LOCATIONAL DEVELOPMENT PROFILE

SDY AND KOCHELWO LOCATIONS
ELGEYO-MARAKWET DISTRICT

Regional Development Research for the Arid and Semi-Arid Lands Programme West Pokot/
Elgeyo Marakwet

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O. INTRODUCTION AND SOURCES

This Locational Development Profile is part of a group of profiles about Locations in Elgeyo Marakwet and West Pokot Districts. They present a summary of the history and situation of the administration, the population, the physical geography, the economy and the social geography. The various profiles are written for people working in the Location and for government employees at the divisional and district level. 1)

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.

SOY AND KOCHOLWO

Only recently Soy and Kocholwo were separated. For a long time they were a combined Soy Location. For us it is the main reason to combine the two Locations in one Locational Development Profile. Another reason is the fact that the Fluorspar Mining Company covers both Locations and within our own research the local effects of this Company were an important research theme.

The results of our various household surveys are presented in a separate part II of this Locational Development Profile and a summary of the main results is presented here under 3.4. The household surveys were the following:
- interviews among 74 local Fluorspar labourers
- interviews among 102 households in Muskut Sublocation
- interviews among 40 shopkeepers all over Soy and Kocholwo
- interviews among 27 market traders
- analyses of CBS Enumeration Area household listings in Muskut (1980 and 1982) and in Katumoi (1980).

The interviews were done in the period November 1982 to January 1983 by three local research assistants, supervised by Jack Koninx. For all the details we refer to PART II.

1) A preliminary text of this Profile was distributed among a few people in the district in the beginning of 1984. Their comments are gratefully included.
For this part I of the Profile we mainly used government sources (1) and more general literature (2). As far as we know in the socio-economic sphere there has never been any academic research, before 1982.

(1) From the National Archives in Nairobi and from the District Commissioners Library in Iten we used Annual Reports, a District Gazetteer, Political Record Books, District Development Plans (the Seven Year Plan 1964-1970, the DDP I, 1974-78 and the DDP II, 1979-83). We also used County Council Annual Reports, Minutes from the District Development Committee, Annual Reports from the Ministry of Agriculture for the District and the Province, reports from the Kerio Valley Development Authority etc. Many government Departments in Iten and Tambach supplied us with unpublished material.

(2) We used a few publications about the Elgeyo as a whole and about the Kerio Valley:
About the physical geography of the area there are various publications:
- Exploratory Soil Map of Kenya 1980, 1:1,000,000 and Agro Climatic Zone Map of Kenya, 1980 and the Accompanying text to these maps (Kenya Soil Survey Report Nr. E1, 1982)
1. THE AREA OF SOY AND KOCHOLWO LOCATIONS

1.1 SITUATION

Soy and Kocholwo Locations are situated in the southeastern part of Elgeyo Marakwet District and they form part of its Southern Division with its headquarters in Chepkorio in the Western highlands of the District. The Western part of Soy and the southern part of Kocholwo are situated in the area of the huge Elgeyo Escarpment: within a distance of 5 kms. the elevation changes from 2,400 m. in the West and South to 1,200 m. in the East. This eastern part is the most southern part of the Kerio Valley floor, with its hot and dry character so much different from the cold and humid highlands close by.

The Escarpment is partly covered with forest, although a lot of it has been cut down by cultivators. In the South the only 'official' forest exists, the Metkei Forest which continues in the Metkei Location. The highland portion in the West is Mosop Location. The highland plateau further continues into Uasin Gishu District, which headquarters, Eldoret Town, functions as the major service centre for all of Southern Division. The Escarpment however was always a major communications barrier for the people in Soy and Kocholwo. Only recently an all weather road was made into the area. For people in the Southeast of Kocholwo communications with the highlands still are very difficult.

East of the Kerio River a very sparsely populated area exists, part of Sacho Location in Baringo District. For some people in Kocholwo the small centre of Mokorwo which is located there, is important.

To the North the Kerio Valley extends into Mutei Location, with Biretwo as a small service centre and with the road from Kabarnet via Chebloch Bridge to Tambach and Iten.
1.2. ADMINISTRATIVE HISTORY

The area of the Elgeyo or Keiyo was colonized rather late: only in 1919 the British moved in to appoint Chiefs, to collect taxes and to recruit labour migrants for the newly established white settler farms in Uasin Gishu. Especially the Rokocho section of the Keiyo, in the North of the actual Soy Location did not accept this, but their revolt, in 1919, was crushed (cattle and goats seized and huts burned down). After that, the establishment of a Native Council (in 1922) for judicial questions and the establishment of a Local Native Council for Keiyo (in 1925) to do part of the local administration was accepted. Even the seizure of part of the Keiyo Grazing Land was not opposed. In 1923 part of this Keiyo Grazing Land was given as a Forest Concession to a Company called E.S.M. Ltd. Especially the clans living in Rokocho, Marichor and Kawach areas of the 'Elgeyo Reserve' lost their highland grazing area and were forced to bring their cattle to the Kerio Valley, where probably half of the stock died. According to the ex-DC Massam the losses "were borne quietly, but it can hardly be claimed that the natives feel better disposed towards the government as a result" (Massam, p.19). See map 2a, which gives the boundaries during the 1920's. In 1936 however the area of the Concession was partly included in the Elgeyo Marakwet District, see map 2b.

For the British administration the Escarpment and Valley parts of 'Rokocho', 'Marichor', 'Tumeyo' and 'Metkei' Locations were only interesting as suppliers of tax money and labour migrants. The only other intervention was the establishment of the Metkei Forest Boundaries in 1937-39. People living there were evacuated to the Chepkoorio area. Even at the end of Colonial times - when the Marakwet part of the Kerio Valley got quite a lot of attention as part of the African Land Development (ALDEV) Programme - the Southern part of the Valley was mainly regarded as a labour recruitment area for the farms, the sisal and wattle estates and the road works in Uasin Gishu.

