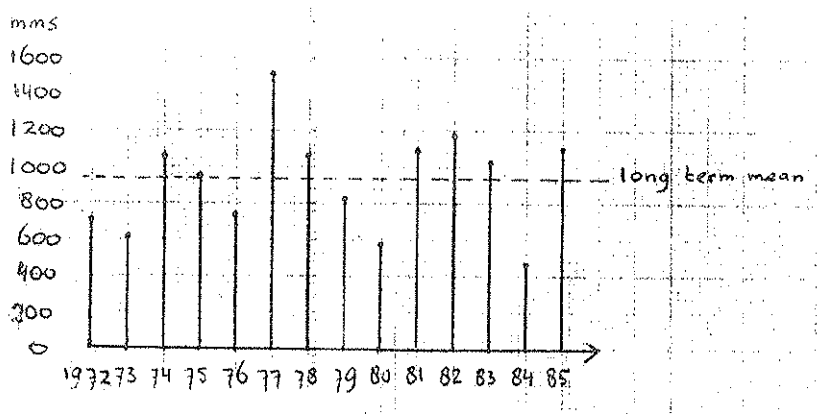
Graph 1 : Dispersiongraph for Chesongoch Station.

Every dot corresponds with the rainfall figure in that particular month for a particular year.



	J	F	M	A	M	J	J	A	S	O	N	D
mean	23	31	78	127	148	69	111	111	69	72	75	19
median	12	9	40	107	138	60	109	106	69	52	54	12

Graph 2 : Annual Totals and Long Term Mean for Chesongoch Station 1972-1985



More (general) information can be obtained from the 'Agro-Climatic Zone Map of Kenya, scale 1:1 million (Kenya Soil Survey, 1980). According to this map, the area is covered by six zones (I, II, III, IV, V and VI). We combined this information with the soil map (map 6). The characteristics of the agro-climatic zones are given in table 1.

2.7 An analysis of rainfall statistics

Since the start of the Chesongoch Mission in 1972 rainfall measurements were carried out by the Father-in-Charge. The rainfall was as follows in Table 2.

Table 2 : Rainfall at Chesongoch (in mms)

	J	F	M	A	M	J	J	A	S	O	N	D	TOT.
1972	?	?	6	100	117	82	106	129	63	71	34	8	716+
1973	8	8	14	44	182	36	42	82	73	31	80	5	607
1974	12	6	257	54	178	85	154	139	39	85	23	28	1060
1975	6	3	51	113	225	122	170	114	80	42	26	4	956
1976	3	9	28	124	134	50	145	67	98	22	54	30	764
1977	65	24	25	234	142	69	189	160	48	229	295	38	1518
1978	45	186	88	81	96	138	112	98	65	100	29	11	1049
1979	91	111	135	95	95	77	29	57	76	40	5	12	823
1980	3	2	29	83	241	29	17	76	8	9	81	4	582
1981	1	13	202	255	85	45	216	68	127	46	27	1	1086
1982	20	7	52	238	145	32	66	226	86	102	192	21	1186
1983	11	13	6	138	86	132	79	175	124	154	60	35	1010
1984	3	8	6	58	32	51	88	15	34	57	66	49	466
1985	34	11	189	163	317	22	147	141	38	23	78	6	1169
1986	0	5	62	137	153	98	122	29	41	41	?	?	688+

These figures can tell us a great deal. For the thirteen years with full records rainfall totals range from 466 mms to 1518 mms. Potential evaporation for the year as a whole for this site is about 2040 mms.(This is a theoretical value, calculated on the basis of altitude, according to a method used by Kenya Soil Survey).

If we divide the rainfall by the potential evaporation we get the following figures. We add the Kenya Soil Survey terminology (with 0.25, 0.40, 0.50, and 0.65 as class boundaries) :

1972	0.350+	semi-arid (at least)
1973	0.299	semi-arid
1974	0.519	semi-humid
1975	0.468	semi-arid to semi-humid
1976	0.374	semi-arid
1977	0.743	sub-humid
1978	0.513	semi-humid
1979	0.403	semi-arid to semi-humid
1980	0.285	semi-arid
1981	0.514	semi-humid
1982	0.581	semi-humid
1983	0.495	semi-arid to semi-humid
1984	0.228	arid
1985	0.573	semi-humid
1986	0.337+	semi-arid (at least)

The annual average for Chesongoch for 1973-1985 is 944 mms, that is semi-humid to semi-arid.

For crops to grow there must be enough rain during the growing season. And the growing season must be long enough and continuous. If we use a number of agricultural measures of rainfall adequacy, adapted to Chesongoch (we will not explain the measures here) we can study the adequacy of the rainfall in the various years and the need for additional irrigation water.

1. In Chesongoch a month with adequate rainfall must have 126 mms. of rain. The rainy season can be regarded to start when rainfall exceeds this minimum.
2. Plants can continue to grow during months when rainfall is at least 80 mms. Yields will be suboptimal however. Optimal yields can only be reached when the rainfall exceeds 126 mms in all months of the growing season. We take a growing season of four months.
3. When a month has more than 136 mms. we can speak about 'surplus rain', which is stored in the soil for a maximum period of one month (and to a maximum of 100 mms.).* A month with inadequate rain can use this soil moisture.

* This is a theoretical average.

We can give a picture of the rainfall adequacy by using the following symbols:

R The rainfall is enough to start a genuine rainy season
& adequate rain after the start of the rainy season
+ rain is not adequate but above the minimum required (80-126 mm)
x rainfall is below the minimum but the former month had surplus rain (above 136 mms) which brings the month above 80 mms.
. the rainfall is above the minimum but the rainy season has not yet started.
- rainfall is inadequate.

	JFMAMJJASOND	Growing months (without irrigation)	Irrigation Necessary (suboptimal results)
1972	---....R----	only August, inadequate	May
1973	----Rx-.--.-	May-June, inadequate	July
1974	--Rx&+&&----	March-August, adequate	no
1975	---.R+&++---	May-September, adequate	no
1976	---.R-R-.---	May and July, inadequate	June, Aug.
1977	---R&-R&-R&x	Apr-May, Jl-Aug, Oct-Dec,inadequate	June
1978	-R+++&++-.--	Febr-Aug, adequate	no
1979	..R++-------	March-May inadequate	June
1980	---.Rx----.-	May-June, inadequate	July-August
1981	--R&+-Rx+---	Mar-May, Jl-Sep, inadequate	June
1982	---R&--R++R-	Apr-May, Aug-Nov, adequate	June-July
1983	---R+&-R+&--	Apr-Jun, Aug-Oct, inadequate	July,(Nov)
1984	------.-----	none, inadequate	whole season exc. July
1985	--R&&+&&----	March-Aug, adequate	no
1986	---R&++---??	April-July, adequate	no

Without irrigation nine out of fifteen years recorded, would have had a crop failure because of inadequate rainfall. One can see how important supplementary irrigation is in this area. In most cases the rainy season had to be extended to avoid crop failure; in other cases a dangerous dry spell had to be overcome.
In the years with a growing season with adequate rainfall this does not mean that the rainfall was optimal. There is not a single year with an amount of moisture available during four consecutive months (126 mms) which would give optimum results.
Adding irrigation water in months when the rainfall is below 126 mms. can give higher yields.

If the farmers only want to get adequate growing seasons of four consecutive months (so accepting suboptimal results), how much irrigation water do they have to add?

We will look at two cases: 1981 with the need to supplement 35 mms of water in June for a suboptimal harvest and 1984 with the need to add water in the first three months of the growing season. (Say April-July: 68 mms, 48 mms, 29 mms, needed in April, May and June respectively).

Let us take an average plot of 0.5 ha.; an average to good irrigation furrow with a flow rate of 150 l/sec. and an effective use of half of the irrigation water. Now we can calculate that for an additional 35 mms. of water in June 1981 a farmer needs at least 38 minutes of water from the furrow during that particular month.* In the situation of April 1984 he needs 68 mms. of water, which means 75 minutes of irrigation. It depends on the soil moisture retaining capacity whether he has to spread the extra water over more periods within the deficiency month. (For the sake of simplicity we have taken a one month retaining period).
Let us look at this situation from another point of view.
If we take this furrow and the need of 35 mms of additional water. Working day and night, more than 1,000 farmers could use this furrow during June 1981. In April 1984 however, only 600 farmers could use it theoretically (provided there is enough water in the furrow). If they adopt water harvesting techniques, this number can rise however.

With this analysis the importance of 'survival irrigation' has been made clear enough. Of course the method can be made more refined. For instance: here we use a monthly evaporation estimate that is based on an annual theoretical estimate. During the rainy season, however, evaporation is lower and, as the crops grow, the evapotranspiration changes. Another refinement may be to include the moisture retaining capacity of the various soil types. Also the water needs (or stress capacity) of particular crops differ. For this Profile it all leads too far. But further agricultural land use planning can certainly benefit from a more thorough approach.

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* $\frac{500{,}000\ dm^2 \times 0.35\ dm}{150 \times 0.5} \times \frac{1}{60}$

2.8 Agricultural Land Use

The people of the northern Kerio Valley are in a rather favourable situation. In the first place they can use a large variety of ecological zones (from zone I to zone VI), some of them with good soils. In the second place there are a number of rivers that can be used for irrigation purposes, although the water is not sufficient to make agriculture independent of rainfall. Only along the rivers and the larger furrows is all year irrigation practised.

Most farmers in the area grow a mixture of sorghum and fingermillet - mainly local varieties. In Endo more sorghum is cultivated, in Mokoro more fingermillet. The local variety of sorghum takes five months to mature and needs supplementary irrigation in most years. Fingermillet is irrigated too, but it can be grown on the escarpment without irrigation , and in good years in the lower areas too. It has a growing season of four months. Recently Serena sorghum was introduced, more drought resistant and with a shorter growing season compared with the other varieties. Maize varieties, introduced in the past, were not a success. Recently Coast Composite maize was introduced and seems to be more promising. Since the early fifties most farmers have an irrigated crop of cassava. Some farmers also grow bananas, vegetables, sugarcane, cotton or peppers.

Crop yields are low: planting is unintensive, poor varieties are used, goat manure could be used much more and the soil is deficient in nitrogen and phosphorus after two or three years of cultivation. Weeding and fencing are done to a low standard. Irrigation water is wasted. Soil conservation measures are hardly taken and water harvesting techniques are not applied. Very fertile soil near the Kerio River is hardly used; it is too far away from the homesteads, most of which can still be found on the escarpment. Also these soils are very difficult to work with the traditional tools. Land is not really a problem yet, water only in dry years. Labour is the major bottleneck and everything is done to economize on labour time involved in cultivation.

This is a large contrast with the many hours involved in walking/ climbing to and from the fields and in the maintenance of the irrigation furrows.

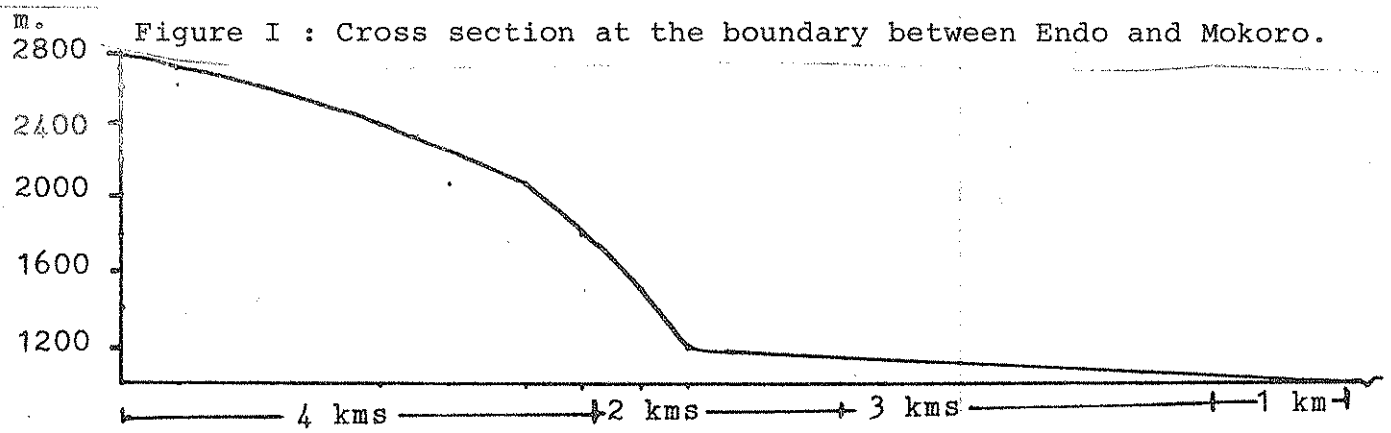
The farmers are not pure cultivators. Many goats are kept, a typical family having 15-20 goats normally. Few have sheep and households with cattle are an exception. Many men have beehives and honeybeer is highly prized. Also (since the end of the 1960s) chickens are kept for meat and eggs.
The land in the highest parts (mainly in Embobut) could be used for dairy cattle, but there are none yet. There are zebu-cattle however, owned by the lucky few who 'climbed up in life'.
Having a herd in the highlands ('masop') is one of the best things one can achieve in the eyes of the Marakwet. In the upper reaches of the location, at the edge of the forest, there are families who keep 40-100 cattle and also goats. A herd of 40 zebu-cattle only gives 10-20 liters of milk per day, but for an average family this can feed them to a large degree.
In the valley ('keyu') zebu-cattle are endangered by tsetseflies (which transmit trypanosomiasis), by ticks and by potential (Pokot) cattle raiders. Goats are kept in the valley, although they are a threat to the crops, especially in the areas close to the homesteads (the 'lagam'). The animal yields are mainly the milk from the cows in the highlands, the occasional cattle meat when an animal dies and goat's meat at various occasions. Goat's milk is used but the quantity produced is very small.

Most families use land in the three major zones, masop for maize, the lagam for fingermillet and the upper valley for sorghum, fingermillet, cassava and occasionally bananas, maize and vegetables. Recently also more areas nearer to the Kerio River were opened up. Here sorghum, maize and cotton are cultivated. According to Critchley (1979 p.7) a typical family owns 1 ha of land on the valley floor, mostly scattered over various plots. This 1 ha. is seldom cultivated completely. Some of the plots are merely a strip of land, a fraction of what was formerly an ancestors field. Theoretically for most families there are rights to two more ha.s of valley land, which is fallow. Total actual fallow land will make up more than 75% of the valley land in use and is utilized as common grazing land. On the escarpment and at

the top of the escarpment an extra half ha. of communal land is cultivated by most households each year. During the last fifteen years the area of the upper Embobut River has been colonized very fast.

In Figure I we describe the pattern of land use and we add the various problems in each zone.

Figure I : Cross section at the boundary between Endo and Mokoro.



masop	lagam	keyu-upper	keyu-lower	Kerio R.
cattle maize	huts stores fingermillet goats	along streams: bananas, cassava vegetables irrigated: sorghum f.millet maize goats	cereals (partly irrigated) cotton	not used
steep climb long growing season good yields cold	severe erosion poor, shallow soils hygienic problems protected no mosquitos	fertile goats are a menace rather difficult to clear weeding necessary hot mosquitos easy access by enemies market places valley road	less fertile long distance easy to clear less goats less weeds difficult to reach with irrigation water hot mosquitos	very fertile difficult to work some places flood prone very hot mosquitos

2.9 Irrigation

The potential for irrigation is large, especially if the water of the Kerio River could be used. At the present time in Endo-Mokoro four rivers are tapped all of which come from the highlands. Judgements about the irrigation potential vary.
At the end of the 1950s there was great optimism in this regard. Huxley wrote that the existing furrows could irrigate "perhaps as much as 10,000 ac." (1959, p.173), or 4000 ha. in the Marakwet valley as a whole. Per furrow 80-90 ha. could be irrigated on average, according to these estimates *. This probably is too optimistic.

In 1981 Soper tried to estimate the flowing capacity of each furrow. First we will give his map of irrigation furrows in a somewhat simplified form. One can see that in Endo Location two rivers are used for irrigation: the Chesegon River and the Embobut River. Here the supply of water is rather generous.

From the Chesegon River there is one main furrow and a subsidiary one. From the Embobut River twelve major furrows are tapped, half of them getting water from a point above the Escarpment (at about 2,400 metres), the others at a point below Sagat hill (1,200 meters). Together with all subsidiary furrows there are at least 29, using water from this river. In the words of Hennings the upper ones are the "most audacious in the region. They leave the Embobut high up in its valley and crawl precariously along the precipitous slope, circumventing the boulders on crazy aquaducts made of flat stones, tree trunks and turf, supported on stakes up to ten foot high" (Hennings, 1951 p.204).

Mokoro Location gets its water from two smaller rivers, the Enou and the Embolot. Both rivers are not as reliable as the ones in Endo, and they carry less water. However, in a normal year, the majority of the fields are irrigated at least once. Three furrows run from the Embolot, and there are a number of subsidiary canals, a total of at least 17. From the Enou there are four major furrows and three minor ones, together with subsidiaries a total of at least 13. Also a small canal connects the Enou system

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* 5-6 feet^3/sec, one cusec can irrigate 16 ha. For reference:
1 liter/sec. can irrigate 0.6 to 1.0 ha. as a 'rule of thumb'.

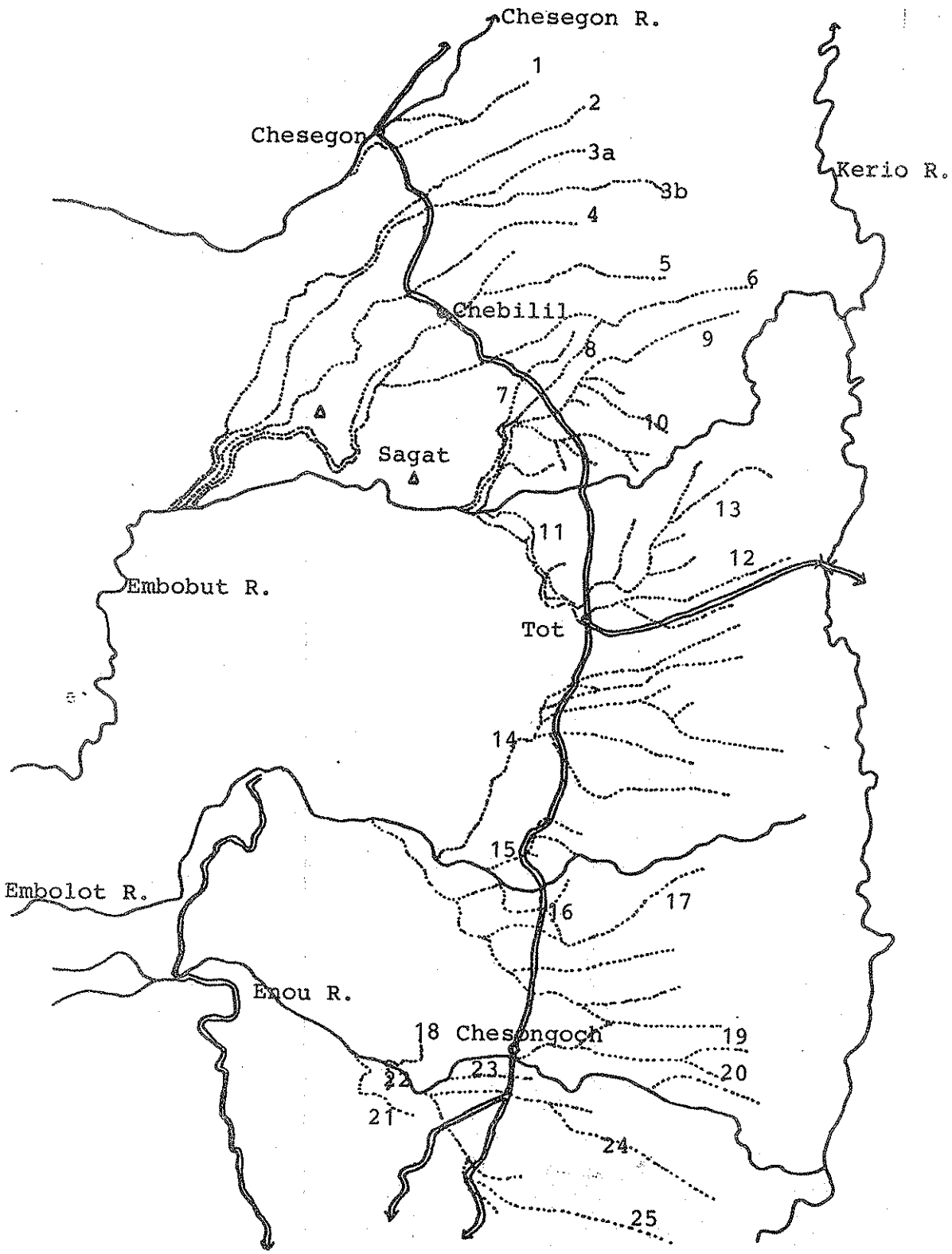
with the Embolot system. In the early 1950s the DAO, mr.Spencer, coordinated the building of a canal (the Katapseron furrow), tapping water from a stream near the Embobut system and bringing it to the Embolot river. It only worked for a few seasons.

Soper's estimated details about the furrows in Endo and Mokoro are reproduced here. The names Soper gives may not be the ones agreed by everybody and also the spelling is his (Soper,1981 p.76).

Table 3 : The irrigation furrows in Endo and Mokoro.

Nr.	Name	Height of Take-off in metres	Vert. Fall m.	Length in km.	Potential Delivery l/sec. estimates
Chesegon system					
1	Kapen (Kaben)	1070	70	3	?
Embobut system					
2	Marich	2400	1400	12	200
3	Kapterik/Shaban	2400	1400	14	150
4	Kasukut/Kowow (Kasagat)	2200	1200	11	150+
5	Kamariny	2160	1180	12.5	150
6	Kabarmwar	2220	1280	14.5	120
7	Kasike	1360	400	7	120
8	Kapsogom	1400	440	6.5	120
9	Kabarsumba	1240	300	7.5	150
10	Kaptepoko	1280	330	7	100
11	Kapsiren	1120	140	2.6	150
12	Shaban	1160	210	8	150
13	Kapsyoi	1280	340	8	130
Embolot system					
14	Kiserowon (Olot)	1460	510	9	140
15	Cheletun	1130	110	2.2	150
16	Chebang'an	1100	50	2	100
17	Sikot (Katut)	1800	840	11.5	150

Map 7 : The irrigation furrows in Endo and Mokoro



The numbers refer to Table 3.

Source: Soper 1981.

The end of the furrows also is the end of the cultivated area in good years.

Enou system

18	Kwenoi	1490	150	2	25	
19	(Chepkisoi, Chebawan)	1070	100	6	250	(?)
20	Kapkurong (Cheresyong)	1000	30	2	?	
21	Chepetyon	1680	340	2.75	15	
22	Kaptul	1450	50	6	15	
23	Simat	1180	130	1.75	150	
24	Cheber (Kasegei or Kakisegei)	1240	270	6.5	250	(?)
25	Muruber=Kabarkutia (Chesoo),(Katemuko)	1240	240	6	250	(?)

The numbers can be found on map 7.

We fear that especially the Embolot and Enou figures are too high. In October 1985 - a dry month after a good rainy season - the Embolot itself carried only 60 l/sec. and the Enou 40 l/sec. A few furrows which were measured by the PIU had between 50 and 130 l/sec. The people in the valley say that the water in the Embolot and Enou systems is gradually becoming less. Also various people say that the Enou system had less water compared to the Embolot system; contrary to Soper's figures.

It is impossible to know when the various furrows were constructed. Some of them are very old and it seems that most of the Embobut canals were already there during the 1910s. A very early colonial inventory, made in 1918, speaks about one main furrow from the Chesegon, nine from the Embobut and three from the Enou ("Endo") river. Hennings speaks about eight Embobut furrows, three upper ones and five lower ones in the 1930s (1951 p.204). Huxley writes "thirteen furrows spring from the Embolot at various heights above the valley" (1959 p.173), but she means the Embobut in stead of the Embolot (see also Soper 1981 p.78).

It is very difficult to know how large the irrigated area was and is. The irrigable area is about 10,500 ha. according to Soper, if we only look at the available land. But water is more of a constraint. Soper gives a very interesting description of the technical side of the furrow system (for more details we refer to his article, 1981, p.80-89).

An important point is his opinion that technically a traditional furrow cannot transport more than 150-200 l/sec. and that only when it is properly maintained. This is one of the reasons why in the Embobut system up to five furrows run parallel. If we use his rough estimates of potential delivery the total flow of the Embobut furrows is 1690 l/sec., good for at least 1,000 ha. The Embolot can irrigate 240 ha. when there is enough water (a maximum of 400 l/sec.). In dry periods however only one or two canals can be used, reducing the hectarage that can be irrigated to about half. The Enou furrows have a higher potential (955 l/sec. or 570 ha.) but the same applies here. There will not be many years when the irrigation can exceed 300 ha. For the Chesegon River we do not have estimates, but it can only irrigate a small hectarage. For Endo-Mokoro as a whole this means that in a year that is not too dry, there is sufficient furrow water to irrigate at least 1,500 ha. Earlier estimates arrived at 900 ha. from the Embobut ("around Tot") and 200 ha. from the Enou River ("around Chesongoch") alone, so excluding the Chesegon and Embolot Rivers.

The area actually irrigated is smaller than that. ALDEV-officials in 1962 speak about 500 ha. of actual irrigation in the "Endo Scheme Area"(see 4.2) and in 1963 the Embobut system was thought to irrigate 600 ha. Due to growing labour constraints after 1963 we expect that the total irrigated land now is less than in ALDEV times, for Endo-Mokoro as a whole certainly less than 800 ha., including the KVDA farm.*

Normally two cereal crops are grown per year, one from April to August (fingermillet mostly) and one from September to January (sorghum mostly). For the first crop supplementary irrigation is practised (and not always all furrows are used). For the second crop irrigation is absolutely necessary. The irrigated area during the second crop is much smaller, however. In Olot for instance, during the first season of 1985, 120 ha. were cultivated by 500 families, in the second season only 30-40 ha., according to local informants.

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* A preliminary ASAL Survey (1985) suggests a much larger irrigated area, however.

2.10 An Estimate Of Current Agricultural Production

To estimate the current agricultural production we will follow the agro-ecological zoning described in 2.5.

Zones I-Uu3 and II-Uu3, 3500 ha.
In these high and relatively cold areas 3000 people (600 households) have their homesteads. They cultivate 600 ha. Also many escarpment households from Endo have a plot here, maybe a quarter of the 1800 Endo escarpment households, all cultivating ½ ha. This means an extra 100 ha. Together this is 700 ha. That is 30% of all the land available here. Especially in the Kaben area it is probably more. The cutting of the forest is ecologically dangerous and the low rate of fallow may give lower yields in the future. At the moment maize yields of 1500 kg/ha. seem to be usual. In 1985, a reasonable year, there were farmers, however, who had 15-20 bags of maize per acre; that is 3400-4500 kg/ha. This area produces at least 1000 tons of maize. There are also cattle and goats here. We will deal with their production separately.

Zone III-M10 and IV-M10, 7900 ha., but because of the steepness more than 10,000 ha. 'real ha.'
This is the lagam, the zone where the majority of the population lives. Around their huts they cultivate fingermillet and in Kaben also maize. Probably 15% is cultivated. Returns are low (500 kg/ha). So 1500 ha. are cultivated with a production of 750 tons of grain.

Zone III, IV and V A8, 300 ha.
Very fertile soils can be found along the Chesegon river. The Kaben people here use it for irrigated maize, bananas, cassava and fruits. Maize yields are high (150 ha.x 2000 kg/ha= 300 tons). Cassava and bananas add a few hundred tons.

Zone IV-F13, 3400 ha.
This is the upper part of the valley floor. It is used intensively with irrigation. In Endo 1800 households have their land here, cultivating approximately 0.4 ha. here. Normal yields are 1000-2000 kg/ha. of fingermillet and sorghum and some maize, if we include

second harvests. Also bananas and cassava are concentrated here, along the river and some furrows. Bananas may be 50 ha. and cassava 60 ha., together with the fields in Mokoro. This means a banana yield of 400 tonnes annually and a cassava yield of 300 tons. The total cultivated area of 700 ha. (of which 600 ha. for grains) is mostly irrigated. Grain yields: 600-1200 tons.
In Mokoro there are more rainfed conditions and people probably cultivate larger areas with lower yields. If we assume also 1800 households nowadays, who cultivate an average of 0.6 ha. here with a yield of 1500 kg. of grains in two crop seasons, where irrigation is applied (half of the land?) and only 500 kg or less where irrigation is not used. Fingermillet, sorghum and some maize may yield 1100 tons of grains here.

If our estimates are correct it means that 50% of this area is cultivated annually (which is very high).
During the 1984-drought grain yields in Mokoro were very low, in some places there was complete harvest failure. In Endo local people estimate the average yield in 1984 at 500 kg/ha. or less.

Zone V-F13, 5100 ha.
Here, in the lower valley, people grow an irrigated crop of sorghum and fingermillet, some maize and some cotton. In dry years there are problems with the irrigation supply. If we use 0.2 ha. per average household it means an extra 700 ha. with low yields (500 kg/ha.). Maybe half is adequately irrigated in relatively good years. Yields: 350 tons of grain.

Zone VI-Y9, 1900 ha.
This northeasternly part is very infertile and hardly used.

Zone VI-Pt2 and VI-A8, 2900 and 2000 ha.
This area near the Kerio River, which is partly very fertile, is hardly used.

Together this means a yield of 4100-4700 tons of grains, 500 tons of bananas, 400 tons of cassava and minor yields of pulses,

vegetables and fruits. If we use the Caloric values of grains as 3000 Kcal/kg, of bananas as 750 Kcal/kg. and of cassava as 1490 Kcal/kg (x 70%) we arrive at 132-150 x 10^8 Kcal in average years. Animal food can add to this.

If we assume that every household has 15 'shoats' on average and that one third of the flock is eaten per year, 21,000 shoats are eaten each year with an average of 15 kgs of meat with 1790 Kcal/kg. This gives an additional $6x10^8$ Kcal. Goats milk is used by children mainly. Per existing goat we may use an average of 20 litres per year. With 850 Kcal/l. this means an extra $11x10^8$ Kcal. Assuming that 400 steers and dead cows are eaten too, this gives $2x10^8$ Kcal extra. Cows milk adds another $2x10^8$. And then there is cattle blood, chicken meat, eggs, wild animals and wild vegetables and honey of which we cannot give any estimates. Together at least $150x10^8$ Kcal is produced in an average year.

If we assume that an average person in this area needs 2100 Kcal per day (children included), the Calories available can feed 20,000 people in an average year. There are probably 24,000 people now so we can regard the area as almost selfsupporting in food.
Only in bad years there will be a clear food deficit, but for some the stores of millet and sorghum from former good years, the food exchange relationship with highland relatives and the money available can form a buffer against famine.
In 1984, however, the situation was rather dramatic. In Mokoro a number of furrows did not have water, so the harvest failed; in Endo yields were low. Production was certainly below local food needs. On top of that the highland harvests had failed too. As a result many highland relatives came to beg for food. Famine relief by the Government and by missions had to assist the Endo-Mokoro people. Before 1984 people in the area could only remember real famines before 1951 and in 1964-65 (although 1980 was a bad year too, a drought and a severe goat's disease and hardly any cattle).

2.11 An Estimate Of The Agricultural Potential

Readers, who do not like speculations,should go to part 3, but those who like some intellectual guesswork may join us to estimate the agricultural potential of this area, given various assumptions. In dealing with the various zones again, we take as a point of departure that the agricultural production must be ecologically sound, which especially means that cultivation in the highest water catchment areas (zone I) should be avoided and that steep areas (the majority of the land in zone III) should be avoided too. Cultivation in zone II is accepted, but only when soil conservation measures are applied. In zones IV, V and VI a maximum area of 1500 ha. is possibly irrigated with only minor improvement of the existing furrow system and its use. Although a larger irrigation area is possible it is not regarded as very realistic for the time being. We will deal with the situation in which no fertilizers are used, which means that proper fallow periods must be maintained. New varieties of sorghum and maize (Serena and Coast Composite/Hybrid) replaced the old varieties. Non-food crops are not regarded in our model.

Zone I-12

Should not be used.

Zone II-Uu3, 2700 ha.

The possible arable use per annum depends on the proportion of the area that can be used for cultivation and the fallow needs. In this area 80% agricultural use is possible, when proper soil conservation measures are taken (and agro-forestry?).
Fallow needs are 75% (so annually 25% can be used).This means 540 ha. can be cultivated annually. Hybrid maize and beans can be intercropped and give high yields of 2800 and 3000 kgs/ha. respectively with good crop husbandry. Production: 1500 tons of maize and 1600 tons of beans, enough to feed 15,000 people, if we regard 200 kgs of grains/beans as an adequate diet per year for an average person. Cattle can use the fallow land and can give additional food. With fertilizers (but no cattle anymore) the land can produce food for more than 60,000 people. There is virtually no danger of droughts.

Zone III and IV-m10, 7900 ha.

This area should not be cultivated. Only in a few small places where the escarpment is less steep (15% or less) would finger-millet still be a good choice. Even in such places 75% of the land should be left fallow. 800 kg/ha. seems the highest possible yield. Production: 200 tons (1000 people).

Zone III, IV, V-A8, 300ha.

This area is very fertile, 80% cultivation possible and with only 20% fallow requirements. Hence 192 ha. could be used per year. Maize can give high yields, 2000 kg/ha. at least. 400 tons of maize seems possible. Along the river bananas, cassava etc. can give additional yields.

Zone IV-F13, 3400 ha.

40% cultivation possible at least, 80% fallow, Coast Composite maize can give 1200 kg/ha., Serena sorghum 800 kg/ha. with a second (ratoon) crop of 400 kg/ha maybe. This gives 272 ha. and 326 tons of grain. This is considerably lower than the actual production, because of the ecological and fallow requirements. (1600 people can be fed). Bananas and cassava along the streams can add extra food. Goats should not be allowed in the fields. They may give extra food too. Fertilizer application can lead to five times the harvest level. If there would be enough water for continuous irrigation (but there is not) a second crop could double the yield on top of that.

Zone V-F13, 5100 ha.

This area is less useful and due to erosion (bare soil at many places) only 20% can be used; 80% fallow requirements. Sorghum might give better returns than maize. Supplementary irrigation. A total of 800 kg/ha. seems to be the maximum. Production: 160 tons. Also this is far below the actual level.

Zone VI-Y9, 1900 ha.

Can only be used after very expensive chemical treatment.

Zone VI-Pt2, 2900 ha.

With irrigation 30% can be used, fallow requirements 70%, sorghum 800 kg/ha. Production: 166 tons of grain. Problem: Kerio irrigation is not yet feasible; the highland streams often do not reach this area. Also irrigation can cause a severe salinization problem.

Zone VI-A8, 2000 ha.

Very fertile, at least 50% can be used, only 20% fallow requirements. With adequate water very high harvests are possible (Coast Composite maize 2000 kg/ha.) Production 1600 tonnes (18,000 people). But this means that most of the irrigation water coming from the four rivers must be used in this area, which is not very realistic. Also a lot of water will evaporate before it reaches the banks of the Kerio River.

Looking at the various zones together (in the non-fertilizer model and neglecting additional animal food) a maximum of 30,000 people can be fed under these conditions. This is not far above the actual number of people that are fed, using their own methods and their own assessment of the environment, despite 65 years of government warnings against environmental destruction. Only the application of fertilizers and expensive additional irrigation furrows can increase the area's capacity.

3 POPULATION, CULTURE AND ECONOMY

3.1 Demographic Developments

The first population figures are from 1913 when 1461 huts were counted in the Endo area and only 311 in 'Mukarra', which was called "a relatively unpopulated area" (Yearly Report Marakwet 1913). In 1918 a population census only covered Mokoro ("2848 People counted"). From 1934 onwards until 1947 all the annual reports give the adult population figures for taxation purposes, but there might be an underrepresentation of 20-30%. Taking this into account, in the 1930s the area of Endo-Mokoro probably had about 10,000 inhabitants. The 1948 census counted 11,897 people (EMAR 1950) but again we may fear considerable undercounting here. According to the 1956 District Gazetteer a population of 14,000 in 1948 would have been more realistic.

Table 4 : Population figures Endo and Mokoro combined

1930's	about 10,000
1948	11,897 (14,000)
1962	26,178
1969	29,114
1979	20,118

However, the population increase between 1948 and 1962 was very large indeed. The better food situation and medical facilities created a high natural increase. But probably net immigration was even more important due to the forced evacuation of people who had moved into the highland forests of the Cheranganis during the 1940s from all over Marakwet. When the harsh colonial methods ended, the people started to migrate to the highlands again. Between 1962 and 1969 the population of Endo and Mokoro continued to increase, but the annual percentage of increase was only 1.5%, which is probably below the annual natural increase for that period. In this period there also was a rather important internal redistribution of population although census boundary mistakes will be responsible for part of this picture.
In Endo the population already decreased during this period. Some more research is necessary to reconstruct what happened in Mokoro during this period.

Between 1969 and 1979 depopulation had become widespread. A 2% natural increase would have resulted in more than 35,000 people. There were only about 20,000 which means that more than 40% of the population must have left the area. In most areas the decrease was drastic, especially in Olot and Kaben.
In our view depopulation is an important factor and it could explain the population decrease in Endo-Mokoro between 1969 and 1979. But there are other possible explanations. In a report about irrigation furrows in Tot Division (J.Cappon, 1984), it is suggested that the 1979 census must have underestimated the population in Endo and especially in Mokoro very much. When the local elders were asked about the number of families using a furrow they may have overestimated that number, but, according to the report, that cannot explain the difference between census and survey results.
Recent local estimates are:

new Endo	11,000 people
new Mokoro	7,000 people
Embobut	6,000 people
Total	24,000 people

Between 1979 and 1984 population growth may have been considerable in the Tot area. Since the establishment of the KVDA farm in Tot many people expected 'things to change' and wanted to be there. Many people who had previously migrated to the highlands, but still retained their claims to clan land, sent at least one member of the household to be 'there' as soon as land adjudication, wage labour opportunities and other changes would begin (as everyone expected).

Already the 1982 relisting of the CBS enumeration area above Tot showed a population increase of 30%.