After Independence the Highland parts were administratively separated from the Escarpment and Valley parts: in the Highlands Mosop and later Metkei Locations were formed; in the Escarpment and Valley parts 'Soy' Location. After 1970 the area was gradually dragged out of its position as a backwater by the establishment
Map 2: Soy-Kocholwo, administrative history

1925

Mulei

Rokocho

Changoch

Sado

Kafere

Tumure

Nalwet

Kapron

Kamasi Reserve

E.S.M. Concession

Baringo District

1936

Rokocho

Marichor

Tumure

Mekkei

1956

Marichor

Mekkei

1962/1969 (Census)

Emsera

Mukul

Musikub

Kimwagw

Kapron

Mekkei Forest

MUSOP

1979 (Census)

Cheptobo

Emsera

Sado

Mukul

Tumure

Kaimur

1982

Cheptobo

Rokocho

Emsera

Sado

Mukul

Tumure

Kaimur
of the Fluorspar Mine.

Map 2e shows the boundaries of the sub-locations of the combined Soy Location as they were during the 1979 Census. Map 2f shows the actual situation, existing in 1982, when a separate Kocholwo Location had been created.
2. NATURAL RESOURCES

2.1. Geology

The geology of the area is rather complicated. Many different rock types are found at the surface. In the escarpment the Precambrium Basement System Rocks are exposed: the oldest rocks found all over the world. The rocks are metamorphic, which means that they were formed during a situation in which existing rocks were changed because of high temperatures, high pressures and chemically active fluids. This occurred during tectonical movements within 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. Most metamorphic rocks originate from sedimentary rocks.

On top of these metamorphic rocks, volcanic material has been deposited: the Tinderet- and Uasin Gishu volcanics. These rocks are phonolites: volcanic (extrusive) rocks which are fine grained and primarily composed of alkali feldspar. These are light coloured minerals containing Aluminium (Al), Potassium (K) and Sodium (Na). The rocks were deposited in the Upper Miocene.

In the South and Southeast the 'Elgeyo' and 'Samburu' Basalts are exposed to the surface. Basalts here are volcanic (extrusive) rocks which are dark/black coloured (Samburu Basalts) and/or which contain olivine-minerals (green coloured, mainly the Elgeyo Basalts). These are the oldest volcanic rocks found in the area (Lower Miocene). In the Northeast (near Chebloon Bridge), the Kabarnet Trachytes are exposed to the surface: the youngest volcanic (extrusive) rocks found in the area (probably Middle Pliocene). The rocks are fine grained and contain alkali feldspar-minerals (see above) and minor amounts of biotite and hornblende.

Scattered over the area, many different types of tuff's (associated with the volcanic rocks mentioned above) are found. A tuff is a cemented rock that consists of material that has been transported through the air (thrown into the air during explosions of the volcano, transported by the wind and often deposited far away from the volcano itself. As will be clear, tuff's are of volcanic origin as well).

All these different volcanic rocks are mixed through each other due to intensive faulting in a later stage; reason why many different
rock-types can be found next to each other or on top of each other.

Generally speaking one can say that the soils which develop on volcanic rocks have a relatively good natural fertility (the rocks contain many minerals which are important for plant growth).

Most of the faults run from North to South and are part of the large Rift Valley Faulting System. The most important fault in the area is the also North-South running fault somewhere in the centre of the Kerio Valley floor. Because of the loose material that has been deposited, it is difficult to trace the exact place. Investigations are still going on (there might for instance be water-supplies along the fault). The Elgeyo Escarpment is a result of the above mentioned major fault. Due to erosion/denudation the escarpment retreated to the West.

Using Landsat data, the Regional Remote Sensing Facility in Nairobi produced a "Geological Sketchmap of the Southern Kerio Valley" (1) which we present here as map 3.

Near Kimwarer fluorite deposits are found and mined by the Kenya Fluorspar Company now (see Map 3). These deposits are believed to be of hydrothermal origin in the Post Miocene era, when lava's formed a cap over the existing Precambrium rocks in the area. At the contact zone of the lava's and the Precambrium rocks, where high temperatures occurred during the deposition of the lava, fluids rich in fluorides altered the top layer of the Precambrium rocks to fluorite (contact metamorphism). Erosion and denudation in later stages have exposed the fluorite deposits at the base of the Elgeyo Escarpment.

"Fluorspar is the commercial name for the various concentrates of the mineral fluorite (CaF₂). Fluorspar has three common grades -metallurgical, ceramic and acid-grade - so called depending on their end-use. The most common are metallurgical grade which is lump fluorite less than 40 mm. in size containing about 70-85% CaF₂ and acid-grade which is a froth flotation concentrate containing a minimum of 97% CaF₂ and less than 1% SiO₂, with some other impurity limits specified by the customer. Metallurgical-grade fluorspar is used primarily in steel making while acid-grade fluorspar is used mostly for the manufacture of hydrofluoric acid which in turn is an important source of fluorine for the fluorochemical and aluminium industries". (G.M.Jones: 'Kenya Fluorspar', in Mining Magazine, December 1982, p.536)

(1) People interested can get a copy of the brochure including this sketchmap (and also including the Landsat picture - an aerial photograph from space - and an interpretation) by writing to Regional Remote Sensing Facility Nairobi, P.O. Box 18332.
Map 3: Geological Sketch Map of the Southern Kerio Valley

GEOLOGICAL SKETCH MAP OF KERIO VALLEY FROM LANDSAT DATA

KEY:
- Fault lineament
- Geological boundary
- River
- Escarpment
- Alluvium
- Kabernet trachytes
- Tinderet volcanics (phonolites)
- Usain Gishu series (phonolites, tufts, basalts)
- Basement system

Source: Regional Remote Sensing Facility Nairobi (Jean-Claude Rivereau for UNESCO Regional Field Training Course in Mining Geology, 1981)
2.2. Relief

The locations are situated in the most Southern part of the Kerio Valley, which is rather narrow here (only a few kilometers wide). In the South we find a mountainous or heavily dissected escarpment zone; altitude ranges from 2,700 m. at the Southern Kocholwo locational boundary to 1,400 m. at the Kerio Valley floor with its large footslopes. In the West the steep, high escarpment stretches out from South to North. Also here the relief differences are large. The escarpment borders the high, undulating Uasin Gishu plateau in the West (3,000 m.) and the valley floor in the East (1,400 m.). Only two small parts of the Plateau are part of the location. The valley itself is mainly built up by large footslopes; only along the Kerio river some loose material has been deposited by the river during flooding (alluvial deposits). Map 5 gives more detail and we also include a cross-section.

2.3. Vegetation

In general one can say that the slopes, scarp and mountains are covered with woodland/shrubs (Acacia spec.) though much of the forested area has been cleared for cultivation purposes. Also in the valley low woodland (Acacia spec.) is dominant, while the amount of undergrowth is variable (fair to poor).

2.4. Hydrology

The location is part of the Kerio catchment area. All the water finally drains into Lake Turkana. Both the Kerio river and its major tributaries in this area (Mong, Kimwarer, Endo and Mkorwa rivers) carry water all through the year (perennial rivers). Discharges in the dry season however, are much less than in the wet periods. From the Kenya Soil Survey site evaluation report no. 24 we learn that the Kerio river has a low annual discharge (5.4 m³/sec., figures from 1973). This may restrain the development of large irrigation schemes.
2.5. Erosion

Erosion is severe at isolated spots on the steep slopes/escarpment bordering the valley. At places where the forest/shrub vegetation is not cut or burned down, or damaged by goats/sheep, erosion does hardly occur, or not at all.
On the footslopes, down in the valley, erosion is severe at isolated spots as well: the grass cover and often also the top-soil disappeared, mainly due to overgrazing.

2.6. Soils

According to the "Exploratory Soil Map of Kenya, 1980", scale 1:1,000,000 (made by the Kenya Soil Survey) 7 soil group units can be distinguished, see map 4.
The first symbol in the code stands for a certain agro-climatic zone (see page 16), the second symbol gives the soil group number (See below)
A descriptive characterization is given, for which also general literature, applicable to Kenya as a whole, is used. The official classification (soil group name) also used by the Kenya Soil Survey is added, in case someone wants more detailed information.

Soils no. 1, 2, 7, 8, 10, 13 & 24 occur in this area, the other numbers are found elsewhere in Elgeyo Marakwet.

1. Soils developed in a mountainous area. The soils are well drained, which means that water is removed from the soil readily but not rapidly (deeper into the earth). These soils commonly retain optimum amounts of water for plant growth after rains or addition of irrigation water. The soils are shallow (less than 50 cm. deep, which can give problems for deep rooting plants) to moderately deep (50-80 cm., less restrictions for plant growth); rocky and bouldary (can give problems while working on them with simple tools); in places they have an acid humic topsoil. Acidity has a negative influence on plant growth. The humic topsoil increases this acidity; lime could be added to neutralize the acid conditions. Chemical fertility is rather good, though if a humic topsoil occurs, the acidity has a negative influence. Additional fertilizers (and if necessary lime) are recommended if the plots are cultivated regularly.
Erosion can be severe on the sloping areas.
Classification: MVbn, nito-chromic Cambisols; with Phaeozems-
lithic phase, Lithosols, eutric Regosols and Rock Outcrops.

2. Soils developed in the mountainous areas and the Escarpment.
The soils are well drained; it is an area with a complex of shallow,
rocky and stony to deep, non-rocky and non-stony soils. Chemical
fertility is moderately good, but if the soils are cultivated
regularly, additional fertilizers are recommended. Erosion
susceptibility is high and conservation practices are advised on
the steeper (7° and more) slopes, which we find in the Escarpment
Zone.
Classification: MFbc, chromic Cambisols-partly with lithic phase;
with eutric Regosols and Rock Outcrops.

7. Soils developed on the footslopes. Here we find a complex of (moderately)
well drained soils. 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 might
be too wet (too little oxygen, which is of vital importance to
plant growth). The soils are deep; in many places they have an acid
humic topsoil (see above) and/or have deep cracks and/or are moderate
calcareous. Natural fertility is rather good though again it
should be said that the acidity has a negative influence. If the
plots are used regularly, additional fertilizers are necessary.
The soils with cracks (Vertisols) contain a high proportion of a
type of clay mineral that expands when wet and shrinks under dry
conditions. During the dry season large cracks develop (due to
shrinking); infiltration rates are high because of these cracks
and consequently erosion will hardly occur. In the wet season the soils
swell again, permeability drops to very low values once the soil is
saturated; under this condition the soil is very susceptible to
erosion and has a poor workability. If deep cracks occur this can
also have a negative influence on the workability. Soils with a humic
topsoil are not very susceptible to erosion while the remaining
soils (Luvisols) are very susceptible to erosion.
Classification: FVC, undifferentiated Luvisols, luvic Phaeozems
and chromic Vertisols.
8. Soils also developed on the footslopes. These soils are well drained, very deep and the structure is rather loose. Chemical fertility is rather good, though extra fertilizers are recommended if the plots are intensively used. Erosion usually is no problem on these soils because they have a good infiltration capacity. Classification: Fuc1c, chromic Luvisols; with rhodic Ferralsols and luvic/ferralic Arenosols.