Table 5 : The Population of Endo-Mokoro in 1962, 1969 and 1979, Census Figures

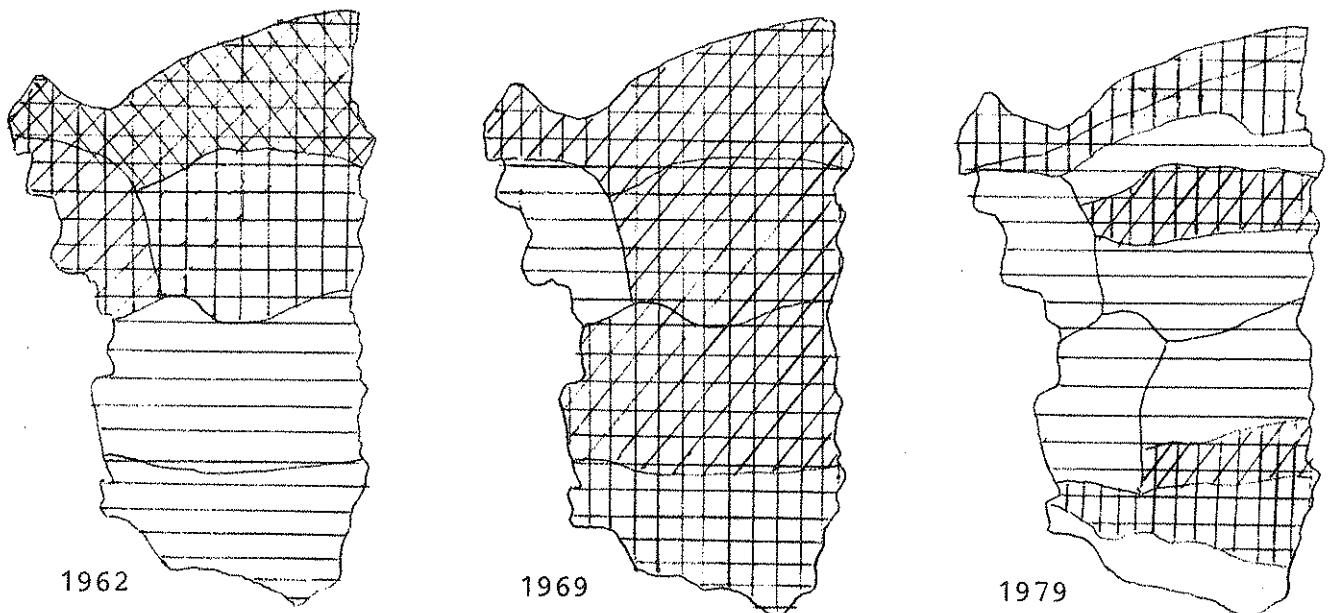
1962		1969		1962-69	1979		1969-79
Kaben	9471	Kaben	7483	-21%	Kaben	2028	
					Marich	1518	
					Barkeley	1059	
						(4605)	-38%
Embobut	4751	Embobut	6835	+44%	Kisiwei	2213	
					Sakat	2631	
						(4844)	-29%
Maron	4308	Maron	2317	-46%	(new)		
					Maron	2522	+9%
ENDO	18,530	ENDO	16,590	-10%	ENDO	11,971	-28%
Olot	5134	Olot	9115	+78%	Olot	1751	
					Korou	1832	
					Kotut	1621	
						(5204)	-43%
Enou	2514	Enou	3409	+36%	Kisoka	1202	
					Enou	1741	
						(2943)	-14%
MOKORO	7648	MOKORO	12,524	+64%	MOKORO	8147	-35%

For a semi-arid and sub-humid area the population density in Endo-Mokoro-Embobut is very high, thanks to irrigation. For Endo-Mokoro-Embobut as a whole there were 100 inh/km² in 1962, 112 in 1969 and due to depopulation 76 in 1979. In 1962 the area of Kaben and Maron had the highest densities: above 120 inh/km². In 1969 also the density in Olot was above 120 inh/km². In 1979 the highest densities could be found in Embobut and especially in Kisiwei (105) and the lowest densities in Enou, especially in Kisoka (45). Table 6 and Map 8 give some details.

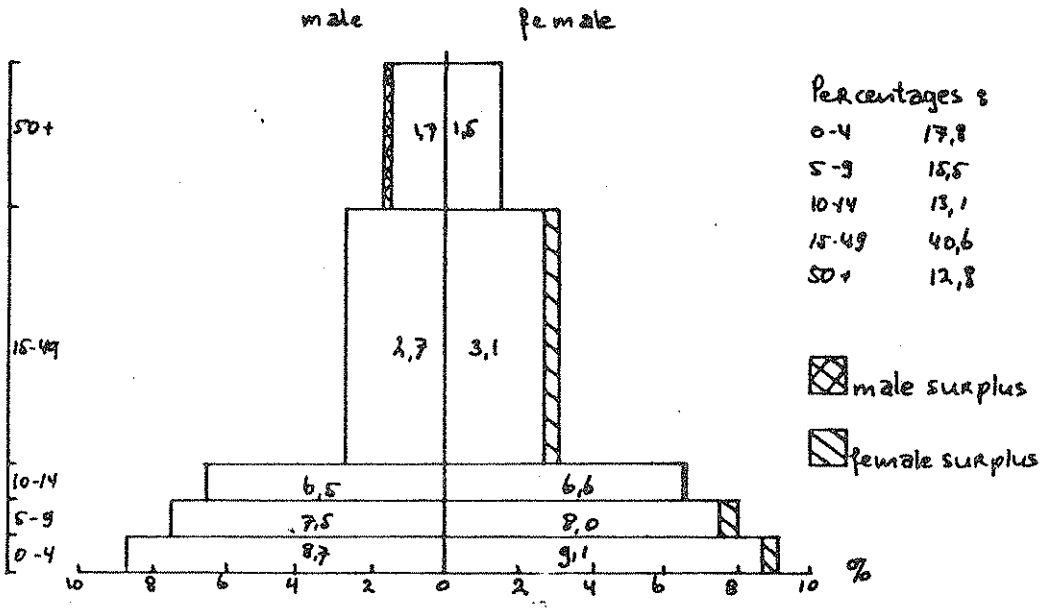
Table 6 : Population Densities 1962, 1969, 1979.

Sublocation	Km²	1962	1969	1979	
Kaben	58	163	128	79	(97, 84, 56 for Kaben, Marich, Barkeley)
Embobut	57	83	129	85	(105, 73 for Kisiwei, Sakat)
Maron	36	120	64	70	
Olot	70	73	130	74	(65, 68, 101 for Olot, Korou,Kotot)
Enou	45	56	76	65	(45, 97 for Kisoka,Enou)

Map 8 : Population Density Endo Location 1962, 1969 and 1979.



Graph 3 : Population pyramid Endo Location 1979



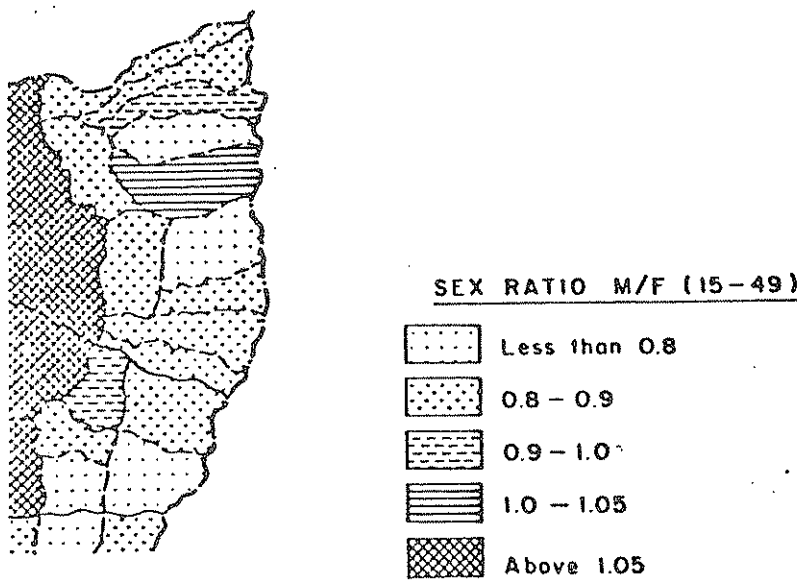
Source : Kenya Population Census 1979.

In the graph following this map the population Pyramid for 1979 is presented, showing a relatively young population (46% under 16) with more females than males in most age classes.

For part of the area the figures about the number of adult males and females suggest a strong female dominance, especially in Kisiwei, Olot, Korou and Enou. Only in Sakat, including Tot Centre, there are more adult males than adult females. In the areas with a strong female dominance many men are away, either because they live at another homestead most of the time, most probably somewhere in the Cherangani highlands, or because they are labour migrants or students in another district.

The Socio-Cultural profile for Elgeyo Marakwet (Kipkorir and Ssennyonga, 1984) states that in a survey area in Cherangani Location 11% of the men and 6% ofthe women came from Endo in 1981. And the writers add that some of the men still retain their original landholdings where a second wife or another relative acts as a guardian. Unfortunately we do not have figures concerning student or labour migration. But in all villages people report that young men do go and look for jobs elsewhere and that migrant money remittances are not unimportant.

Map 9 : Sex Ratio Endo-Mokoro 1979 Census.



3.2 A Socio-cultural Profile of Endo-Mokoro

Traditionally Marakwet country was divided into seven sections. The present location of Endo-Mokoro covers an area drawn from parts of two of these sections. In the past, the inhabitants of each section were recognized by outsiders on the basis of certain, section specific, cultural practices. At the present time these distinctions are no longer as important as they were because the traditional sections have long been superceded by the present administrative boundaries.

Villages and their organisation

Endo-Mokoro Location is divided up into a number of villages or kor. These villages are geographically and socially defined entities, whose boundaries are always delineated by physical features, such as streams and rocks. These boundaries are not always easy to see, and to the newcomer the whole escarpment can seem to be one great village. This is because village boundaries are contiguous: on either side of a dry stream bed, households 100 metres apart are in different villages, often with different allegiances and different interests. Among the valley Marakwet, each village contains an area of land on the escarpment side (lagam), a portion of land between the foot of the escarpment and the Kerio river (keu), and a portion of land on top of the escarpment (masop). This three-zone pattern of land use is typical of the valley ecology and means that the form of all the valley villages is essentially the same. In all parts of Marakwet the term kor (village) typically denotes both a residential area and an area of associated land from which its members gain their livelihood. The link between the land and the people who occupy it is very strong.

All villages are comprised of one or more patrilineal clan groups (aret). These groups trace descent through a common 'ancestor' and recognise themselves as belonging to a specific group represented by an animal, a bird or some other feature of the natural world. Within the village, each residential clan unit has its own particular area. The exact number of clans in each village varies, some villages may have two or three, while others may have only one. The actual number of clan groups in any

village is the result of historical accident, migration and changes in settlement pattern.

All residential clan groups are divided into lineages (kabor), whose members can trace their relationship to a common 'father'. The genealogical depth of both clans and lineages is no more than three or four generations. Thus, requests for genealogies usually produce only three generations of ancestors between the 'founding father' and the present day members of the lineage. This helps to sustain the immediacy of links with the past and with the founder of the clan, since no living man is ever more than four generations from the 'father' of his lineage or clan. It is either said that clans are divided into lineages because the 'founding father' had many sons or it is said that each lineage is descended from the sons of different wives.

Within the village each lineage has its designated area within the clan area, but it is not necessary the case that all members of the lineage will be resident there. This is particularly the case in villages where there is more than one residential clan group, because these groups are permitted to intermarry and men may choose to live near their wife's brothers rather than near their own brothers.

The village, the residential clan group and the lineage are all co-operative groups and decisions concerning matters of mutual interest are made by groups of male elders (kok).
A Kok is basically a group of men called together to discuss matters and settle disputes. The composition of the group depends entirely on the matter in hand. If a Kok is called together to settle marital or other lineage disputes then it will consist of all circumcised men of the lineage. If the matter is one of water rights or stock trespass, then all the circumcised men of the clan will be called. If it is a village matter, then all the men of the village will attend.

The Marakwet say that the kok expresses the strength of social relationships between men, and it symbolises the unity of the group. Prior to colonial times, the Marakwet had no chiefs.

There were, however, men called kiruwokin, who were orators of reknown, and whose advice and knowledge were respected in the kok. A man still gains much prestige if he talks well in kok and if his advice is seen to be sound. But, the ideal of Marakwet life is that all elders (boyot) are equal and none have authority over others. In the past, this ideal seems largely to have been the reality, although there were always men of prestige, whose personal qualities had allowed them to prosper in wealth and influence. Nowadays the ideal of equality is under considerable pressure from the alternative prestige structures which wage-employment and manufactured goods have created.

Households and Houses

All lineages are made up of a number of households. The size of lineages varies; some may contain as few as five households, and some as many as fifty. Each household consists of a man, his wife or wives, and their children, although many households also contain elderly relatives or young children who are living with the family temporarily. An individual household unit will normally occupy a single compound. Each individual compound (birir) consists of a levelled platform cut into the side of the escarpment, with a stone revetment (telek). The size and composition of compounds is variable, but they usually contain one or more houses, in addition to grain stores (kapchogo) and a goat house (kano). The Cherangani escarpment runs north-south and because the Marakwet insist that a house (go or ko) must never face out over the valley, all compounds have the same distinctive shape, with the houses facing each other across an open space, along a north-south axis.

In the past, in a compound of two houses, one house would have been for the man and the other for the woman. Nowadays, many families prefer to express this division as one house for cooking and the other for sleeping/entertaining. The traditional division of domestic space is beginning to break down now that more families prefer to live on the valley floor, and now that some can even afford to build square houses, with separate kitchens.

Marriage, Land, Labour and Animals

The Marakwet conceive of marriage as a joint project in which men and women work together to produce foodstuffs, maintain their herds and rear their children. A man is expected to provide land and livestock with which to support his family, and, in return, a woman is expected to contribute her agricultural and domestic labour, and to produce children. Through marriage men and women acquire rights in each other and in so doing they also acquire rights to land, livestock and children.

In Endo-Mokoro, land belongs in perpetuity to named clan groups, but individual men inherit usufruct and disposal rights over certain portions of the clan land from their fathers, and possibly from other male agnates. A man only gains full rights in land and livestock when he marries. Until that time such resources remain under the control of his father. Boys acquire their first animals through promises made during circumcision, and in this way a boy may acquire rights to one or two female goats. During the intervening five to eight years between circumcision and marriage, a man will try through various means - raiding, purchase, reward - to build up his herd. When a man marries, his father will normally tell him which animals he can expect to inherit. However, there is considerable variation in the way fathers distribute their land and stock, and it is always the father who decides when this will actually take place. Thus, while a man will usually be provided with one or two animals to make initial bridewealth payments, the point at which he receives his whole share of the inheritance will depend on his father.

As well as being allocated stock when he marries, a man will also acquire land, and although he may have been given a small (0,1 ha) shamba before his marriage, he will now receive enough to support an independent household.

On their marriage women also acquire rights to land and livestock, but these are usufruct and consumption rights which are invested through marriage, and which are not the same as the ownership rights possessed by men. A girl is first promised a goat during

Enou system

Kwenoi	Kwenoi, Kipkisoyi*
Kipkiriwon	Kipkisoyi*
Kakisegei	Kapkurong, Cheperyon, Cheber
Kaptul	Kaptul, Simat
Katemuko	Chesor***, Muruber
Karawe	"
Kapchepturukut	"
Kasang	"

There are 33 clans, 13 have at least one furrow for themselves. The others share furrows, either because the furrows were jointly constructed or because the clan was allowed to extend a furrow from another clan (Ssennyonga, 1981 p.102).

15 furrows are owned by one clan
6 furrows are shared by two clans
1 is shared by three clans and one by four
2 furrows are shared by six clans

The irrigated fields belong to the clan. Some are big, others are smaller (2-3 ha.). Inside a fence of thorny branches each man has one or more small plots, individually owned and inherited from father to son. Each man allots at least part of his plot to his wife.

Sometimes - already in the 1930s - a plot changes hands at the price of a few goats but the original owner always has the right to buy it back at the same price. The usual arrangement is for a big communal field to have the water for a certain number of days. Hennings writes (1951, p.207-208) : "In Endo.... a single field can keep the water for a week or so without bringing drought to another field.... In Mokoro the furrows give such a limited supply that the area to be watered has to be reduced to a minimum... (Here) we find the reductio ad absurdum of the system, namely plots which are no more than strips a few yards wide and sixty to one hundred yards long."
Not all the land which is used is cultivated by the owner. In Olot, for instance, out of 500 households 100 are landless and they have to beg land all the time. Here the irrigated plots are very small: together these households irrigated 30-40 ha from August 1985 to January 1986 (sorghum mainly).

circumcision, but few women ever receive this animal. On the whole, women cannot inherit stock, but they do acquire certain secondary rights in particular animals and certain usufruct rights in their husbands herd as a result of marriage.

The Endo perform a ceremony called bita. At this ceremony a woman is given secondary rights to a portion of her husband's herd. The animals so allocated and their progeny will ultimately be inherited by the women's sons. The decision of how many stock to allocate rests entirely with the husband. Some informants say that if the woman is the first or only wife, there will be considerable social pressure for a man to allocate as much as half the herd. This allocation does not represent an economic loss for the husband because these animals will continue to be part of his herd, and he may use them for exchange and ritual purposes, if his wife agrees. For her part, the woman cannot dispose of these animals without her husband's permission, and cannot dispose of them outside the domestic unit at all. These animals are not considered to be the woman's property and are held in trust for her sons and daughters-in-law.

A woman also acquires rights to land when she marries. This land is given to her by her husband and will consist of several plots in different parts of the clan area. In point of fact, each woman actually shares the cultivation of all the man's land with the man himself and with other wives, if there are any. But, each wife is expected to grow enough food to feed her own family on the land which is hers, and it is this land which will eventually be inherited by her sons. Although a woman's land is always spoken of as 'hers', she only has usufruct rights over the land itself and consumption rights over the produce of the land. A woman cannot dispose of her land. Women frequently retain rights, through their mothers, to use land in their natal village, and this is particularly important if a woman leaves her husband and has to return home. A woman's land cannot be taken from her, and it cannot be disposed of without her consent, but land, like livestock, is owned by men. A woman is really only a trustee and holds the land in trust for her sons and daughters-in-law.

Both men and women are engaged in agriculture: men clear, fence and irrigate the fields and may also do the heavy digging, while women dig, sow, weed and harvest the crops. However, inspite of this joint involvement, farming is seen as women's work, and women spend most of the day engaged in agricultural activities. This is in marked contrast to the men, whose agricultural involvement is restricted to certain periods in the production cycle. Although it is true that women's agricultural work load is also subject to some seasonal variation. Women are not only the producers of crops, but they also retain control over what they produce. A woman's granary is her own, and no one may go into it without her permission. The food she produces is used for feeding the family, and she controls its production, distribution and consumption. A man is, therefore, dependent on his wife as the main producer of the family's subsistence requirements and his use of any agricultural produce is constrained both by his dependence on his wife's labour, and by her control over distribution and consumption.

Men are dependent on women not only for their agricultural labour, but also for their domestic labour. Men need women not only to work their land, but also to run their household, gather wild vegetables,collect the firewood, carry the water, prepare their food, and feed their family. Adult men do not engage in domestic tasks, and although men can carry water and cook if necessity dictates, they must never remove ash from the fireplace, or grind flour. The responsibility for the running and maintenance of the household, combined with the demands of agricultural production, means that women have a heavy work load. This work load can become acute during times of crisis, childbirth or sickness, and women join together with their neighbours to co-operate during times of difficulty and during peak points in the agricultural cycle.

Co-operative groups based on residence and kinship are a notable feature of Marakwet society. Men join together in maintaining the water channels, in producing cash crops - mainly cotton and chili - and for building houses. Women co-operate for the purposes of childcare, and domestic and agricultural labour.

3.3 The Social Organization of Irrigation

The construction, cleaning, checking and repairing of the furrows as well as the actual irrigation work has always been the men's responsibility. In principle every man who belongs to a clan with water rights has the right and the duty to cooperate. When the water becomes scarce (in the Embobut system during dry years, in the other systems during most years) the water is distributed rather fairly, although some families have more 'rights' than others. The local elders operate this system of water distribution. When a furrow is in use by their clan, they gather regularly, in Mokoro in the dry season 3-4 times per week even. Farmers belonging to the clan can make their plea (a system called 'Kimwar'). In systems where the water supply is abundant the kok ı gathers less frequently (see Ssennyonga, 1981 p111).

Water distribution is managed in cycles. A cycle finishes when all families have irrigated their plots, and a new cycle will start. The clan elders decide on the order of water-use by each sub-clan. At the sub-clan level the distribution among families is arranged. The length of a cycle depends on the number of families and plots. A cycle can be as long as a month, while each plot receives water during only two hours. Other cycles are as short as one week with each plot receiving water during eight hours. Irrigation is continuous, 24 hours a day. In order to claim water a representative of the sub-clan has to be sent to the meeting where water distribution for the cycle is being discussed. To those who do not attend, no water will be alotted (ASAL Report, 1985).