10. Soils developed on almost flat areas (Piedmont plains = almost flat erosion surfaces at the foot of mountains). The soils are well drained, deep and moderately calcareous (contain lime, which is a favourable characteristic; on many other soils lime has to be added). The soils have a sodic deeper subsoil. Sodic means that the soil-material contains relatively much sodium, which makes plant growth almost impossible. By using special fertilizers this sodium can be replaced. Non-saline irrigation water will be necessary then to wash away the now sodium containing soil-water (all very expensive). Erosion can be severe under bad management. Classification: Yubk, calcic Cambisols-with sodic phase.

13. Soils developed on sloping areas at a relatively high altitude. The soils are well drained and extremely deep. Chemical fertility is good; they have a favourable moisture storage capacity and aeration conditions (oxygen is of vital importance for plant growth). Again, extra fertilizers are recommended if the soils are cultivated intensively. The soils have a good structure stability which enable them to be cultivated even on moderately steep slopes with a minimum erosion hazard. Classification: eutric Nitisols.

24. Soils developed on flat areas along the rivers (alluvial deposits). The soils are well drained to imperfectly drained. The latter means that water is removed from the soil slowly enough to keep it wet for significant periods. This can result in a shortage of oxygen. 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 a rather good chemical soil fertility, though additional fertilizers are recommended if intensively used.
There hardly is any erosion in these flat areas also because the infiltration capacity is good. Flooding and consequently accumulation of new material can cause problems: good soil material is covered and/or young plants can be damaged. Classification: AAjc, calcaric Fluvisols.

2.7. Climate

Long rains in this area occur from April to August with a minimum in June and the short rains are confined to November. The topography however, causes considerable differences in precipitation, depending on the altitude and the exposure of the valley side (the Western side receives more rain (convective rains). The high areas on top of the mountains/scarp receive maximum amounts of rain, while at the valley floor rainfall is lower throughout the year. Also the rainfall distribution varies much more between the years and between the months. See graph 1 for Chebloch Bridge: although the average annual rainfall was 959 mm., one third of the years received less than 750 mm.

Temperature in the valley is fairly high with an annual maximum ranging from 26° to 34° and an annual minimum from 14° to 22°C, causing high evaporation rates. On the slopes and scarp and in the mountains the temperature will be lower (12° to 20°).

Evaporation is lowest in the wet periods.
We will give rainfall figures for a station in the valley (near Cheploch Bridge, just East of the area and for a station on the high Uasin Gishu Plateau (Kipkabus Down Estate, West of the area), see graphs 1 and 2, page 17.
We adjusted the schematical boundaries of the Agro-Climatic Zone Map to the more detailed boundaries of the Soil Map.

<table>
<thead>
<tr>
<th>zone</th>
<th>r/E* ratio</th>
<th>climatic designation</th>
<th>mean annual temperature in °C</th>
<th>climatic designation</th>
<th>average number of growing days</th>
<th>major limitations to maximum production in approximate order of importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>65 to 80</td>
<td>sub-humid</td>
<td>12 to 16</td>
<td>cool to fairly cool</td>
<td>290 to 365</td>
<td>soil fertility, farm management, drainage</td>
</tr>
<tr>
<td>III</td>
<td>50 to 65</td>
<td>semi-humid</td>
<td>14 to 20</td>
<td>fairly cool to warm temperate</td>
<td>235 to 290</td>
<td>soil fertility, farm management, rainfall</td>
</tr>
<tr>
<td>IV</td>
<td>40 to 50</td>
<td>semi-humid to semi-arid</td>
<td>18 to 22</td>
<td>warm temperate to fairly warm</td>
<td>180 to 235</td>
<td>farm management, rainfall, soil fertility</td>
</tr>
<tr>
<td>V</td>
<td>25 to 40</td>
<td>semi-arid</td>
<td>20 to 24</td>
<td>fairly warm to warm</td>
<td>110 to 180</td>
<td>rainfall, farm management, soil fertility</td>
</tr>
</tbody>
</table>

* r = rainfall, E = potential evaporation
Graph 1 shows dispersion figures for the monthly rainfall. Every dot corresponds with the rainfall figure in a particular year for the month. Figures in brackets indicate the number of years in which no rain fell in that month.
Graph 2 shows the variation from the long term mean, using available annual figures.
2.8. Suitability of the various land mapping units for agriculture.

Using the information of the combined soil- and agro-climatic zone map (map, p. 12) and of the Farm Management Handbook (2) we made an evaluation for the different mapping units of their suitability for agricultural use. Within the units quite some variation may occur, as they are derived from the 1:1 000 000 scale soil map (1).

II-1 and II-13:
are suitable for smallholder rainfed arable farming with a traditional technology, if crops are cultivated which requirements suite the climatic conditions (sub-humid, cool to fairly cool): wheat, maize, pyrethrum, potatoes and vegetables. At (gently) sloping places contour ploughing is necessary to avoid erosion.
Management improvements would increase yield: better ploughing, more weeding, sufficient fallow periods, mulching and if possible (expensive) application of fertilizers.
The area is suitable for sheep- and dairy cattle husbandry, though overgrazing should be avoided (correct stock-ratio's).
The existing forest reserves should be kept intact, because they are of vital importance for the water supply in the entire catchment area.

III-1 and IV-1:
are moderately suitable for smallholder rainfed arable farming with a traditional technology, if the requirements of the cultivated crops match the climatological conditions: wheat, maize and pyrethrum in zone III, maize and sunflower in zone IV.
Due to the steeper slopes in these areas conservation measures are necessary to avoid erosion: contour ploughing, avoid bare surfaces and trampling afterploughing and/or harvest.