In the Embobut system where water is not really a constraint, most clans have their own furrow. The few furrows with a shared ownership alternate from year to year. In the Embolot and Enou systems most furrows are used by various clans. A complicated system of rotational rights exists. There are three furrows which can only be used once in every four or even six years. But clans can have rights in more than one furrow. In the area around Chesongoch most farmers, however, manage to receive an irrigation supply for several hours at least once during a period of water stress in the main growing season each year (Critchley 1979, p.10).

For most farmers in most years this is enough to rescue the crop from withering. The information about clans and their furrow rights is presented in table 7. The information is from Soper, 1981.

Labour duties and water arrangements can be circumvented now and then. Those who do not assist in repair work are fined a goat. Those who face a water shortage when it is not or not yet their turn may purchase water from another farmer if this man is willing to sell his turn. In the 1930s the price for this arrangement was one goat for a day (Hennings, 1951 p.205) and that still is the price. E.g. in Enou a medium sized goat for one night's water (Soper, 1981 p.92). Sometimes clans as a whole try to purchase water rights from other clans, e.g. exchanging land rights, maintenance work or other labour for water rights. In other cases individual arrangements can be made (see Ssennyonga, 1981 p. 106).

Table 7 : Clans and furrow rights.

Clan	Furrow
Chesegon system	
Kapen	Kapen
Embobut system	
Marich	Marich
Kapterik	Kapterik
Shaban	Kapterik*, Kapsiren*, Shaban**
Kasagat	Kasagat
Kamariny	Kamariny, Kabarmwar*
Kabarmwar	Kabarmwar*
Kapsogom	Kapsogom
Kabarsumba	Kabarsumba
Kaptepoko	Kaptepoko
Kapsiren	Kapsiren*,Shaban**
Kapchepsum	Shaban**
Kapsyoi	Kapsyoi
Embolot system	
Kabioswa	Kiserowon*****, Cheletun*
Kapcheset	"
Kakulu	"
Kamogo	"
Kaupigen	"
Kabarkiro	" , Cheletun*
Kiptalum	Chebang'an, Sikot*****
Katyeng	Sikot*****
Kobil	"
Kakasorkor	"
Kapchesuk	"
Kabarkechar	"

*shared with one other clan
**with two others
***with three others
*****with five others

Almost every time outsiders comment upon the irrigation practices they are astounded by the contrast between the ingenuity of the construction work and the inefficiency of the water application. In the words of Critchley (1979 p.10):
"The application of water to fields is primitive and wasteful. Water is lost from breaches in the supply channels, erosion is caused by the rapid flow through sandy soil in the approaches to the fields, and in the fields it is common to see water boring through the middle of the plot (and out of it, heavy with eroded soil) while most areas await wetting. No previous preparation is made of furrows to direct, or walls to contain the water."

3.4 The Enumeration Area Listings of the CBS

In 1980 the Central Bureau of Statistics posted an enumerator in the area to monitor developments in Sakat, an area above Tot, in Endo Location. In that area all households were asked to give some information about the number of adults and children, the number of houses ('structures'), the occupation and job income, the number of acres and the main crop or livestock. In 1982 (December) a second listing was done with the same questions.

We cannot rely on these findings completely but they do give some useful information about this area close to Tot Centre.

In 1980 there were 103 households in the CBS cluster with 430 people, 46% of them adults. In 1982 the number of households had risen fast to 132. Also the number of 'structures' had risen from 140 to 200. In both years the number of female households was rather high, almost 30. In 1980 12 men and three women were living alone. Further there were 15 other households without children. The 73 households with adults and children had an average of 3.2 children. There were only two households in this area with more than six children.

In 1980 there were 9 households with a paid job, not related to agriculture . Two of them were working for the mission, the others for the government. Their average income was 630 Shs. per month. In 1982 there were ten employed men in the area, including two traders who were also farmers. Their average income was

was above 2,500 Shs per month but also the average income of the others was considerably higher: more than 1,100 Shs per month.

The agricultural information is doubtful. There were 94 cultivators in 1980, and a quarter said they cultivated '2 acres'; all the others said they cultivated '1 acre'. The total number of cultivators had increased from 94 in 1980 to 123 in 1982 and there were also slightly more cultivators saying they cultivated '2 acres'.

When asked what their principal crops and/or livestock were 19 cultivators in 1980 answered sorghum only, 16 cassava and sorghum, 15 cassava only, 12 sorghum and goats, and 9 cassava and goats. Only four farmers mentioned maize, only 10 bananas and only 2 cattle.
In 1982 35 farmers mentioned 'sorghum and millet' as their major crop, 28 sorghum only, 11 sorghum and cassava, and 8 cassava only. The number of maize farmers had risen to 7, there were 4 cattle owners and the number of farmers mentioning bananas as their major crop had fallen to only 2. (Both the maize and the cattle information might be an underestimation).

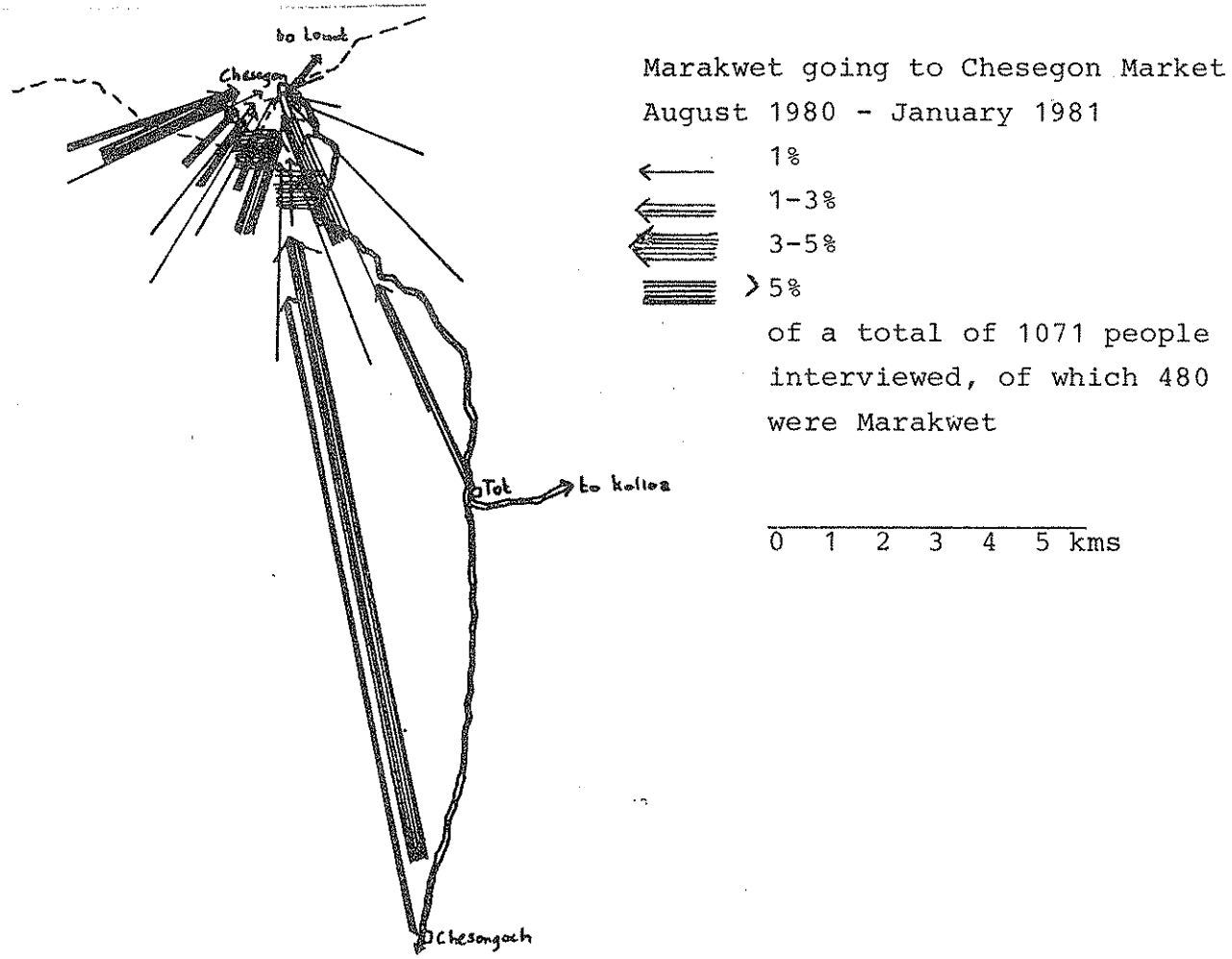
3.5 The Survey of Kurita in Chesegon

At the end of 1980 and the beginning of 1981 a Japanese research associate of the Institute for African Studies did a market survey at Chesegon Market just across the border with West Pokot District. His article (see 0, Sources) gives details on Endo too, a reason for us to include a paragraph about his findings as far as they relate to Endo.
In his market survey Kurita found that 39% of all the market traders at Chesegon were Marakwet, 60% women and 40% men. The Marakwet sold all the cassava, most of the metal goods, the sorghum, the bananas, the sugarcane, the pawpaws and the mangos which could be found on the market. They sold half of the maize and a third of the wooden tools and the beans. Only a very small part of the tobacco originated in Marakwet.

With the money earned, the Marakwet buy goods in the shops, which play a very important role in Chesegon, and they buy tobacco from the agricultural Pokot and milk from the pastoral Pokot.

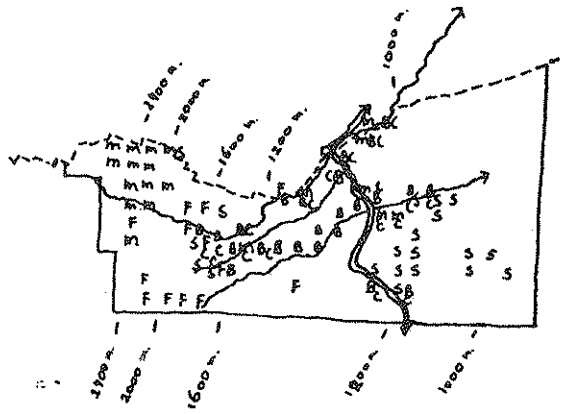
Although some of the Marakwet come from Tot or even from Chesongoch, most are coming from areas near Chesegon. See map 10.

Map 10 : Origin of buyers at Chesegon Market.



Kurita also did an agricultural survey in Kaben, in the north of Endo Location. He found that below 1000 m. only 2% of the land was used as fields, all for sorghum. Between 1000 and 1200 m. 33% of all land was under crops, along the irrigation canals: cassava and bananas are the major crops here as well as sorghum and even some maize. Between 1200 and 2000m. in the steep escarpment zone, 38% of the land was found to be cultivated, mainly with fingermillet and maize. On the slopes of the area above 2000 m. maize is the dominant crop; 55% of that land was used for maize cultivation. Map 11 gives the details.

Map 11 : Endo, Kaben area : field survey Kurita



0 1 2 3 4 5 kms
---Elgeyo Marakwet-W Pokot boundary
___study area Kurita 1980
m maize fields
f fingermillet fields
s sorghum fields
b banana fields
c cassava fields

Many people living at the lower zones do have a (maize) field in the higher areas. Unlike the neighbouring Pokot however, they possess very few animals. Thirty families interviewed near Chesegon (at about 1200 metres) only had a total of 60 cattle, 360 goats, 15 sheep and 150 fowls. Another interesting finding was that almost 20% of the interviewed married Marakwet men were married with a Pokot wife.

3.6 Household Economics in Sibou Village

In March 1983 Raymond Suter, one of our research assistants, interviewed 30 households in Sibou village above Tot, in a straight line from the former rest house up the escarpment. Information was gathered about jobs, income and expenditure mainly. Mostly (17 times) the wife of the head of the household was interviewed, in three cases a son and in ten cases the head himself. In 15 households the head was away (almost) permanently, working outside the area or living mostly with another wife.

Some Demographic Data

In the households surveyed there were 143 people at home (4.8 per household), out of which there were 21 visitors, most of them children from relatives. On the other hand 18 non-married children were living elsewhere.
Although the information is not very clear, it seems that most heads have only one wife and that there is an average age difference of about five years between man and wife. The wives were

coming from Endo in almost all the cases. The monogamy probably points at a strong church influence.

Out of 65 non-married children above five years old and at home, 45 were going to a primary school and 5 to a secondary school. This means that primary schooling is almost general, which is rather exceptional for the northern Kerio Valley, in 1982 (but no longer in 1986).

Jobs

Only in eleven households there was no income from a job. In 13 households the wives could rely upon a more or less stable source of income, either from the head himself (9x), from a son (2x) or from other relatives (2x). In six other households there was income from a casual job in or around Tot, especially since the arrival of the KVDA farm. Job income on such large scale is something very recent.

The labour migrants were working in various places: Kericho (picking tea), Nairobi (factory labourer), Nanyuki (air force), Kitale and Nakuru (clerk) and Baringo (teacher). Most incomes are above 8000 Shs per year but only a small part of it is remitted to the households in Sibou.

Other permanent jobs were in Elgeyo Marakwet itself: Iten and in the forests above Tot. Some heads who were without a job at the time of the interview still used savings from a former job as a forest guard or a teacher.

Other Income

There are various local income opportunities. Households who can afford it (mostly those with a job income) employ casuals for building huts (rate: 100 Shs and/or beer) or stone houses (rate: 300 Shs); for digging (120 Shs) or for weeding (beer). In our sample 15 households employed casuals in 1982. Thirteen of them paid money; in some cases in addition to the traditional payment of beer. In at least seven households there was money income from casual work. Compared to the 1981 situation, studied by H.Moore, this was a big change.

An important income opportunity for women is brewing and selling beer or liquor. At least eight households received money from brewing; from 40 to 600 Shs in 1982. But brewing beer is much more important within the Kin-network and mostly not monetarized.

Further there are possibilities to sell goats, milk, cassava, maize, hides and skins and cattle (if one has them and only in great need of cash). Although the survey may underestimate the money income generated, we only found a rather low agricultural cash income: for the 30 households interviewed together we only recorded a stated cash income of 6000 Shs out of agriculture in 1982.

Agriculture

All households were engaged in agriculture, most of them growing maize and/or sorghum, with fingermillet as a minor crop. They cultivate two or more plots, most of them irrigated. Only a few households cultivated plots in the highlands. Some more households had started cultivation near the Kerio River. Most farmers said that they cultivated between 1.5 and 2 acres (or 0.6-0.8 ha).

22 households had animals, but only seven had cattle. One of these households had 90 head, the others an average of five. The household with 90 cattle can be regarded as very rich in a traditional sense: with five wives, 90 cattle, 80 goats and 15 sheep. Money income however was rather low.

The cattle owners graze their animals along the Embobut River and near the Kerio River (4x), in Rimoi more south (1x) and in the highlands (2x). In 1978 the number of households with cattle was not much higher (nine) but together they had 200 head of cattle. Sixty of these animals were said to be stolen by cattle thieves since then and another 80 died from various diseases.

The milk production of the herds is very low. An average lactating cow produces less than 300 litres per year. Old people used to bleed their cattle now and then.

21 households had goats in March 1983, but only 14 per household on average. Before 1979-80, years with a disastrous goats disease 20 households had more than 1000 goats together, or an average of 50 per household with goats. Almost 500 were lost because of the disease and another 150 were stolen.

19 households owned hairsheep in 1983 with an average number of seven per household. Also here there were much more animals in 1978: almost 400.

The old custom of shared ownership is still practised. Twelve households said that part of their goats and some cattle were 'given' to friends and relatives,all in Endo, with a claim on economic assistance. In some households indeed some animals were received after the goat's disease 'from relatives'.

Expenditure Patterns

In our interviews we asked questions about the expenditure in 1982 on the following items: grains, milk and animal produce, other food and household needs (esp. sugar, salt, washing powder and soap, cooking fat and oil), clothing, energy (firewood, charcoal, kerosine), the house, other housing expenses (furniture, a radio), seeds, animals, schooling, relatives and casuals. Of course the answers must be interpreted with care and our only intention is to give an order of magnitude. But we must say that many respondents do very well remember their major expenses and we think that the picture presented below is rather reliable. We think it gives more information on the household economics than money income, first of all because of the difficulty to estimate the value of the remittances and second because of the fact that 'savings' by the head are considerable and interviewed wives do not have the information.

One thing is very clear. There is a very large difference between the households with access to a permanent job income and households without. The first group of thirteen households can be further subdivided into a group of three households with a lot of expenditure on a 'modern' house in 1982 and a group of ten

households without large housing expenses. We call these groups A and B respectively. Seventeen households are without major job incomes. One was too unreliable so we call this group of sixteen households C. Table 8 gives the expenditure details.

Table 8 : Expenditure details for three groups of households in Sibou, 1982

Item	group A (3)			group B (10)			group C (16)		
	nr.	total exp.	median exp.	nr.	total exp.	median exp.	nr.	total exp.	median exp.
grains	1	3000	0	8	4320	250	10	1620	100
milk/an.pr.	3	1680	600	7	2920	250	12	720	40
househ.needs	3	3400	1000	9	3920	250	11	900	40
clothing	3	5900	1000	7	2800	380	12	2090	100
energy	3	460	120	7	1310	90	1	150	0
house	3	24950	8000	6	1460	180	5	440	0
transport	2	1120	120	5	760	40	2	90	0
furniture	2	3300	300	6	6050	450	1	600	0
relatives	3	2200	200	8	3050	50	0	0	0
casuals	1	130	0	8	1720	160	1	100	0
school	3	4100	2000	3	320	0	11	900*	100
seeds	2	110	55	3	160	0	0	0	0
animals	1	2000	0	1	100	0	0	0	0
total	3	52350	13395	10	28890	2100	16	7610	380
people/hh	5.0			4.2			5.6		

* In two cases 3000 Shs for secondary school boarding still had to be paid.

The average expenditure in 1982 was more than 17,000 Shs for group A, that is almost 3,500 Shs per capita. This group was separated from the next group because of the exceptional expenditure on the house (for which savings from former years were used). But also the expenditure on other items was relatively high, especially on clothing and schooling.

In group B the average expenses are lower (average 2889 Shs, median 2100 Shs, per capita 690 Shs). But the group is rather diverse with an expenditure range in 1982 from 800 to 7200 Shs. It is striking that four-fifth of these households gave money to relatives and employed casuals, more than 15% of their expenditure is directed to other households in the surroundings. Probably part of the 'hidden' job income also goes to other households directly in the form of material presents.

This is embedded in a strong mutual assistance along kinship lines. The expenditure on furniture, particularly beds, is remarkably high in this group.

In group C the expenditure ranges from a very low 90 Shs to 1900 Shs. Per capita the expenditure is less than 100 Shs, a striking difference with the former two groups. Clothing is a major item, since it is no longer accepted to wear skins. Also grains are important. It is also interesting to note that none of these households gave money to needy relatives and that only one employed casuals.

Looking at all the households together it is obvious that the village is no longer self supporting in food. The large majority buys food, per average household about three 90-kilo bags of maize. in 1982, which was a good year agriculturally. Also (preserved) milk was a major item to buy. Most of the food items are coming from the highlands, either bought there directly or via shops in Tot. The shops also supply the household needs like soap and fat, which are bought almost generally. Also the large majority of the households buys clothing; half of the households spent money on their houses and on schooling. Minority items were energy, transport, furniture, money to relatives and casuals. Only a few households bought seeds or animals.

We have seen that expenditure levels differ a lot. Per capita they range from 1900 to 5000 Shs in group A, from 100 to 1900 Shs in group B and from 30 to 220 Shs in group C. It is interesting to look behind these figures. We will present seven cases which give a picture of the large diversity in household economics.

Case I : expenditure 25,000 Shs, five people at home , group A, extreme upper level.

A three generation household; a father of 48, a mother of 43, a son of 24 and his wife of 20, three other children of whom one at a secondary school (costs 2000 Shs) and one at a primary school. Both are not at home. Since a few years the son has a job in forest conservation in the highlands nearby (10,000 Shs per year). The household has cattle, goats and sheep and cultivates maize and fingermillet on a small irrigated plot. Part of the

harvest is given away and some food was sold. In 1982 also two head of cattle were sold. The household had to spend a considerable amount of money on food. In 1982 a house was built with an iron sheet roof, a major break with tradition. But furniture still was rather poor.

Case II : expenditure 7200 Shs, 6 people at home, group B, average level.

A female headed household in practice, with four children (one at school) and another girl of eight years old helping in the household. The husband has a permanent job far away and earns more than 10,000 Shs per year. The household cultivates in the highlands,assisted by casual labourers who are paid with food. They only have four goats left from a large former flock. Before 1979 they also had 30 head of cattle but these were all stolen. In 1979 their situation was critical and they received famine relief. Nowadays their situation is good. In addition to the job income, the wife sells cassava and bananas at market days. In 1982 they gave a lot of money to needy relatives and also spent money on a radio and a cupboard. Their furniture is very modern, but the house is still grass thatched with two rooms.

Case III : expenditure 820 Shs, 8 people at home, group B, extreme lower level.

A young couple with two small children of their own, also taking care of brothers and sisters, three of whom are still schooling. The man was recently employed as a forest worker; also money was available from a relative working with the army and from his mother after selling beer. The household grows maize in the highlands for some years already with high harvests. There are no animals. Since being employed the man paid casuals to build a stone house and he bought a bed and a radio. Also some relatives were assisted with 100 Shs. No money was spent on food since the household is self supporting.

Case IV : expenditure 900 Shs, 5 people at home, group C, upper level.

An aged couple with their daughter (five children are no longer at home), a former neighbour and a relative, both of them schooling. The household grows maize and millet and they own two cows and four sheep. Two children have jobs (teacher and policeman), but they cannot be regarded as a secure source of remittances. If they do send money it is used to buy food.

Case V : expenditure 620 Shs, 7 people, group C, average level but special case.

A mid life couple with one older child, three school age children and one young child. The head has four other wives, one of them living in the same village, the others living elsewhere, two even outside Elgeyo Marakwet District. The head was one of the richest cattle owners in the area before 1979 and he still is because he succeeded to rescue his stock by sending it to more southern parts of the Kerio Valley. He still owns 90 head of cattle, 80 goats and 15 sheep. Some milk is sold. An elder boy is an untrained teacher outside the district and sends some money now and then. The household cultivates a rather large area with millet and is self supporting. Clothing is the most important consumer item.

Case VI : expenditure 320 Shs, 4 people, group C, average level.

A young couple with two small children. They grow sorghum and they have goats and sheep. They do not buy grains. Money was earned by selling beer, selling two goats and doing casual work for relatives in Tot. They live in a grass thatched house with hardly any furniture.

Case VII : expenditure 90 Shs, 3 people at home, group C, extreme lower level.

An aged couple with six children who are all away. A girl of 15 years old takes care. They grow some sorghum, assisted by others and they no longer have any animals. The head has a lot of bee-hives and the honey is partly given away in exchange for services and food. The household does not spend any money on food and only small amounts on clothing and some household items. They have no furniture.

Looking at the seven cases as a whole we see that there are very large differences in levels of expenditure and in living conditions. It is clear that job remittances are of utmost importance, but it is also clear that there are a lot of possibilities between living from a paid job and no remittances at all. For many households new income and expenditure patterns are mixed with old traditions of mutual aid. It is also clear that food self sufficiency is a problem for the majority of the households now. As long as job income and mutual aid still work together, not many households face a situation of desperate poverty (although available cash can be very, very low). As soon as mutual aid traditions are breaking apart, poverty conditions will be very severe for households with no access to job income.

A final remark must be made about the survey village as such. Sibou may be regarded as one of the most integrated villages in Endo and Mokoro in terms of labour market participation and other sources of cash. In 3.8 and 3.9 we will see that the situation in Sibou village is very rosy compared to the villages described there.

3.7 Results of a Survey Among 104 Labourers at the KVDA Farm in Tot.

In 1981 the Kerio Valley Development Authority started an experimental irrigated farm in the area northeast of Tot. In1982 the

preparations were ready and a first group of 30 casual labourers were recruited. Later, especially in January 1983, a further 70 casual labourers joined the farm. Also a considerable number of local people volunteered for 'harambee labour', hoping to get a casual or even permanent job later.

Raymond Suter interviewed 104 KVDA labourers in March 1983. It was our intention to find details about their prior job history, about their local agricultural activities during 1982 and about their families. The results of the interviews also shed light upon the economy of the area, although we must bear in mind that the interviewed group probably represents medium to upper income and expenditure levels probably.

The Labourers and their Families.

All 104 interviewed persons were males. They were not all young people. In fact only 42% was between 20 and 30 years old and hardly anyone was under 20. There were even 18 people older than 40. Also it is untrue to say that most of the casual labourers were unmarried. To the contrary, 86% was married, 17 even had two wives. Together the labourers had 444 children,that is 5 per married man. Of the total group the average number of adults per household was 2.05 and the average number of children 4.3.

Places of birth and residence.

More than 80% of the labourers were born in Endo-Mokoro and another 10% in the more southern Mon Location. Only a few labourers were non-Marakwet. Some villages in Endo Mokoro are strongly represented: Sibou (16), Sagat (13), Kapsiren (7), and Kasegei (6). Although nobody was born in Tot itself 30 people were living in that centre now. All the others still lived in their villages.

Education

61 labourers had no formal education at all, 41 had attended primary school, 2 a secondary school and 1 a village polytechnic. Two others had attended a carpentry course.

The work at the KVDA farm and the earnings

The large majority, 80% of the workers, were 'general labourers', doing any work, like planting trees or vegetables, nursing the young plants, digging canals and terracing. There were also two clerks, four watchmen, three drivers and one tractor conductor, three supervisors in the field, five carpenters and five construction workers. All the casuals earned 10 Shs per day or between 200 and 260 Shs per month. There were three permanent labourers earning 1205, 1110 and 885 Shs respectively.

Prior job experiences

Questions about the prior job experiences were the most important ones of the survey. From the old records we knew that the Marakwet of Endo-Mokoro had been integrated in the labour market as casual farm labourers in Uasin Gishu and Trans Nzoia Districts in colonial times (although not on a large scale) and we wanted to know how important labour market integration was in 1982-83.
We were surprised when KVDA officials told us that one of the aims of the farm in Tot was to get the valley Marakwet accustomed to paid labour and to teach them job discipline. This idea must have been based upon the opinion that the Marakwet still were isolated subsistence farmers who had to be dragged into modern society.

The interviews tell us that this idea is completely false. The large majority of the interviewed labourers had prior job experience. Out of 83 people who had a paid job once, 48 even had more than one job before. The majority of the 175 jobs mentioned however lasted for a few months only. Less than 10% of the prior jobs lasted for more than a full year. Also the job period as a whole is short compared to the number of years available. If we take 12 years of age as a possible start of a job carreer (for nine of the interviewed labourers it started even before they were twelve years old) and then compare the number of potential job years with the years in which there actually was income from a job (although maybe only for a few months) we arrive at the following findings. Including the work period with the KVDA only 2% of the labourers worked more than 50% of their potential

productive years and 14% between 30 and 50%. These people can be regarded as relatively well integrated in the labour market. For the other 84% this cannot be said: 22% worked less than 10%, 40% between 10 and 20% and 22% between 20 and 30% of their potential productive years in paid jobs.

If we reconstruct the life histories of the interviewed labourers we can find the periods when more than 15% of the available workers (that is: older than 12 years) indeed had a job. These periods were 1958-59, 1966-68, and 1982-83 (of course). Also there were years in which very few people had a paid job (less than 5%) 1964, 1972, 1975. Also 1980 was a year with a sudden drop in labour market participation. In all the non-mentioned years (after 1950) the labour market participation of this particular group of people was between 5 and 15% of the available men.

Type of prior job and income

What type of job were people doing and what income did they earn? Let us look at the peak periods first.
In 1958-59 33 people of our interviewed group were older than 12 years. Nine of them indeed had a job during this period, six of them labour migrants outside the district, doing farm work at the 'white' farms in Uasin Gishu and Trans Nzoia and earning between 20 and 60 Shs per month (average 36 Shs). Three others were working at Kapsowar AIC Mission in highland Marakwet.

In 1966-68 80 people could have had a job. Twenty indeed had, three of them in Elgeyo Marakwet itself (one in Tot: the bridge). The other 17 men worked at large maize farms around Eldoret (children 9-15 Shs per month, adults 35-50 Shs), at wattle tree estates (60-80 Shs) or as livestock herders near Kitale (45-75 Shs). The average income was 75 Shs per month if we include three people with incomes above 200 Shs per month.

In 1979 labour market participation was also rather large, reaching 20% of the available men. But the job situation was completely different. Out of 20 people (with 24 jobs mentioned in 1979) 15 jobs were in Elgeyo Marakwet itself and two in West Pokot. Jobs outside the districts were cutting wattle trees in

Uasin Gishu (400 Shs), watchmen in Nakuru and Kitale (200-500 Shs), farm supervisor in Kitale (359 Shs) and building bridges (600 Shs). One person was a self employed charcoal dealer in Kipkabus (250 Shs).

In Elgeyo Marakwet in 1979 eleven out of the fifteen jobs were in Endo or Mokoro itself: building the bridge (4x, 300-600 Shs), improving furrows (2x, 250 Shs), building a house (360 Shs) or paid agricultural work (220 Shs).

Comparing these three periods it becomes clear that agricultural jobs no longer dominate the paid jobs as was the case in the 1950s; that local jobs have become important and that incomes had risen considerably (approx. from 35 Shs in 1959 via 75 Shs in 1967 to 290 Shs in 1979. Of course one must take into account that the level of inflation has been rather high since 1972, at least 300% in the 1969-1979 period.

These results ask for a more systematic approach of the changes in type of job, in location and in income. To avoid a long discourse we will present the results in table 9 and let it speak for itself.

Table 9: Prior jobs, 1969-1982

	1969-73	1974-78	1978-82
nr of people above 12	90	103	104
nr of people above 18	65	87	102
nr of people with a job	8	9	13*
%age of people with a job (of 12+)	9%	9%	13%
nr of jobs mentioned per year	8	9	15
jobs in Endo/Mokoro	18%	39%	33%
other jobs in Elg. Mar.	15%	16%	16%
jobs outside Elg. Mar.	67%	45%	52%
av. earnings per month Kshs	145	213	339
type of job: agricultural**	50%	35%	33%
building***	5%	22%	29%
other****	45%	43%	38%

* Endo and Mokoro
** casual weeding, harvesting, cutting wattle trees, gardening, farm supervisor, cattle herding, irrigation furrows
*** building houses, schools, churches, mission, roads, bridges; maintenance of roads
**** watchmen, factory work, carpentry work, office work, barkeeping, carpentry work, sewing, gold digging.

Labour migrant experiences

52% of the interviewed labourers did have labour experiences outside Elgeyo Marakwet, the large majority in Uasin Gishu and/or Trans Nzoia. Only six people had job experiences elsewhere in Kenya; three in Kericho (picking tea), two in Nakuru and one in Thika. The majority of these jobs were related to agriculture and to security (watchman).

In the year directly before their KVDA job only nine labourers reported a job. All the others had stayed home and worked at their farm, most of them for more than two years already.

Local labour

Recently the local labour opportunities had risen considerably. Most of the new jobs were related to the government (road, bridge, government houses, school, irrigation furrows, extension plot, census enumerator, surveyor of lands) and to the mission (building, agricultural plot). Compared with jobs outside the district the average local earnings are not lower and people clearly prefer to work in their home areas. Most people regard the casual wages of 10 Shs a day which KVDA paid as low (55 labourers had earned more than 200 Shs per month before, 35 of them even more than 300 Shs). They hope to get a better paid position as a permanent labourer later. This hope and the opportunity to be at home makes them accept the low wages for the time being.

The people without prior job experience

Twenty-one labourers had no job experiences before. The majority was below 30 years of age and relatively many had no education (76% in contrast to 59% for the group as a whole).
For these people KVDA's claim to offer labour to local people who had none before holds true. But it is only 20% of the labourers.

The labour milieu

Having paid jobs is almost exclusively a male affair. None of the labourers had a wife, a mother or sister with a paid job during

the time of the interview. But twelve labourers had brothers with a job and nine brothers-in-law were working. 90% of the labourers said that their father never had a paid job. The eleven fathers who had a job, had it before 1950 in five cases and after 1960 in the other six.
We asked the labourers to give us the number of people from their village with a paid job elsewhere and their places of work. By combining the information from the people coming from the same village we can try to estimate the extent of labour migration in the beginning of 1983.

In Endo we may estimate the number of adult males between 1700 and 2200. 55 of them were working with the KVDA; there were more than 50 teachers and another 20 working for the government. About 25 people had a job in a shop, teahouse or bar. From the interviewed labourers we received information about at least 90 people with a job elsewhere, most of them in Uasin Gishu, but also in Kitale, Nakuru, Nairobi, Mombasa and in Mandera. We may conclude that in 1983 above 10% of the male adult population had a paid job, at least 35% of them outside the location.

In Mokoro the number of adult males may be a bit higher. 22 are working at the KVDA farm, more than 50 people work as teachers, and another 20 in various jobs with the government, in the mission or in shops. The labourers gave information about at least 80 people working elsewhere, with the same geographical pattern. Total male labour participation in Mokoro thus may be a bit lower compared to Endo, maybe slightly less than 10%.

In 1985 the Chief of Mokoro informed us, that according to him, only 30 families in Mokoro had relatives working elsewhere, who might be seen as 'labour migrants'. Not all of them send or bring money to the valley, though.

The information about jobs was about the situation during the beginning of 1983. It is very probable that a considerable number of men who stayed at home during that time did have prior job experiences, many even outside the district. If all people with a job (approx. 400) spend 200 Shs for their Endo-Mokoro households per month (the group B in Sibou village of Chapter 3.6

spent 230 Shs per month in 1982) the total job expenditure in Endo and Mokoro is in the range of one million Shs per year. Because there is not much other cash income, the per capita expenditure level in Endo-Mokoro will be a very low 50 Shs only. The Sibou village of 3.6 indeed is relatively well off and this can also be said about a few other villages with a relatively high labour market participation as reported by the labourers: Kasagat and Kapsiren and probably also Kaben and Marich in Endo and Kabarkiro, Kaakisegi and Katemuge in Mokoro.

The labourers as farmers

With the exception of one labourer all households grew crops in 1982. The average farm will be close to one hectare, with an average of 2.3 plots of which 1.9 plots were irrigated. There were 20 labourers who only cultivated one plot.

Fingermillet still is the most common crop: almost 80% of the farmers cultivated this crop on plots of half a hectare. Many times there is mixed cropping with the other two staple crops, maize and sorghum. Despite the fact that the fingermillet harvest was good in 1982 (with an average of five bags per farmer) 22 farmers reported a crop failure.

Sorghum is cultivated by 35% of the farmers with the same average hectarage and yield, but with less crop failures.

Maize cultivation is practised by almost 70% of the labourers and farmers, with almost six bags per farmer from an average maize area of 0.6 ha. But also here many farmers (21) reported a crop failure. Twelve interviewed persons had plots in the highlands and most of these were used for maize.

Smaller number of people cultivated cassava (29), bananas (9), cotton (4), sweet potatoes (3), groundnuts (3) and beans or peas (3).

An average farmer reported a harvest of 10 bags of grains. If we value the 1982 harvest with the official prices (which were high for sorghum and millet) an average farmer had a subsistence value of approx. 3000 Shs.

To get this value the total group of farmers invested 7,500 Shs: 56 households bought agricultural implements (average 75 Shs), 25 bought seed (average 50 Shs) and 19 hired casuals (average 100 Shs).

Livestock

Most labourers said they had animals: 60 had goats (on average 8) 41 had sheep (on average 5) and 18 had cattle (one claimed to have 70 cattle, the others an average of 6). Eight respondents said that they had bought animals in 1982 (average 280 Shs). 15 labourers said that they had milk from their herd, in the rainy season a daily average of 1.5 litres and in the dry season 0.8 litres from the herd as a whole (6 cattle) per household. This is low, even for semi-arid areas.

Farmwork and expected changes

90% of the labourers did some farm work at home in 1982. The majority mentioned three activities: planting of crops (80%, mostly maize), fencing of the plots (80%) and preparing of the land (70%). These activities can still be regarded as men's work. A minority of the men also mentioned that they irrigated the land themselves (30%), kept bees (20%) and assisted in harvesting the crops (20%). A further 10% mentioned digging and repair of canals for irrigation. Almost no men mentioned weeding, bird-scaring and rearing of goats. But also herding cattle was mentioned only a few times by those having cattle. Mostly this was done by children.

55% of the labourers did not expect any changes in the burden of farm work at home, because of their absence during the job with the KVDA. 30% of the labourers expected that the work at home would become easier and only 15% expected the work load to increase, either for their wives or for casuals.

When asked what they were going to do when there would appear to be more farm work during their absence, 41 people had a clear opinion: 16 said they expected their wives to work harder, another 16 would hire casuals and 4 would ask relatives for (unpaid) help.

Only 5 labourers said they would cultivate less acres in that case.

Cash income in 1982 in the labourer's households

37 labourers already worked with KVDA in 1982, most of them from November onwards. Together they earned approx. 20,000 Shs of KVDA money. In addition to this, three permanent labourers earned 30,000 Shs with KVDA. Another full time job brought 13,000 Shs to the household of a labourer (here a father earned this money, not the labourer himself). In 18 households there was income from casual work or local contracts (23,000 Shs as a whole) and almost 8,000 Shs were received in cash from a friend and relatives by 59 households. One can see that in 1982 a total of almost 100,000 Shs was earned by the labourer's households from jobs and relatives. That is an average income of 1000 Shs per household, half of which was earned at the KVDA farm.

Compared with the job income the cash income from agricultural sales is very low. The total group of labourer's households sold for less than 13,000 Shs of agricultural produce, almost everything in the local market places. Also it is evident that only a minority of the households participate. Most important is the selling of livestock (4000 Shs, 12 hh), followed by the sale of bananas (3000 Shs, 18 hh) and cassava (2500 Shs, 26 hh). Also income from brewing beer is important (1500 Shs, 15 hh). Minor sources of income are the sale of hides and skins, of milk, of honey and of fruits.It is not clear however, if the labourers are completely informed about their wive's income.

Expenditure in 1982

We tried to get an estimate of the household expenses in 1982 by asking detailed questions about the expenditure on various consumer items. We have estimated the income in 1982 at approx. 110,000 Shs. Total expenses which were reported were about 140,000 Shs (if we leave out three households with clearly wrong answers). In table 10 we will give information of the number of households spending money on a particular item, the total reported expenditure (rounded) and the expenditure per average household spending money on a particular item. Some expenditure items may be a bit overestimated.

Table 10 : KVDA labourers : their expenditure in 1982

Item	Number of households (n=104)	Amount of money (rounded)
maize	73	14,000
meat	44	9,000
milk	51	9,000
kimbo	32	4,000
other food	7	500
other hh needs	46	6,500
clothes	85	26,000
house	37	15,000
transport	45	8,500
medicine	83	11,500
school	46	28,500
harambee	59	5,500
to relatives	32	5,000

An average household spent 20% on schooling (or was supposed to do so; a lot of it may not have been paid in practice), 18% on clothes, 8% on medicine (modern and traditional, human and veterinary) and 4% on harambee. These are all items that are clearly related to government initiatives mostly and are relatively recent items. Together they form 50% of the total expenditure. Another recent item, the house, gets 11% from an average household. Almost 30% of total expenditure, or more than 350 Shs per average household was spent on various food items. Three quarters of the households bought maize and half of the households animal produce.