(2) Ministry of Agriculture: Farm Management Handbook Part II, Rift Valley Province, Keiyo Marakwet, pp 233-279 (German Agricultural Team; R.Jaetzold), Nairobi, 1983.
Management improvements would increase yield (see II-1, II-13). The area is moderately suitable for sheep- and dairy cattle husbandry (especially zone III) if trampling is prevented; in fact the best would be zero-grazing. Again, existing forest reserves should be handled with much care because of their water supply function.

III-2 and IV-2:
are not suitable for any traditional smallholder rainfed arable farming because of the mountainous character (very steep topography). If drastic conservation measures are taken (very high cost and labour intensive terracing) the areas would become moderately suitable for arable farming (if cultivating the same crops as described for III-1 and IV-1). It would still be on a small scale though, and costs and energy would probably not balance the profits.
The units are not suitable for grazing either; only with zero-grazing the areas could tolerate some livestock activities.
Any natural vegetation should be kept in peace (water supply).

IV-7:
is suitable for smallholder rainfed arable farming with a traditional technology, if crop requirements match with the climatic conditions (semi-humid to semi-arid; fairly warm to warm).
Management improvements would increase yield (see II-1 and II-13). Small scale irrigation projects seem possible, though not necessary if the right, drought resistant crops are cultivated.
This unit is also suitable for ranching if overgrazing is prevented (correct stock-ratio's). A good management is necessary however; better than the traditional methods. At least part of the valley floor area is infected by tse-tse. There tse-tse control measures are necessary first (bush-burning/control etc.).

IV-8:
is moderately suitable for traditional smallholder arable farming (rainfed), if drought resistant crops are cultivated (see IV-7). Better management will increase yield. The unit would become suitable even, if for instance water-harvesting-practices and fertilizers are applied.
The unit is suitable for ranching (comparable with IV-7).
V-10:
is not suitable for any arable farming because the soils have a sodic subsoil and salinity is a very unfavourable (toxic) characteristic for most plants. If the area is irrigated and drained very carefully (to wash out the saline material) arable farming is possible, if crops are cultivated that tolerate high temperatures. Locally soils may lack the saline properties; there very drought resistant crops can be cultivated. A detailed soil survey is necessary here and the drainage measures are very expensive and of high technological standard.
The unit is moderately suitable for ranching. The climatic condition may become a restriction (poor vegetation cover) and large parts of the area are infected by the tse-tse fly. A thorough field check of the vegetation and tse-tse infection would be useful here. If ranching is practised management should be good: enough drinking places, correct stock ratio's, rest periods for the vegetation etc.

V-24:
is not suitable for smallholder rainfed arable farming because of the climatological conditions, flooding hazard (which has advantages to: fresh, fertile material is deposited) and soil characteristics (imperfect drainage, salinization hazard). Locally situations exist where the area is moderately suitable for arable farming, but then, of course adapted crops should be cultivated: millet, sorghum etc.
The suitability of this unit for ranching is comparable with unit V-10.
3. POPULATION DEVELOPMENT

The Keiyo or Elgeyo (as they were called by the Maasai and later by the British) are part of the Kalenjin language and cultural group. Originally the undifferentiated Kalenjin came from the southern part of the Sudan and settled in the area between Mount Elgon in the West, Mount Tiatia in the East and the area which is now Kericho in the South. This probably happened before A.D. 1000. They were a mobile hunting and gathering group of people, operating in small units. In the period between 1600 and 1800 some differentiation took place, but probably the various sub-groups still had a high mobility, using both the highland plateau and the drier parts of the Rift Valley for their hunting and gathering activities. According to Massam the Keiyo stories about their origin tell about a dramatic period when during a heavy drought the 'Kurut' people (still to be found in Weiwei Location of West Pokot District) left the southern part of the Kerio Valley. After this drought there must have been a period of favourable climate, because "from all sides people came" and occupied the Escarpment and the Valley. Most of them were Kalenjin speaking, coming from Baringo, from Nandi, from Sebei and some of them were returning Kurut-refugees. Massam also tells about Kisii among this group. After this influx the area was divided into 16 territorial entities, each one combining a variety of ecological situations. Ten of these entities were in the present Soy-Kocholwo area: Rokocho, Changach, Sego and Marichor, Mwen, Kawach, Tomeio, Maoi, Kapwon and Metkei, from North to South; see map 2, page 6. It is unknown when this settlement took place. According to Kipkorir the various territorial groups had reached "a state of political and economic equilibrium" by the end of the 18th Century.

We do not know whether there is a direct connection, but at the end of the 18th Century the Uasin Gishu Maasai (or better: the Ψ-Washin Kishu or to the Kalenjin: the Ikwapek) settled on the Uasin Gishu Plateau, coming from Ethiopia. This might have forced the Keiyo groups to settle permanently on the Escarpment and to give more attention to crop cultivation (millets and sorghum). We do not know when the Keiyo groups changed from hunting and gathering to livestock rearing and crop cultivation, but it might have been well before these new circumstances.
According to Massam around 1925 the Keiyo still regarded themselves predominantly as pastoralists. They used to graze their growing number of cattle on the plateau bordering the Escarpment, when the western neighbours were weak and they were forced to retreat with diminishing herds to their Escarpment refuge when the neighbours were strong. The 19th Century must have been a period with a lot of ups and downs in this respect. In the beginning of that Century the Uasin Gishu Maasai were seriously weakened by other Maasai, and were finally overrun by the Nandi at the end of the Century. After 1850 Karamojong raiding parties reached the Keiyo now and then. When the first British entered the area they found a situation of general insecurity with the Keiyo seizing cattle from the Sebei and fighting a war with the Tugen from Baringo over cattle. At the time the British came, the Keiyo probably had quite a lot of cattle (and goats) although raiding and disease (like the rinderpest of 1883 and 1913) dealt heavy blows now and then. Crop cultivation always was a secondary means of food production in this area, and unlike other parts of the valley no irrigation took place: there was not enough water in the few permanent rivers of the area. Crop yields depended on rainfall only and after three years of cultivation fields were left fallow for ten years.

When the British took a large part of the grazing areas in the West by leasing it to white settlers and forest concession firms, cattle expansion became impossible and the Keiyo were forced to give relatively more attention to crop cultivation and small stock (and to beekeeping). This was especially so in the area which is now Soy Location and less so in the Kocholwo area.

In the 1930's things changed again. Part of the western highlands, around Chepkorio and Nyaru was added to the 'Elgeyo Reserve' again. People from the Escarpment of Rokocho and Marichor began to drift westward to Chepkorio while people from Tumeyo went up to Nyaru. At the end of the 1930's also people living in the new 'Metkei Forest' were evacuated to Chepkorio and Nyaru. So a variety of clans came together there and laid the foundation for the 'Elgeyo smallholder boom' which would become famous in the 1950's.
The large majority of the Southern Elgeyo however still were living in the Soy-Kocholwo area and many labour migrants in Uasin Gishu — a group increasing rapidly from 1937 to 1947 — as well as many Mosop colonists still retained their farms on the Soy-Escarpment.

Although there are figures available about the adult population in the Southern part of the Elgeyo Reserve for the period 1934–1947 and although there are figures for the total population from the 1948 Census these are all so unreliable (and so low) that we do not present them here. Moreover the boundaries of the Reserve and lateron Southern Division do not correspond with the present boundaries of Soy and Kocholwo Locations.

So we only present the population figures from the 1962, 1969 and 1979 Censuses.

Table 2: Population in Soy (incl. Kocholwo) Location, 1962-1979

<table>
<thead>
<tr>
<th>Year</th>
<th>Males</th>
<th>Females</th>
<th>Total Soy</th>
<th>km²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
<td>18410</td>
<td>16892</td>
<td>35302</td>
<td></td>
</tr>
<tr>
<td>1969</td>
<td>9084</td>
<td>8076</td>
<td>17160</td>
<td>433</td>
</tr>
<tr>
<td>1979</td>
<td>6193</td>
<td>5963</td>
<td>12156</td>
<td>432</td>
</tr>
</tbody>
</table>

The area of Soy Location (including Kocholwo) probably was the same in 1962 as in the other two census years. Between 1962 and 1969 Soy was the only location in Elgeyo Marakwet with a population decline and it was a considerable decline. The population in 1969 was less than half of that of 1962, only seven years before.

Table 3: Soy compared with Mosop/Metkei and with Uasin Gishu

<table>
<thead>
<tr>
<th>Year</th>
<th>Soy</th>
<th>Mosop/Metkei</th>
<th>Total Southern</th>
<th>% of Soy in Southern</th>
<th>Elgeyo in Uasin Gishu</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
<td>35,302</td>
<td>25,000</td>
<td>60,000</td>
<td>59%</td>
<td>7,193</td>
</tr>
<tr>
<td>1969</td>
<td>17,160</td>
<td>27,000</td>
<td>44,000</td>
<td>39%</td>
<td>30.779</td>
</tr>
<tr>
<td>1979</td>
<td>12,156</td>
<td>22,000</td>
<td>34,000</td>
<td>36%</td>
<td>unknown</td>
</tr>
</tbody>
</table>

When white farmers left Uasin Gishu large farms, in 1961-63, thousands of Elgeyo families settled there, partly on the new settlement schemes, partly as buyers and partly as 'confiscators' of the ex-white property. The Elgeyo came from all over the old 'Elgeyo Reserve' from Irong, from Mosop but especially from Soy.

Legend:
Population density per km²:
- 0-10
- 16-20
- 31-50
- 51-75
- 76-100
- 100 and over

Graph 3: Population pyramid Soy Location 1979

male  female

- male surplus
- female surplus
Here the population decrease was really dramatic between 1962 and 1969 and there was still a decrease from 1969 to 1979 although the rate of decline slowed down. Due to the differences in population decline between Soy and the Highland parts of Southern Division the share of the Soy population in Southern Division as a whole decreased too: from more than 90% in 1930 via ca 70% in 1950 to 36% in 1979. See also map 6, showing the changes in population densities.

The density map of 1979 shows a rather thinly populated northern and southern part of the location and a more densely populated central area. This is the area where the Fluorspar Mining Company is located. The densities are of course much higher in 1962 and 1969. In 1962 the highest densities were found in the northern two sub-locations, where the largest outmigration took place afterwards. By 1969 the southern part was more densely populated than the northern part.

<table>
<thead>
<tr>
<th></th>
<th>1962</th>
<th>1969</th>
<th>1979</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emsea</td>
<td>9.602</td>
<td>2.365</td>
<td>Cheptebo 820</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Emsea 1.025</td>
</tr>
<tr>
<td>Muskut</td>
<td>10.899</td>
<td>4.225</td>
<td>Muskut 797</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sego 1.071</td>
</tr>
<tr>
<td>Kimwarer</td>
<td>4.940</td>
<td>2.991</td>
<td>Morop 2.143</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Turesia 1.232</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Kimwarer 1.532</td>
</tr>
<tr>
<td>Kaicholwa</td>
<td>5.684</td>
<td>3.059</td>
<td>Kocholwo 903</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turmo 1.094</td>
<td>Molol 845</td>
</tr>
<tr>
<td>Kapkosom</td>
<td>4.177</td>
<td>2.794</td>
<td>Kaptumoi 696</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kimoloi 632</td>
<td>Kolimur 1.092</td>
</tr>
</tbody>
</table>