If the labourers indeed succeeded in getting a 'permanent' casual job at the KVDA farm, they would earn more than 2,500 Shs in 1983 (and later). That is 2.5 times their expenditure levels in 1982. If they continue their farm work the labourer's households will probably have access to quite a lot of additional money. One can expect that improvements at the house, furniture and radios, new clothes and payment of school obligations will be the major items. But also it can be expected that a lot of money will be given to relatives, either directly or in exchange of labour services (farm work and building). As in other parts of Kenya which are isolated from the major markets for agricultural produce it is doubtful whether there will be done any investments

in agricultural production, with the exception of seeds, casuals, minor implements and animals (as long as these are not stolen). With a sound development programme, part of the 'surplus money' might be attracted to rural or even agricultural improvements in Endo and Mokoro.

Rural improvement wanted most

Asked what the government should do to improve living conditions in the area, most labourers were not thinking about agriculture, but about additional job opportunities. For a large minority of the labourers, irrigation improvements and increased agricultural extension (especially geared towards food crops) were a major government task. It is remarkable that only few labourers mentioned more schools or better roads or dispensaries.

3.8 Some Observations Regarding the Situation in 1984 and 1985

1984 was a year with a severe drought in the higher parts of the location and in the highlands in general. In lower Endo there was only little irrigation water and the harvests were meagre, only approx. 500 kg. per ha. Relatives and friends from all over came to this area with at least some harvest, to be assisted. In lower Mokoro there was no harvest at all. In Mokoro a total of 4400 90 kg bags of maize was received as famine relief (2800 government, 500 World Vision, 1100 Catholic Relief Services) to feed a population of at least 8,000 people for 17 months (Febr 1984-Aug 1985). That is 50 kgs per capita, about 18% of their food requirements in these seven months.

In June 1984 the Roman Catholic Church started to supply food regularly, brought with a lorry from Eldoret. First the food had to be paid. Lateron it was free. In January 1985 they supplied a top amount of 13,700 kg of food given out in Mokoro. Also Endo received a bumper amount of 24,700 kg in one month. In February 1985 World Vision gave out a lot of maize and also beans and dried milk in Mokoro. Thereafter the Roman Catholic Church stopped gradually and went on with food for work, paid in food but sometimes also in money. The valley road and the Sambalot road were improved, a school and the Church in Chesongoch were

built. The workers stayed on for one or two weeks at a time and then others got a chance to do some work to earn food or money. In March 1985 the Government gave famine relief (also in other months?).

In 1985 the situation was gradually improving. The August harvest was not too bad. In Olot Sublocation - as an example - 500 families cultivated 120 ha of fingermillet during the rainy season and had a harvest of approx. 4,000 bags. The dry season sorghum crop gave approx. 1500 bags from 40 ha of irrigated land. The people also had cassava, sweet potatoes and bananas and their herds and goats were healthy again and increasing in number.

3.9 The 1984 crisis in Kasang and Kacheturgut villages and the recovery afterwards

In the period April to July 1986 all households in the two villages Kasang and Kacheturgut have been interviewed. These two villages are located in Mokoro location in the lagam a bit south and upwards the escarpment from Chesongoch (see Map 1). Interviews have been held here for two reasons. First to get an impression of the effects of the very dry year 1984, in which also most goats died of a disease. Second the villages described in §3.4 and §3.6 give a quite prosperous impression of the area. The villages Kasang and Kacheturgut, which have always been rather poor, were chosen to show the reverse side of the medall. Their main problem was and is, water. Rivers in this more southern part of the area are further apart and contain less water and consequently irrigation is more or less marginal.

According to the oral history of both villages their forefathers originated in Egypt and came via Sudan and Uganda to Western Kenya. The founding father of Kasang village came through Mount Tiati from where he fled to the present place. By changing his shoes he is said to have outwitted his pursuers. He bought rights from a nearby village community to use water once every seven years and on water from Kipkuruan (Kipkiriwon) village once every four years, the latter with goats which filled one hut". This water was needed badly as Kasang village has a long-time history of dry barren land. These water rights are still valid nowadays.

From the interviews it is clear that Kacheturgut village was founded by Bartonyo, the father of Cheturgut. He asked permission from Ki(a)pchemon to settle in the area. Because of his 'barning magic methods of driving wild birds away with a whistle horn", birds which were destroying people's fields, he was accepted and could settle in the area. He bought a right to use Enou water in the evenings. That is why Kacheturgut people still have this right of water.

101 households have been interviewed, of which 39 in Kasang and 62 in Kacheturgut. In 1986 there were 79 adults and 95 children in Kasang. Most households had one husband and one wife, there were three households with a female head and four with a second wife; besides there were a number of visitors. Of the 95 children 34 were under six, 49 between six and seventeen of which 41 were schooling and twelve were 18 or older of which eight were still schooling.

Kacheturgut had 129 adults and 173 children. Most households had one husband and one wife but about four households were without a female head, there were five second wifes; besides there were a number of visitors. 56 children were under six, 103 were between six and seventeen of which 88 were schooling, and 14 were 18 or more of which seven were still schooling. The percentage of schooling of the 6-17 group in the two villages (85%) is a bit lower than the average for Mokoro but the number of persons of 18 and above still schooling is quite high.

In Kasang and Kacheturgut millet is the main crop, also some maize (especially in Kasang) and sorghum are cultivated. Most households have more than one plot. In Kasang each household has on average two and a half plot of about one and a half to two acres. In Kacheturgut the plots are usually a bit larger, almost two acres, but there they cultivate on average two plots per household. The yields are extremely low. For 1985, a rather but not extremely bad year, we estimated 100 kg. of dried grain per hectare!

Irrigation in these villages is less important compared to the rest of the location. In Kasang only 6 out of 39 households irrigated their fields in 1984, one, two or three times. In 1985 none of the families irrigated their fields. In 1986 the people had water rights again. In Kacheturgut many more families

have water rights. In both 1984 and 1985 29 out of 62 families mention that they had irrigated their land one to three times. 23 families did not answer this question so it is not clear if they irrigated or not.

Drought 1984 and afterwards

During the beginning of 1984 it looked as if it was going to rain heavily that year. By late March and early April all fields had been cleared, and prepared and people planted whatever preserved seeds they had. The weather turned out to be a small "drop-drop of rain". During the middle of April drought became dominant. In the valley hardly any food was left as the harvest of 1983 had been rather bad as well. In the highlands the stores were still full as the 1983/84 harvest had been good there.
In both Kasang and Kacheturgut only four households harvested one to three sacks of about 8 kg. dried millet grains. One household had a highland maize plot, which produced 20 90kg. bags of maize. All the other households produced nothing at all.
In Kasang 31 out of 39 families bought food in 1984. Most families received relief food or food from others. In Kacheturgut 59 out of 62 families bought food in 1984. In 1985 almost all families bought food before the harvest, but after the harvest very few did. We did not ask if they bought food before the harvest in 1986, but this is very likely. In 1985 the production of grains was better than in 1984, but still far from being enough to stay alive. Table 11 shows the amount of calories needed and the production of grains in the two villages.

In Kasang 79 adults and 95 children makes a total of 174 persons. In Kacheturgut 129 adults and 173 children makes a total of 302 persons. We assume that an average person needs 2100 Kcal per day and so 766,500 Kcal per year.
Further assumptions are:

millet contains 2800 Kcal in 1 kg and a sack is about 8 kg dried grain
maize " 3100 " " " " " " " " " 20 " " "
sorghum " 3000 " " " " " " " " " 15 " " " .

Table 11 Production of Kcal in Kasang and Kacheturgut in 1985

Kasang	kg	Kcal	Kacheturgut	kg	Kcal
millet	3792	10,617,600	millet	7512	21,033,600
maize	3200	9,920,000	maize	1100	3,410,000
sorghum	435	1,305,000	sorghum	270	810,000
		25,253,600			25,253,600

The above means that in 1985 in Kasang enough food was produced to feed 29 persons and in Kacheturgut to feed 33 persons. This is 17% of the food requirements of Kasang village and 11% of those of Kacheturgut!

Usually part of the food requirements are supplied by milk and meat of goats or by selling goats to buy grains, and less so by eating the meat of cattle and sheep or by selling them. To worsen the situation in 1984/85 even further a goat's disease in 1984 killed almost all goats in a very short time. People could not eat all the food which was suddenly available then. Also they were sometimes afraid to eat the meat of the diseased animals or part of it. In 1984 there were about 750 goats in Kasang of which 727 died. The figures for Kacheturgut were 2250 goats of which 2000 died. Less sheep died. In 1984 in Kasang 42 out of 85 sheep died and in Kacheturgut 140 (or a bit more) out of 494 died. In 1984 the Kasang households had on average 21 shoats, by early 1986 they had only seven shoats. In Kacheturgut the households had 44 shoats on average and only 4 in 1986. By November 1986 this number had probably increased considerably. Goats have a very fast multiplication rate and the rains were quite good that year.

However, the situation in 1984 was very bad indeed. No crops whatsoever. No shoats to be sold or eaten. Other sources of income or food were needed desperately. How did the people survive? First of all there were a few people in the interviewed households with permanent jobs. The difference between a permanent job or permanent income and casual jobs is not always very clear, but the following figures give an impression of the importance of regular, paid jobs and of casual jobs. In many households they are an important way to increase family income and food supply. Often the casual jobs are only jobs for one week or to gather the money for one bag of maize.

Table 12 Paid jobs and casual jobs

Place	Kasang		Kacheturgut	
Year	1984	1985	1984	1985
Paid job	7	5	8	9
Casual job	22	15	35	30
Total	29	20	43	39

In both villages in the year with the worst situation, 1984, the number of casual jobs is the highest.
Sale of goods is another way to increase income:

	Kasang	Kacheturgut
Sale of beer or liquor	16	24
" " hides or skins	1	6
" " honey	1	1
" " shoats	7	30
" " cattle	0	1

The numbers indicate the number of households involved in the above mentioned activities.

In 1984 no one sold crops. In 1985 there was one farmer with a plot of maize in the highlands who sold maize for 5000 shs., one farmer who sold cotton for 112 shs. and one who sold maize for 110 shs..

Almost all households increased their food supply with wild vegetables, wild fruit and some, mainly in Kasang, with honey. When possible goats and cattle are milked and cattle as well as small stock is sometimes bleeded.

In 1984/85 the food situation in the area was so bad that famine relief was given by various organizations. From the interviews it is not clear how much food is received as famine relief and from which organizations. Some people got famine relief from more than one organization.

Table 13 Famine relief

Place	Kasang		Kacheturgut	
Year	1984	1985	1984	1985
World Vision	23	19	34	37
Government of Kenya	12	8	22	17
Roman Catholic Mission	13	11	14	22
CCF	0	1	1	3
Not clear from whom	0	5	0	0
Total	48	44	71	79
Without any help	8	13	11	13

Even people with jobs regularly get famine relief. Apparently they are still dependent on their agriculture to stay alive.

We conclude with some data on ceremonies. These are mainly marriage ceremonies in which a bride from another village comes to live with a husband in Kasang or Kacheturgut. Most of the other ceremonies mentioned are namings or blessings. The bride price is usually paid in shillings or bags or tins of grain, sometimes in honey, but livestock was never mentioned which is a surprising change from the past. In 1984 only one marriage took place and money spent then was only Kshs. 280. In 1985 four ceremonies were held with an average expenditure of shs. 440. In the years before, more ceremonies were held than in 1984 and much more was spent than in 1984/85. 1986 apparently makes up for the years 1984/85. The amounts spent increased again and the number of ceremonies was much higher than in any other year, although the interviews were held from April to July, so a large part of the year was still to come (see Table 14).

Table 14 Ceremonies

Period/Year	Number of ceremonies	Average amount spent per ceremony
1981-83	14	2000 Kshs.
1984	1	280 "
1985	4	440 "
1986	10	1210 "

4 ECONOMIC DEVELOPMENT

4.1 Precolonial

The Marakwet irrigation system indicates occupation of at least several centuries before Colonial rule. The Marakwet do not claim to be the inventors of the irrigation. When they arrived in the area (coming from the North) there already existed one or two irrigation furrows derived from the Embobut River, probably the Kabarsumba and maybe also the Upper Kapsyoi Furrow (see map 7).

Various Endo clans started to construct their own furrows in addition to the original ones and later (?) the Mokoro clans followed. Soper (1981, p.78) suggests a certain sequence in the construction of the furrows: Kabarsumba-Kaptepoko-Kapsogom for the lower northern furrows, Kamariny-Kabarmwar-Kasukut for the upper northern furrows and Shaban-Lower Kapsyoi south of the Embobut River.

The Endo clans probably were joined by a group of people coming from Kiptaberr/Cherangany, maybe descendants from the people who originally had used the escarpment and the valley as part of their hunting and gathering activities (Sengwer or Terng'eny, the ones coming down called Talai).(*)

The various small groups settling on the escarpment and gradually creating their own furrow and cultivation system settled on the steep escarpment side for good reasons. The literature gives a variety of these reasons:

- it is close to water all year round
- it is free from mosquitos and cooler compared to the valley
- defence possibilities are better: raiders from the valley and from the highlands have a difficult job reaching the homes, stores and animal enclosures.

(*) Political Record Book, especially the parts about 'Endo History' (about 1928) and 'Sengwer History' (about 1927). About the early history of the furrows especially see Soper.

- the (few) cattle which were herded in the highlands nearby were close by and when they had to be brought to the valley (especially to use salt licks there) the village was a convenient rest place.
- settlement in the valley would have reduced the available land for cultivation.

In the pre-colonial times all the ecological zones were already used. The highlands (masop), with their dense forests, were used for hunting and gathering, for herbal plants and for building materials. On the edge of the forest the Marakwet grazed the few cattle they had. The escarpment (or lagam) was the domestic zone and was used for some millet cultivation near the huts. The granaries were there as well, and also the goats enclosures. The upper part of the valley floor, (keu), was used for irrigated agriculture, with communal fields of millet, sorghum (twice a year) and some tobacco. Further down wild fruits and relishes were gathered as well as flying ants. Also beekeeping was rather important there, the honey was used as food, as medicine and for liquor brewing. There were some beehives on the other side of the Kerio River too, and hence Marakwet claims (see Marakwet yearly Report, 1913).

In quantitative terms there was little trade with the outside world. Pokot and earlier Turkana came to buy grain after the harvest in exchange for goats. Also tobacco and gourds were bartered. In general the food was in short supply and to obtain the meagre harvests a lot of labour hours were necessary.

4.2 The Colonial Period

Two famous explorers visited Endo-Mokoro at the end of the 19th century: Joseph Thomson in 1884 on his way back from Lake Victoria and Count Teleki, the Austrian explorer. Thomson noticed the canals "many of them being conveyed with surprising judgement along the most unexpected places" (quoted by Hennings 1951, p.206). Teleki found food in Endo during a severe drought "when elsewhere was only death and starvation" (ibid.)

The early British officers all had two reactions when they were confronted with Marakwet agriculture: they were struck by the poverty and they were amazed by the ingenuity of the irrigation furrows and the possibilities of the land. We will give a number of quotations.

1913 Yearly Report Marakwet: "The Marakwet appear to be quite the poorest body of natives in East Africa with the exception of the Wandorobo and possibly the Elgon... A certain amount of continuous work is absolutely necessary in order to obtain the bare means of subsistence.... There is very fertile soil in the valley.... Irrigation should never fail....(they) should produce enough food to be entirely selfsupporting and also have a surplus for export".

Political Record Book, about 1918-19: "Their neighbours call them the 'Chebleng', the poor ones.... The people could become rich grain-, sugarcane and ricefarmers...."

1926 Annual Report District Commissioner Elgeyo Marakwet: "The admirably engineered series of irrigation furrows.... The irrigated area of Marakwet shares with Njemps the boast of being the granary of the (Kerio) Province. From it are supplied not only such Marakwet as have insufficient water for irrigation but the neighbouring tribes of Suk (Pokot), Kamasia (Tuken) and Turkana.... The real trade of the (Elgeyo-Marakwet)District is the Marakwet grain and tobacco trade with their neighbours."

The British were quick to start a considerable agricultural campaign. In Kaakisegi (in Mokoro, the present day Kabetwa?) a government plantation was started in 1918 and sweet potatoes, maize, bananas, rice, sugarcane, fruit trees, beans and even wheat were experimentally introduced. Sweet potatoes were accepted but all the other introductions were not. Especially maize was not succesful: there were many pests and the people disliked the taste. Even in 1936 the Annual Report mentioned that there was hardly any maize in the valley.

The 1918-19 hausse in agriculture experiments was soon over. In later years some extension work and some experiments were

done now and then using the experimental shamba in Mokoro as a focal point. In the 1930s bananas, mangos and groundnuts did have some success and in the beginning of the 1940s more people had started to grow them as well as sweet potatoes, cassava and pigeon peas. In 1952 the cultivation of cassava was made compulsory and "there are few Marakwet who do not grow this" (EMAR 1953). It seems that during the 1940s there must have been an important trade with the Pokot in sorghum and tobacco, with Chesegon as a major market centre. Here also the first (Somali) shop of the area started.

The 1940s must have been a relatively prosperous time. People who could afford it had increased their herd of cattle. In the 1929s the British counted hardly any cattle in Endo Mokoro; in 1947 the stock census figures were 3355 head of cattle in Endo and 1506 inMokoro. By 1956 this had decreased a bit for Endo (to 3294) and further increased for Mokoro (to 2040). For non-cattle owners getting cattle became an important objective and many of the poorer men went to farms in Trans Nzoia for a few months in a year to earn some money.

Labour Migration

In 1919 the first Marakwet were recruited for labour contracts. In 1922 there were a lot of men "from Kabarmwar, Kakasigei, Mokoro and Kaben". (MAR 1922) out on verbal contracts, more than 800. That is more than 60% of the registered adult men. In 1923 however the original response had faltered: now only 450 men went on labour contracts. Only around 1928, during a severe famine, valley Marakwet came up again in large numbers. The European farmers partly paid them in food rations. All the time the Marakwet labour migration was a casual affair. Also there were hardly any Marakwet squatter labourers, unlike the Elgeyo. There was a quarantine for Marakwet cattle in the 1920s, so the major reason to become a squatter - getting a place to graze the cattle - did not exist for the Marakwet.

In 1937-38 it seems that labour migration for a few months, after the valley harvest time, was widely practiced and "time after time employers have been heard to say how they prefer the poor

weedy specimens from the bottom of the escarpment to the well fed and wealthy cattle owners who inhabit the top of the escarpment; the poorer members of the Marakwet are more amenable and willing to do a job of work "....(EMAR 1939).

Also another type of migration became important. Cattle owners among the Endo and especially among the Mokoro started to drift from the lower escarpment zones to the highlands since 1943 and especially since 1952. Part of the forest was destroyed and British officials became very worried about that. The British wanted the people to move down, not up (the settlement in the lagam was regarded as "the biggest stumbling block to any future development", EMAR 1952). Forest guards were appointed and they tried to evict as many 'illegal intruders' as possible. But the colonial officers realised that that was not enough. Something had to be done in the valley too.

Agricultural Development Policy in the 1950s

During the 1950s several government demonstration plots were started or renovated, especially Kabetwa, Embobut and Karena. Old introductions were propagated with more force, like cassava and bananas. These and products like groundnuts, sweet potatoes, sugarcane, mangos and other fruit trees were accepted by many farmers now. In the early 1959s a first trial was made to expand the irrigation system: the Katapseron furrow was constructed with the intention to bring extra water to the Embolot system. But after a few years it was abandoned.
During the 1950s, as part of the African Land Development Programme, a plan was launched to develop the valley and to make it an important cash crop area. In 1958-59 two ALDEV schemes started in the area of Endo-Mokoro.

The "Embobut Furrow Construction Scheme" consisted of the repair of one of the 13 existing Embobut furrows, the Kapsyoi furrow, using concrete viaducts and plastic pipes, both resulting in a lot more water. The costs were approx. 40,000 Shs grant and 20,000 Shs loan plus an additional 7160 Shs for repair after the 1961 floods. The construction was done with local paid labourers, most of them men who were originally responsible for communal

(and non-paid) maintenance work. Another change brought about was that now also non-owners could use the furrows, paying a water charge to the old men of the clan that owned the furrow.

"The Endo Irrigation Scheme" introduced a system of ridge and furrow irrigation along the contour, using tractors (with the intention to prevent erosion) and combined this with a plan to enlarge the cash crop production: chillies for the national market and maize, onions etc. for the Pokot (and Turkana) markets. The costs were a grant of 112,000 Shs and a loan of 32,000 Shs. The irrigated area had to be increased from 500 ha to 800 ha and all should be ridged and furrowed.

In 1961 the Embobut (Kapsyoi) furrow was repaired and approx. 80 ha were ridged and furrowed, probably serving 85 families (see Huxley 1959, p.173). However, despite the technical successes there were a number of social problems: in 1962 it seemed that "the scheme was perhaps not 100% supported by the local people", the communal repair activities were "released" and when the British supervisors had left in 1962 and the heavy 1961 floods had caused severe damage, it lasted until 1965 before the old communal maintenance practices were restored. But that was after a minor famine in 1964 and during a severe drought. "We are waiting for the government to come and mend it" had become the mentality (Huxley 1959, p.174). But after 1962 the government did not come. The cement and corrugated iron did not come and the old materials had to be used again, especially the brown olive poles, the use of which was so much discouraged during the 1950s by government forest preservation rules. Huxley was a bit too early with her romantic disapproval of changes to come when she wrote in 1959: "Soon the valley will be inundated by the flood of progress and the Marakwet as they have been, and just are now, will go"(p.175).

The success of chillies was a short lived one. In 1962 10 tonnes had been produced from 18 ha and with an export value of 12,320 Shs. In 1965 however only 4 tonnes were sold for very low prices. Most of the chillies harvested could not even be sold. In 1966 the people had abandoned chillies completely.

Also the tractors were no longer used in 1965 and between 1962 and 1964 they had been used for ploughing only and not for the improved practice of making ridges and furrows. In the ALDEV evaluation of 1962 the schemes in Endo had been mentioned as one of the big successes of the ALDEV programme as a whole. In 1965 it had failed completely.

Some other plans had even failed from the beginning: the introduction of Sahiwal cattle and the start of a rotational grazing scheme did not get off the ground.

4.3 After 1963

1963-1970

The Seven Year Development Plan for Elgeyo Marakwet, launched in 1964, stated that at least 50% of the people from the escarpment zone should move to the Marakwet forest lands, to Trans Nzoia District and to Uasin Gishu District. The escarpment zone and no longer the forest was regarded as the area with the large ecological dangers. All cultivation should stop and a lot of trees should be planted on the escarpment. Migration to the highlands which had already started again around 1960, was strongly encouraged now. In Chapter 3.1 we already saw that the population of Endo indeed started to drift away before 1969 and we estimate that after Independence probably 50% of the Endo-Mokoro people indeed left the area.

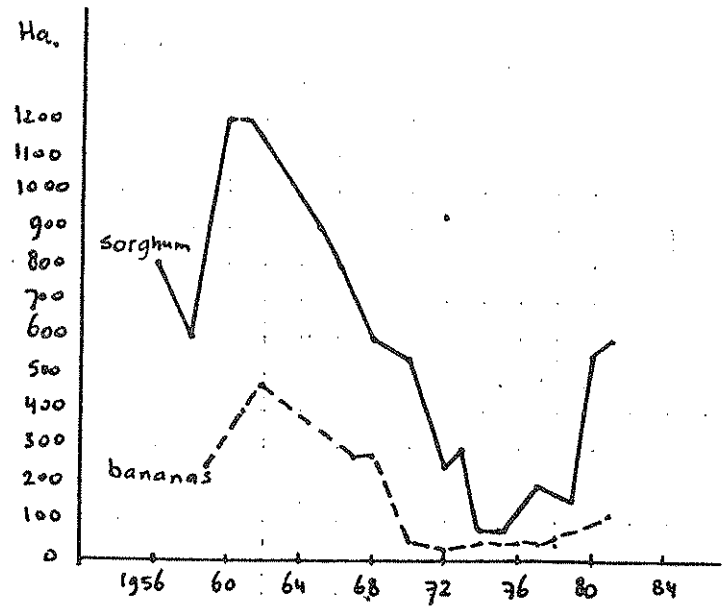
For the valley a Yugoslav consultant estimated that about 150 ha could be irrigated around Chesongoch and 900 ha around Tot. But before anything could be done to improve and extend irrigation a detailed hydrological survey was suggested. In the Seven Year Plan however a project was launched already, called the 'Endo Irrigation Extension Project', using the Embobut River. In 1963 the total irrigated area was estimated to be 600 ha of which 20% was ridged and furrowed during ALDEV (1959-62). Problems were the severe erosion, land fragmentation and water control. The Seven Year Plan continues the colonial attitudes, saying:

> The irrigation system is "under the authority of the old men, who cling jealously to its control and before any development is planned it would be essential to obtain control and distribute the water to all cultivators".

A new water control organisation, e.g. a paid water committee, a land consolidation team and destocking (there were 40,000 goats and 25,000 hairsheep in Endo and Mokoro at that time) were all seen as important but marketing was regarded as essential. The 'excellent yields' of cotton, citrus, maize (4500 kg/ha possible), chillies and pulses under improved conditions were regarded as wasted when no markets could be found. Especially the use of tractors and agricultural extension officers would be uneconomic otherwise. Cotton was only thought economically worthwile if a ginnery was built at Tot. As a result of all the problems foreseen the project got a 'low to medium' priority, planned for 1965-67 with 14,800 £ as necessary project money for a land rover, for tractor maintenance and for repair and maintenance of existing furrows.

During the 1960s not only those plans did not materialize; in fact the agricultural situation as a whole deteriorated. There was a cotton and sisal demonstration plot at Kabetwa but without any professional assistance. In 1966 0.6 ha of cotton were planted with a production of 1,3 tonnes of seedcotton but that could not be transported. In 1967 in the whole of Endo and Mokoro there was not a single agricultural extension or research officer present. The 140 ha of chillies planned were never realized. Only a few ha's were planted now and then. Bananas, the major 'cash crop' for the people , dropped from 475 ha in Elgeyo Marakwet as a whole (but mainly in Endo and Mokoro) in 1962 to 275 ha. in 1967 and to less than 50 ha in 1970. Mass emigration, especially of young people, caused a neglect of the irrigation furrows and less interest in the production and marketing of bananas. The same neglect can be seen from sorghum figures: from 1200 ha in 1962 the sorghum area dropped to 550 ha in 1970 and to 250 ha in 1972 (again these figures are for the Elgeyo Marakwet part of the Kerio Valley as a whole but the tendencies are probably the same in Endo and Mokoro).

Figure 2 : The hectarage of bananas and sorghum in Elgeyo Marakwet



In fact the only economic activity of government agencies was the organisation of irregular sheep and goat markets at Tot Centre. The people themselves were more interested in cattle, but also here improvements were meagre. Despite two harambee projects (1969 Kaptirei and 1972 Sangach) it lasted until 1979 before the first cattle dip was built.

1970-1978

The period of government neglect lasted until 1979, although some minor improvements were done in the period between 1970 and 1979.

According to the First District Development Plan (1974-78), "detailed plans had to be prepaired for the improvement and expansion of the Endo Irrigation Schemes". Also land adjudication was planned for 1974-77, to be started at Maron. In 1975 the Rural Development Fund (RDF) gave 27,200 Shs for the 'Tot Minor Irrigation Project', furrow improvement which was completed in 1981. Other furrows followed: Kowow (?) in 1978-81 (29,260 Shs) and Kabarmwar in 1979-83 (24,000 Shs).

In 1975 some farmers followed the extension advice of newly appointed agricultural officers. In 1976 10 ha of cotton existed in the Marakwet part of the valley. But in 1975-77 there was heavy Pokot raiding so that traders and the Cotton Lint and Seed Marketing Board did not dare to come. The Pokot raids also had the effect that the Endo people were forced to concentrate on crop cultivation; in 1975 alone 7000 head of cattle were stolen by Pokot raiders. Cultivation near the Kerio River was regarded as very dangerous now and many people did not see any local solution and migrated to their relatives in the highlands.

In 1979, Critchley wrote: "The Marakwet display a deep lack of confidence in the Valley. Most people feel that the best land and easiest lifestyle is in the highlands. They fear drought, they don't trust early rain, they are sceptical about cash crops and they believe machines to be a prerequisite for development."

1978-1982

In 1978 suddenly a lot of activity started. In the second District Development Plan (1979-1984) we read "The Kerio Valley can be considered as one of the best potential areas of Kenya in terms of land suitability" (p.2). It is suggested to expand irrigation from 300 to 500 ha. Further the area is seen as a major future 'cotton belt'. Via the Integrated Agricultural Development Programme 1000 farmers had to be recruited for the cultivation of 2000 ha of cotton which could be expanded "to 5000 ha at the end of the Plan period"(p.11,16,70). Although the proposals were all too rosy, some government initiated developments took place. This was stimulated further by the promotion of Tot to a divisional headquarters of the newly formed Tot Division. In 1979 there already were two assistant agricultural officers, one technical assistant, an animal health assistant and a junior one and a hides and skins inspector. Also outside direct government projects agricultural development was stimulated. In 1977 the Catholic Mission at Chesongoch appointed William Critchley as an agriculturalist. We will deal with their project lateron. First we will look into the facts of cotton and irrigation projects, initiated by the government.

Cotton

Cotton was reintroduced by the government in 1978. In 1979 the Endo Farmers Cooperative Society was formed as a tool for cotton development. 25 farmers got 50,000 Shs credit from the Cooperative Bank of Kenya. Within the IADP arrangements the cotton seed and the gunny bags were provided free and insecticides and pumps were given on a loan base. The Tractor Hire Service came and ploughed 204 ha for cotton, both in Endo and in Mokoro Locations. (Another source even mentions 310 ha of cotton.) The first year was a success although loan repayment was bad. In 1980 again a 50,000 Shs loan was given, this time to 57 farmers. But the Tractor Hire Service was inadequate that year and only 120 ha were ploughed. Because of late land preparation and drought the 1980 crop failed. In 1981 60 farmers were recruited but this time no IADP funds were released and in 1982 the overall result of the 'big cotton push' was a meagre 25 ha. of cotton and insecure marketing for the few farmers who continued.

In 1978 the cotton yields were 280 kgs/ha per average farmer, while the best farmer had 1125 kg/ha. In 1979 yields were poor, 150-250 kgs/ha. An average farmer with a plot of 0,5 ha could get 400 Shs as a margin above cost (excluding family labour) according to Critchley (1979 p.31).

In 1983 the MoALD started again; at Kabetwa 250 farmers were trained in cotton production (costs 20,000 Shs).

Irrigation

Thanks to the Rural Development Fund activities for the furrows in the area the District Development Committee started to recommend other furrows for rehabilitation. Also the people themselves were forced to give more attention to the furrows because of the 1980-81 drought. Irrigated sorghum production expanded (from 180 ha in 1979 to 600 ha in 1982 for the whole Elgeyo Marakwet valley). Also there was much more demand for bananas. The valley banana area expanded from 70 ha in 1979 to 120 ha in 1981. In 1981 960 tonnes were harvested out of which 800 tonnes were marketed for 600,000 Shs. Bananas still are the major cash earner in Endo-Mokoro.

In 1981 the Provincial Irrigation Unit estimated that 200 ha were irrigated, scattered over a 12,000 ha area. They estimated a possible irrigated area of 250 to 300 ha in Endo and Mokoro. The PIU planned a 'Tot-Embobut Irrigation Project' for the period 1981-83 with the following aims: a consolidation of the irrigated area, an improved conveyance and distribution system, more efficient water use and improved crop husbandry. For the time being the PIU proposals had to remain plans however. In 1982 the Kerio Valley Development Authority suddenly decided to establish an irrigated farm northeast of Tot Centre. It was started the same year despite local opposition and despite warnings from anthropologists.(*)On a casual and harambee basis local people were engaged to build the structures.

The KVDA farm was planned to be 80 ha for 'horticulture and viniculture' (vegetables, fruit and grapes). In 1983-84 250,000 Shs was allocated and in 1984-85 another 400,000 Shs. The KVDA also planned to rehabilitate and modernize the irrigation furrows in Tot Division. In 1983-84 400,000 Shs was allocated for that purpose followed by 2 million Shs in 1984-85 for Tot Division as a whole. In that period also 500,000 Shs was allocated for a river profile study of the Embobut River to be followed by afforestation projects and (maybe) hydro power development. The Arid and Semi-Arid Lands Programme also wanted to fund a rehabilitation of the irrigation furrows of Tot Division. In 1984-86 1.1 million Shs was planned. In 1984 ASAL did a furrow survey. In that year the Ministry of Agriculture and Livestock Development also posted a Kenyan irrigation technician (TO) in Tot, assisted by a T.A.

(*) E.g. Prof. Kipkorir of the Institute of African Studies writes: "All efforts to take over the irrigation canals and to employ the able bodied persons in wage labour can only lead to more unemployment; what I believe as required is not the substitution of a new system for the existing one, but for the strengthening of that system." (Kipkorir 1982, p.13)
Soper (1981, p.93) is less critical: "The plan for a pilot project in the area north of the lower Embobut..... has a certain logic in that it would utilize land hardly reached by the existing system and water remaining in the Embobut after extraction for other needs".

In 1983 the District Development Committee had recommended to assist in a number of difficult furrows. The Ministry of Agriculture assisted by the Provincial Irrigation Unit and the ASAL Programme started with the renovation of the Katapseron furrow in 1985. A camp was built in Kapchebau, a road (5 km) was constructed by harambee labour from all four Mokoro sublocations; and the furrow was surveyed. The Mokoro locational development committee decided that the work should not only increase the water in the Embolot system but also the water in the Enou system. An interesting problem arose: the PIU proposal first to bring Katapseron furrow water to the Embolot river and then divert Embolot water to the Enou system was very much opposed by the Embolot users. Now a solution was proposed to bring Katapseron furrow water to the Embolot and - via an additional canal crossing the Embolot - to the Enou.

Other government related productive projects*

The last few years the Kabetwa demonstration scheme was strengthened. Here not only cotton development training was established, also a beekeeping project started (funds MoALD 1983-6, about 60,000 Shs). In 1984-5 the Rural Development Fund financed a cassava bulking project (50,000 Shs).

In 1980 the RDF also started to finance soil conservation activities, e.g. cut off drains and gully control. Harambee soil conservation had some impact too, e.g. in Tot and in Chesongoch.

In 1980 a fruit nursery was established at Kabetwa which started to produce citrus seedlings, to be sold at subsidized prices. In 1984 the MoALD started horticultural extension services. ASAL financed Chiefs nurseries in both locations (1984-5 48,000 Shs) and KVDA planned to start a large fruit and forest tree nursery at Tot (1983-5 allocation 460,000 Shs). In 1983 a Presidential Directive made forest preservation a much higher priority for the upper areas. Illegal settlers were 'resettled' in areas below the forest line. Also intrusion of goats is fined now.

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* Information about 1983-6 from the 1984-5 Annex to the DDP Elg.Mar.

On the livestock side only dip activities are worth mentioning. The Kabaldamet cattle dip was repaired (1981) and new dips were constructed at Kapchebau (1983, RDF, 35,000 Shs) at Lemeiywo (MoALD 43,000 Shs), Sangach (ASAL 1983-5, 70,000 Shs), and Kapkobil (ASAL 1983-5 70,000 Shs). It remains to be seen whether these are viable projects without supervision. Not only the people are not really interested in improved animal husbandry, according to Critchley (1979, p.27) also the veterinary services are (or were?) rather dormant.**

Outside the field of agriculture there are plans too. KVDA wanted to start a marble quarry at Tot (1984-6 750,000 Shs planned) followed by further mineral explorations in later years. And of course all the activities sparked a boom in building activities, especially in Tot. KVDA alone wanted to invest 700,000 Shs in offices and houses in the period 1983-86.

4.4 The Chesongoch Agricultural Project

In 1973 a Benedictine Mission was established in Chesongoch. From 1977 to 1979 Miserior, a German Catholic Aid agency, financed a modest agricultural development project, based at Chesongoch Mission (total funds 380,000 Shs). William Critchley was appointed as an agricultural extension officer. After he left the project continued on a reduced scale. Critchley's Final Report (1979) and an article in the 'Kerio Valley, past present and future' book (1981) give a lot of details about the area and the project. Elsewhere in this Profile we have already used Critchley's more general observations. Here we will deal with the Project itself and summarize the activities and the results.

** In 1980 a goats disease could not be stopped. Most goats were killed.

Activity	Result
Demonstration plots (2.5 ha) the backbone of the Project; extension advice on	Lot of interest
- early planting - terracing - regular weeding - fencing - efficient (furrow) irrigation - use of goat manure - intercropping with pulses - dry farming	Some followed advice (1979-1980) All other advice hardly practiced
Experimenting and introduction of formerly introduced crops (bird's eye peppers, vegetables, even coffee) and new crops (cowpeas, bulrush millet, and many others)	Experiments showed that many crops can give good yields; farmers adopted peppers (some) and vegetables (many)
Introduction of new varieties (Sorghum Serena, Coast Composite Maize, Gulu E finger millet, groundnut varieties)	CC maize rapidly accepted Very good yields Serena Sorghum accepted esp. south of Tot.
Start wholesale shop and convince local shopkeepers to sell seeds and tools	Two shopkeepers sell. 1300 kgs of CC Maize seed sold, 430 kgs of Ser.Sorghum and 540 packets of vegetable seed "Most tangible success"
Supply of chemicals against maize stalk borer, for maize storage, pesticides for vegetables, seed dressing for stored seed, control of fleas and lice in goats and poultry, acaricide for cattle and goat dips (on loan), some animal medicine	540 jars sold Good interest in crop chemicals; hardly any interest in animal chemical
Introducing and making appropriate technology, donkey ploughing scheme, donkey transport carts, wooden weelbarrows groundnut sheller, maize sheller, top-bar beehives	donkey ploughing failure, transport promising, all others need more time, beehives did not work

Activity	Results
Education: informal talking, barazas, tours, farmers clubs, one day sessions, regular farm visits (a.o. stimulating cultivation near Kerio River), training, sponsoring studies elsewhere	Very large interest except the farmers clubs
Repair of one irrigation furrow (Kapsogom)	improvement
Goats project: pure bred milch goats and a cross breeding stud	high kid mortality very low response needs at least ten more years
Dips: initiate cattle dip at Lukuket, reactivate cattle dip at Chesongoch, reactivate goats dips at Liter and Tot	After initial burst of enthousiasm only Tot dip shows signs of continuity.
Small fruit tree nursery	Especially orange seedlings in demand.