(in 1948 the Emsea area was part of Rokocho, with 5,400 people counted; the Muskut area was part of Marichor, that also included Chepkorio in the highlands, with 6,300 people counted; the Kimwarer area was part of Tumeyo, that also included the Nyaru surroundings in the highlands, with 4,000 people counted; the southern part was included in Metkei, with 6,100 people counted; as said before there probably was considerable undercounting)

The population pyramid of Soy Location in 1979 (see graph 3, p. 21) shows an average number of persons in the age-group 15-49, an overrepresentation in the group 50 and above and an underrepresentation in the group of 14 years and younger compared with Elgeyo Marakwet as a whole. When outmigration takes place usually the younger ones leave the area which might explain both
the overrepresentation of older and the underrepresentation of younger people. That the group of 15-49 is average might be explained by on the one hand the outmigration and on the other hand immigration of male workers to the Fluorspar Company. The last phenomenon probably explains the surplus of males in the age-group 15-49. Map 7 shows that the male surplus was confined to the areas of the Fluorspar Mine.

If we compare the number of children schooling in 1982 with the number of children in the age-group 5-14 in 1979, we might conclude that at least in this age group a growth has taken place between 1979 and 1982.

<table>
<thead>
<tr>
<th>Children between 5 and 14</th>
<th>Children on primary schools in 1982</th>
</tr>
</thead>
<tbody>
<tr>
<td>Census 1979</td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>1573</td>
</tr>
<tr>
<td>female</td>
<td>1517</td>
</tr>
<tr>
<td></td>
<td>1868</td>
</tr>
<tr>
<td></td>
<td>1649</td>
</tr>
</tbody>
</table>

We assume that all the children on schools are between 5 and 14, (probably in fact the whole group of children going to school might be a little older).

We also assume that all children are attending school which is probably the case for the boys. Maybe not all girls are schooling.

On the basis of the above we think that the decline of the whole population has probably come to an end and that the population might even be growing since 1979. But future growth will very much depend on what happens to the Fluorspar Company.

Map 7:
Sex Ratio,
1979.
4. ECONOMIC HISTORY

4.1. COLONIAL TIMES

When the British arrived in the area they found most people living on the escarpment ledge, herding their cattle on the highland pastures and herding their sheep and goats in the valley, where also beekeeping and gathering of wild fruits and vegetables was practised. On the escarpment the women cultivated fingermillet near their huts; only in the Southern part of the valley the fields and the stores were not near the homes. Although the area was rather isolated, there were (trade) contacts with other people, especially via the Kerio Valley public route (called the 'commercial route of the valley' by Kipkorir).

From Massam's observations we conclude that the Keiyo households were not undifferentiated economically, but the Keiyo society had a number of social rules to alleviate poverty of individuals (like the old people) or households: cows were lent to poor men; poor people could become caretaker for wimbi stores which were not near the homes in exchange for part of the store's contents; it was allowed for old people to beg for food after the harvests etc.

Between 1919 and 1923 the British got a grip on the area. All people were confronted with taxation, with labour recruitment and with the alienation of part of their highland pastures. On top of that the people of the northern part of the area lost all their highland pasture as well as the important salt licks there to a commercial forest concession company. These people were forced to bring their stock to the valley, where half of it died, according to Massam. Later the people tried to distribute the remaining animals among friends in other clans, from Tumeyo to Kapchemutwa, but after that those remaining highland pastures were 'hopelessly overstocked' (Massam, 1927). Some years later however part of the alienated area was given back to the Keiyo and in the 1930's there was a considerable movement of people westward (see 2.1.) combined with a forced evacuation of people from the Metkei Forest to the Chepkorio area too (Arap Chellal, 1969).

The sudden problems of forced 'overpopulation' on the escarpment and adjoining portions of the highlands combined with taxation resulted in large scale labour migration.
In 1925 large numbers of men were forced to work on the Uasin Gishu railway line and many of them died during an outbreak of influenza (1). From the end of the 1920's till after the 1950's compulsory labour recruitment was no longer necessary: taxation alone was enough to bring hundreds of Keiyo men to the Uasin Gishu farms, as there was no other possibility for them to get the money to pay taxes (Stichter, p. 34). Probably the majority of the Keiyo men did work in Uasin Gishu for a number of years. Most of them did return to their villages now and then, but all their money must have been absorbed by taxes and minor consumption items because almost nobody seems to have invested in agricultural innovations or business in the escarpment zone. After the 1940's however some did invest in their Chepkorio farms but this does not concern us here.

At the end of the 1930's not only men went to the large farms. Also "large numbers of women and children earned easy money by picking pyrethrum on Nabkoi and Kipkabus farms" (AR 1939, p. 14-15).

The agriculture of the Escarpment and the Valley did not change much here until the 1960's. Because of growing population pressure the periods of fallow decreased from ten to seven years (Elgeyo Marakwet District Gazetteer, about 1956) but the type of crops, the total lack of 'official' marketing and the crop husbandry techniques still were the same.

The British did not believe in any agricultural development possibilities for a long time. In 1928 the District Commissioner stated "The Elgeyo are not great agriculturalists; it is hard to blame them, they have to leave no stone unturned" (A.R. 1928, p.20). Also Massam wrote: "There is ..... little hope of the Elgeyo ever becoming more than labourers on farms. The reserve, depleted of its young men, will doubtless, ere long, become a resort for the old people and the idle youths. The dispersal of the vigorous men and their families must inevitably result in the breaking down of the tribal tradition which hitherto has held the tribe together" (Massam, 1927, p. 131).

During the African Land Development (ALDEV) period hardly any plans were made for this area. We only know about an 'Emsea Piping Scheme' and a 'Kerio Valley Grazing Scheme-Emsea' but in the archives we could not find any other information about them so we think nothing happened.