It is useful to remember Critchley's opinions on policy issues for the future development of the Marakwet valley. In his article (1981) he gives the major ones.

a - The emphasis must be on food production, especially on sorghum, fingermillet and Coast Composite maize: better varieties, early planting, reliable seed supply (bulking), intercropping with pulses, more emphasis on vegetables, better use of irrigation water.

b - A reliable cash crop is necessary, which is non-perishable, has a high value to weight ratio, takes not too much water and labour away from food production and has a guaranteed outlet. Not only cotton is possible, also peppers, fruits and vegetables.

c - An irrigation policy should not jeopardize the existing (relatively) egalitarian system of irrigation. What is necessary is a rationalization of irrigation practices, e.g. introducing water basins in the fields as a water harvest technique.

d - It should be encouraged that people leave their lagam homestead and settle in the valley.

e - Formal education should have a strong agricultural orientation (Critchley 1981, p.22-26).

5. SOCIAL AND INFRASTRUCTURAL DEVELOPMENT

5.1 Summary of the Services

The traditional service centre of the area was Chesegon, on both sides of the Chesegon River. Here the Pokot-Marakwet market was held and in the 1930s also the first shop of the area was established there as well as the first police station.

In 1955 the African Inland Mission started a missionary station in Liter closeby with a school and a dispensary.

In 1949 the government started to build some houses in Tot, more south and during the 1950s a market developed, which was even called an "improved market" in 1966. There was also a resthouse, a school (1953), a dispensary (1959), a policepost and a camp of the Ministry of Works during colonial times. In the period after 1965 Tot became the major centre of Endo and Mokoro.

In 1968 the Catholic Mission started church activities in Chesongoch and in 1973 a mission station was built. In 1977 this station had important agricultural activities as we have seen. In the 1980s other missionary stations were established in Maron (the highlands) and in Endo.

Now Tot is the major centre, recently upgraded to the divisional headquarters and the centre for the KVDA farm. Chesongoch and Chesegon/Liter are centres of secondary importance and Kabetwa, Chebilil and Kabaldamet minor ones. In table 10 the service situation is summarized for the various places with the situation in 1983 in mind.

Table 15 : Service situation Endo and Mokoro, 1986

Place	Sublocation	Services
Liter/ Chesegon	Kaben, Endo	Assistant-Chief, AIC mission with dispensary and primary school with twelve teachers 14 commercial plots given out (1982), 3 retail shops, 2 butcheries, a blacksmith and a teashop (others in West Pokot). adult education: 1 part time and 1 self help teacher

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Place	Sublocation	Services
Mungwa	Kaben (highland), Embobut	Roman Catholic Church and a RC sponsored school with seven teachers
Sambalat	Marich, Endo	Assistant-Chief
Endo	Barkelat, Endo	RC Church (between Sangach and Chebilil)
Sangach	Barkelat, Endo	Assistant-Chief, RC sponsored school with eight teachers, hoteli, Adult education with part-time teacher
Katelit	Maron, Embobut	Primary school
Kabaldamet	Kisiwei, Endo	RC Church and RC sponsored school with twelve teachers, poshomill
Chebilil	Kisiwei, Endo	Chief, four commercial plots given out, two retail shops and one teashop, AIC Church and AIC sponsored school with nine teachers and one full-time adult education teacher
Maron	Maron, Embobut	Assistant-Chief, African Inland Church, RC Church and RC Sponsored school with five teachers, one part-time ad. education teacher
Chawis	Maron, Embobut	AIC Church and AIC sponsored school with seven teachers and AIC dispensary, full-time adult education teacher
Embobut	Maron, Embobut	RC Mission and Church, poshomill, dispensary, Chief, primary school
Embimir	Sakat, Endo	Primary school
Tot	Sakat, Endo	Assistant-Chief, Divisional Headquarters with 2 AAO, TA, JAHA, AHA, H&SI, seven Livestock people, MoTC Camp, GSU Camp, KVDA Camp Market, two commercial plots given out, five retail shops, three butcheries, one tea shop, poshomill, cotton store and cotton cooperative society, Secondary school and DEB primary school with thirteen teachers, Government Health Centre, Air strip (not operational), two women groups, RC Church, AIC Church Kabito family helpers group, watertaps
Kapkobil	Olot, Mokoro	Primary school, women group, water supply
Kabetwa	Olot, Mokoro	Assistant-Chief, retail shop, teashop Agricultural demonstration plot and fruit nursery, AIC dispensary, AIC Church, AIC school with sixteen teachers, RC Church, RC sponsored women group, part-time adult education teacher, cattle dip

vervolg Tabel 15

Place	Sublocation	Service
Kamogo-Masop	Korou, Embobut	Assistant-Chief, AIC Church, AIC dispensary, AIC sponsored school with twelveteachers, self-help adult education teacher
Toroko	Ketut, Mokoro	Primary school, women group
	Ketut, Mokoro	Assistant Chief
Korou	Korou, Embobut	AIC Church, RC Church, self-help education teacher
Ngejer	Korou, Embobut	AIC sponsored school with nine teachers, AIC Church
Kapchebau	Korou, Embobut	RC Church, part-time and self-help education teacher, shop, cattle dip under construction
Chesongoch	Enou, Mokoro	Chief and Assistant Chief, Market and 25 commercial plots given out by the County Council, wholesale shop and six retail shops, tailor, poshomill, RC Mission, RC Health Centre and RC sponsored school with eightteen teachers, RC women group, RC youth activity, Full-time and part-time adult education teacher, Youth Polytechnic, Secondary school, two women groups, carpentry workshop, butchery, Murkutwa cattle dip, watertaps
Chechan	Kisoka, Mokoro	Assistant-Chief, RC sponsored school with eleven teachers, part-time adult education teacher

5.2 The Development of the Roads

When the British arrived they found a 'free trade route' (the valley road) and two tracks, one going from this road up towards Marakwet Station (Kapsowar) and the other one halfway the escarpment, running parallel with the valley road. Around 1913 the British used forced labour to improve the valley road and in 1953 this was done again with 'Chief's labour' . In the 1950s the African District Council in fact only maintained one road in the area, the valley road. Only in 1959 the track from Chesongoch to Chesoi was improved to a motorable road and in 1965 a few other tracks were improved, via self-help road projects. At the end of the 1960s a road was built towards Baringo, including a bridge over the Kerio River.

The very bad quality of all the roads was a continuous headache. In a lot of annual reports we read about "requests to repair",

"funds which are not enough" and "proposals".
Recently there were many road proposals, e.g. in the General Development Plan of the Kerio Valley Development Authority (1981), in the District Development Plans and in the Rural Access Roads Proposals made by the District Development Committee. In 1984 work was started to improve the "staircase", the Chesoi-Chesongoch road (budget 500,000 Shs). For the 1984-5 financial year also the Embobut River bridge was planned to be improved (20,000 Shs) as well as the Endo River drift (200,000 Shs). For the 1985-6 financial year a road from Tirap in Lelan via Maron to Chesegon (300,000 Shs) was planned.

Other recent plans (which did not materialize yet) were:
- the improvement of the valley road
- regravelling the Tot-Baringo road
- classification of the Chesoi-Maron road
- new rural access roads (Tot- Chesermat-Chesegon, Sangach-Kerio River, Chebilil-Maron, Kapkobil-Kiptuya, Chesongoch-Chebaraya, Chesoo-Muruber, Kapkundot-Chemutei and Chesoo-Cheptuyun).

New tracks were cut recently from Kapchebau to Maron and from Kapchebau to the Katapseron furrow.

5.3 Water Development

Because of the irrigation furrows which can be used by everybody for domestic purposes, water is not really a problem in Endo. In Mokoro the domestic water supply is somewhat more problematic.

In some centres there are specific water supply systems or plans to start them. In colonial times two already existed, in Tot (maintained by the African District Council and later - if funds were available - by the Area or County Council) and Kamogo (maintained by the AIC). In the 1970s the Tot water supply was problematic. Some improvements made during 1972-3 were damaged by heavy rains in 1977 and a large scale Rural Development Fund project (150,000 Shs) had a lot of difficulties to come off the ground, especially lack of transport. In 1983 the MoWD again started to improve the Tot water Supply (funds 200,000 Shs).

Ssennyonga (1981, p.103) warns that it is the interference of irrigation and government domestic water provision that causes the problems and suggests that domestic water supplies should not take their water from irrigation furrows.

In Chesongoch a domestic water supply project was started in 1969, sponsored by the mission since 1972 and to be assisted with a government grant in 1985-6 (20,000 Shs).

Two other water supply projects that were proposed in 1980 (in Chebilil and Kabetwa) did not start yet.

5.4 The Development of Education

Primary education started in 1952 when the African Inland Mission began schools in Liter, Kamogo and probably also in Kapchebau. The Roman Catholic Mission followed in 1956 in Chechan and in 1959 in Chesongoch. The government opened a primary school at Tot in 1953, which closed and reopened in 1956. In 1965 this still was the only school with exam classes (KPE).

In 1971 there was only one additional school, the AIM school at Ngejer. School attendance must have been bad. In 1972 and especially in 1974-75 however a number of harambees were organized to open new schools and to get better buildings and equipment at existing schools (e.g. for Chebilil, Kabetwa, Liter, Tot, Kamogo and Kapchebau schools). The people started to accept education for their children, especially for the boys, and in 1976 there were also six adult education centres with 54 male and 28 female students altogether. In 1978-80 there was a new and rather large scale attempt to get more children enrolled and in 1982 all informants agreed that the majority of the children got at least some primary education. But the facilities were very primitive and in 1982 the Chesongoch school was the only one with a reasonable result in the exams in the whole Marakwet valley. For this school and for the school at Liter there had been proposals to change it into a boarding school.
Since 1982 four more schools opened: Kapkobil, Embimir, Katelit and Toroko.

In 1980 the first secondary school was opened, at Tot: the Kerio Valley Secondary School. It was financed by a major harambee first and sponsored by foreign donors later (see Table 11). As was the case with a second secondary school at Chesongoch. It started as a harambee school while now a new building is under construction with ASAL money. The primary schools got foreign assistance as well. From 1984 onwards the ASAL programme sponsored better buildings and equipment. A newly opened Village Polytechnic, at Chesongoch supplies part of the furniture.

Table 16: Major funds for educational development

Project	Donor	Year	Shs
Tot Kerio Valley Secondary school	Joint Harambee Fund	1979	150,000
	EEC Micro Project	1981	840,000
	Netherlands	1983	160,000
Chesongoch Village Polytechnic	Rural Development	1981	100,000
idem	ASAL	1986/87	300,000
Primary Schools	ASAL	1984 onw.	260,000
Chesongoch Craft Training	MCSS/ASAL	1983	200,000
Chesongoch Secondary school	ASAL / RCM	1986/87	200,000

Table 12 gives data on schools in the three locations. Remarkable is the low number of female pupils in Endo and Embobut as compared to Mokoro where the number of male and female pupils is roughly the same. The number of pupils per teacher is still quite high. Besides the number of teachers is considerably lower than the number of classes. Apparently it is difficult to get enough teachers for these rather isolated areas. It seems to be even more difficult to get trained teachers to the three locations as the percentage of untrained teachers is very high. The AIC (African Inland Church) and the RCM (Roman Catholic Church) are the main sponsors in the area. By 1986 in the three locations together there were 3649 boys and 2906 girls schooling, in total 6555 pupils. Besides there were 35 trained and 114 untrained teachers.
In day to day schooling we may fear a considerable irregularity or even drop out from school, both probably more so for girls than for boys. The relatively low participation of Marakwet girls at the secondary schools is one of the results.

Table 17 :Schools in Endo, Mokoro and Embobut in 1986

Place	Sub-Location	Start	Sponsor	No. of trained teachers	No. of untrained teach.	Total no. of teach.	Boys	Girls	Total no. of pupils	P/T*	Classes	P/C*
Tot	Sakat	1956	DEB	4	9	13	324	274	598	46	15	40
Chebilil	Kisimei	1972	AIC	2	7	9	187	92	279	31	9	31
Sangach	Barkelat	1980	RCM	2	6	8	345	178	523	65	11	48
Kabaldamet	Kisiwei	1978	RCM	2	10	12	301	215	516	43	13	40
Embimir	Kisiwei	after 1982	RCM	1	2	3	92	72	164	55	4	41
Liter	Kaben	1952	AIC	4	6	10	221	130	351	35	11	32
ENDO TOTAL				15	40	55	1470	961	2431	44	63	39
Chesongoch	Enou	1959	RCM	4	14	18	358	302	660	37	17	39
Kabetwa	Olot	1975	AIC	3	13	16	312	316	628	40	16	40
Chechan	Kisoka	1980 (1956?)	RCM	2	9	11	225	275	500	46	12	42
Toroko	Katut	1983	RCM	1	2	3	64	45	109	37	3	37
Kapkobil	Barkelat	after 1982	?	1	4	5	94	135	229	46	6	38
MOKORO TOTAL				11	42	53	1053	1073	2126	40	54	39
Maron	Maron	1975	RCM	1	4	5	174	146	320	64	9	36
Chawis	Maron	1975	AIC	1	6	7	165	180	345	49	10	35
Mungwa	Kaben	1979	RCM	1	6	7	277	63	340	49	9	38
Katelit	Kipchumwa	after 1982	RCM	1	0	1	30	25	55	55	1	55
Kamogo	Kaitamoi	1952?	AIC	3	9	12	281	241	522	44	12	44
Ngejer	Korou	1969	AIC	2	7	9	199	217	416	46	12	35
EMBOBUT TOTAL				9	32	41	1126	872	1998	49	53	38

* P/T means the number of pupils per teacher
* P/C means the number of pupils per class
DEB means District Educational Board
AIC means African Inland Church
RCM means Roman Catholic Church

source: information supplied by the District Basic Education Officer at Iten. Also we used the District Gazetteer (about 1956).

If we place the Embobut schools under the locations to which they belonged in 1982 we can make some comparisons with the 1982 situtation.

Table 18: Schools in Endo and Mokoro

Locat.	Year	Tr.T	UT	To.T	Boys	Girls	Pupils	Classes	P/T	P/C
Endo	1982	23	26	49	1473	873	2346		48	
	1986	20	60	80	2210	1510	3720	98	47	38
Mokoro	1982	19+	23+	42+	1258	1175	2433		58	
	1986	15	54	69	1439	1396	2835	72	41	40

Tr.T = Trained teachers
UT = Untrained teachers
To.T = Total number of teachers
P/T = The number of pupils per teacher
P/C = The number of pupils per class

From the above several things attract attention. First the number of girls schooling in Endo has increased spectacular, by 73%. But also the number of boys going to school increased by 50%. Growth in schooling in Mokoro is less remarkabl . In the famine years 1984/85 school food and milk must have been one of the reasons of the increase in school attendance. Moreover in both locations the number of trained teachers decreased a little. This is probably a movement to less isolated areas and to better paying jobs. The number of untrained teachers however in both cases more than doubled. The number of pupils per teacher stayed on the same high level in Endo but decreased considerably in Mokoro where before there were almost sixty children per teacher, a number which now dropped to about fourty.

Table 14 shows the estimated percentages enrollment in Endo and Mokoro (also here we placed the Embobut figures under their former locations for reason of comparison). The basis for these enrollment estimates are figures on attendance and the 1979 population census. The "normal school age" in this area is probably from 7 to 17, but in the interviews in Mokoro we found a number of persons of 18 and above still schooling. The population census however gives only data on five-year age groups on sublocation level. So we used the 5-15 years of age group as reference group of children at a schoolgoing age. This might produce some distortion so we should be careful in drawing conclusions.

Moreover we assumed a 4% annual growth since 1979, also this could be incorrect but better figures we do not know.

Table 19: Estimated percentage enrollment in Endo and Mokoro

		Estim. Popul. 5-15			School attendance			Percentage enrollm.		
		Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
Endo	1982	1839	1909	3748	1473	873	2346	80	46	63
	1986	2152	2233	4385	2210	1510	3720	103	68	85
Mokoro	1982	1335	1395	2730	1258	1175	2433	94	84	89
	1986	1562	1632	3180	1439	1396	2835	93	86	89

In Endo the percentage enrollment increased considerably, compared to the situation in 1982. In Mokoro the same high level of enrollment was maintained. The difference between the attendence of boys and girls was still large in Endo and quite small in Mokoro. The correctness of the above estimates are confirmed by the interviews in Mokoro which gave roughly the same results.

By 1982 there were in the three locations together 14 adult education classes, four with self help and seven with part time and three with full time teachers.

Missions and the Department of Social Services try to organize women groups partly as an educational effort. A few hundred women are assisted with various activities, like small scale farming, poultry keeping, needle work and handicraft, the running of a shop and the sewing of school uniforms. The number of women participating is relatively low however and will probably not be more than 10% anywhere. The same is true for the adult education activities.

5.5 Health Facilities

Health problems are mainly found among children. In general adults are well fed. The high infant mortality is mainly caused by endemic intestinal diseases (like Amoebiasis) due to the fact that the drinking water is not boiled and is contaminated with human waste.

Major diseases are malaria, tuberculosis and measles. "Ill health amongst working adults causes a considerable strain on productivity in the fields, where timeliness of work is critical" (Critchley, 1979, p.6). Traditional health care is still widespread.

During most of the colonial times there was not a single health facility in the area other than traditional healers. Sick people who wanted to have treatment with western medicine had to go as far as tha AIC mission hospital at Kapsowar.

Around 1955 two health dispensaries started in the northern Marakwet Valley: the AIC Mission dispensary in Liter and a government dispensary at Tot. For the people of Endo and Mokoro local 'traditional' medicine must have been far more important at that time; figures from 1964-65 suggest that on average only 300 patients were seen per month at the Tot dispensary. During 1965 free treatment was introduced in all government health facilities and suddenly many more people came for treatment, roughly a fivefold increase. In addition almost the same number of people were treated by the mobile clinic when it started its work in 1966. During the 1970s and early 1980s there were improvements and the Tot facilities changed into a health centre. In 1979 there was one clinical officer assisted by three enrolled community nurses.

In 1968 the people around Chesongoch began to build a dispensary on a harambee basis. In 1974 it was adopted by the Roman Catholic Mission and gradually it developed into a second health centre.

In 1982 there were also some minor dispensaries, at Kabetwa and at Kamogo, run by the AIC from Liter. Kabetwa and Chebilil were visited regularly by the Mobile Clinic from Tot. Tot health Centre operates an ambulance and also it supervises the Kolloa government dispensary in Baringo. There were plans to develop Tot to a 'cottage hospital' and to make it the Rural Health Unit head-quarters for the northern Marakwet Valley.

In 1984 the World Bank sponsored a major uplift of the Liter dispensary. Building was still going on in 1985.

Together Chesongoch and Tot Health Centres had 49 beds in 1981 with almost 1,000 in-patients. Per month more than 6,000 out-patients were treated. Some more detailed statistics are presented in table

Table 20 : Health Statistics for Tot and Chesongoch Health Centres, 1981

	TOT	CHESONGOCH
number of beds	25	24
in-patients	369	621
maternity	85	186
out-patients	35,886	32,621
ante-natal	856	2,310
child welfare	512	2,678
nutrition	27	-
family planning	4	-

6 Some Final Remarks

Of all the Profiles we have written, this is clearly the most extensive one. Still, there are many gaps in our knowledge, and for serious development planning for this promising area even more detailed information is needed. On the one hand the physical geographical data need to be checked on the ground. On the other hand the socio-economic variety is so large (in time and place) and the local "survival strategies" so intricate, that a lot is still to be discovered. The generation of knowledge about an area, its people and its development should not be an "outsiders" job only. In fact, the local people themselves are continuously generating knowledge and discussing it among themselves.
To bridge the communication gap between local inhabitants and professional "agents of change" is a complicated, but important task. This "Profile" hopes to supply some building materials for that bridge. In our opinion there is one group of people who can and should mediate between "people's knowledge" and "professional knowledge": the teachers of primary and secondary schools. "Localizing the curriculum" also means doing fieldwork, discover the local habitat and the local culture and economy. Together with their students teachers probably can be the major critics of "Profiles" like this. And if they communicate their findings the knowledge about the area and its inhabitants can be improved. Knowledge is a tool for development; knowledge is also a weapon against ill-conceived "development from above".