(1) In a book dealing with Migrant Labour in Kenya (Harlow, 1982), Sharon Stichter explicitly calls it compulsory labour (p.81).
In the Kenyan context the area of Soy-Kocholwo must have been one of the extreme examples of a 'labor reserve': more than a thousand migrant labourers, some 20,000 Shs of annual tax money and 1000 goats sold through the Muskut goat market were the relations of the area with the outside world at the eve of Independence.
4.2. 1963 to 1970

The 'Seven Year Agricultural Development Plan' promised some bold plans for the area. The western escarpment parts should be depopulated and "all cultivation closed". The people should be evacuated to the Forests, to Uasin Gishu and to Trans Nzoia (in fact outmigration to these areas was already in full swing, see 2.2.), and trees should be planted on the escarpment. For the Southeastern part of the escarpment zone the 'Kaimor Settlement Plan' was launched: some young men "already fenced large paddocks and cultivated small acreages, in the last eighteen months" and these men were seen as the nucleus of the settlement scheme of some 250 households for the production of beef, maize and groundnuts. In 1964-65 16,700 £ was voted for land consolidation, sahiwal bulls, piped water, loans for spray races, improved stock and seeds, and the construction of a road. Although it was envisaged that "there is every prospect of this project being a great success" as far as we know nothing happened. For the valley it was observed that, despite tsetse, "recently stock moved into the area" and were "gradually eating back the (tsetse infested) bush". This had to be encouraged. Also investigations had to be made for sisal possibilities.

In practice the only thing happening until 1970 was the arrival of two technical agricultural assistants at Muskit, who probably assisted in introducing maize and beans. The people themselves tried to organize self help projects to get cattle dips (e.g. at Koimur, Changach, Emsea, in the period 1969-1972). Only from 1971 onwards the government became more active in the area in the sphere of economic development, following the arrival of a large mining company, the Fluorspar Company. We will first give some details about this company and its activities. Afterwards we will give a description of recent agricultural development policy. And finally we will present a short summary of the major findings from our own household surveys, of which the details can be found in part II of this profile.
The main fluorite deposits of the Kerio Valley which are located in the areas of Kimwarer, Choff and Kamnaon were first discovered in 1967 by a prospector searching for semi-precious stones. Al-Amin, the prospector who initially mistook the purple fluorite evident in some of the outcrops for gemstone, started a hand-mining operation at the rich deposits on Kamnaon ridge to supply fluorspar to the Bamburi Portland Cement Company Ltd. in Mombasa. The operation, which relied on donkeys to transport the fluorspar up the escarpment, produced at its peak approximately 400 t/month of high grade fluorspar. It was bought out in 1971 by the newly formed Fluorspar Company of Kenya Ltd. (FCK) which under the auspices of the Kenya Government planned to exploit the deposits on a much larger commercial scale". (Jones 1982, p. 536-537) The labourers working on the site were taken over and the Company got a lease for which land compensation money was paid to individual inhabitants of the area and not to the clan. According to Kipkorir this was rather strange.

"As the land on which the mines are located had not been adjudicated, it did not legally belong to any individuals as such but to the County Council which holds it in trust for the people. Although those individuals who claimed to have been usufruct holders were compensated, in the absence of title deeds this exercise could never be fully completed as the relatives of those who received 'compensation' would always keep coming for their share. Added to this is the fact that the mining operations have radically altered land values." (Kipkorir 1981, p.8).

"FCK was owned 51% by the Kenya Government through the Industrial Commercial Development Corporation of Kenya, 24.5% by the Continental Ore Corporation Ltd\(^2\) who were the managing partners and 24.5% by the Bamburi Portland Cement Company Ltd\(^2\)" (Jones, 1982, p. 537). In 1971 a plant was built to produce metallurgical-grade fluorspar and construction started of a 24 km. road up the escarpment to give access to the railhead at Kaptagat. In 1975 a fluorspar concentrator with a design capacity of 10,000 dry t/month of acid grade fluorspar was erected. In the meantime other infrastructural improvements were made too: bridges were built over the Kimwarer and Mong Rivers, linking Kocholwo with Sacho in Baringo; also electricity and telephone connections were made.

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1) B.E.Kipkorir: "Historical Perspectives of Development in the Kerio Valley", in "Kerio Valley, Past, Present and Future", Nairobi 1981
2) A U.S.A.company, later controlled by the International Minerals and Chemical Corporation Ltd.
3) Costs: 4 million KShs.
In 1976-77 the Company reached its peak production, and there were 500 labourers, of which 50% came from the surroundings\(^1\). An area that was one of the most outspoken outmigration areas in Kenya now saw people coming in. The positive developments in the southern part of the valley brought imaginative planners to the idea that another fluorspar mine might be opened in Kolloa, East of Tot in Baringo District. A railway line from Maji Moto via Kimwarer to Kolloa and further to Sudan —total costs 60 million KE—would open up the valley completely\(^2\).

But in Kimwarer things were going not very well after 1977. According to Jones: "FCK continued to operate both the metallurgical and acid grade operations, but in doing so it experienced a number of serious technical, sales and financial problems. The availability of suitable ore for the metallurgical-grade gravity jigging plant diminished and production fell to less than 10,000 t/yr. in 1978. The acid-grade operation suffered from grade specifications due to high SiO\(_2\) grades in the concentrate thus making the product more difficult to sell in what was already a tight market at that time ... These problems, coupled with poor company financing, unsatisfactory operations, a lack of sales planning and shortage of spare parts for the plant and mining machinery, culminated in FCK being put into receivership in May 1979" (Jones, 1982, p. 537).

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\(^1\) From a study about Elgeyo Marakwet done in 1976: Thijs de Jong and John Tits: "Vraagstukken van 'een ontwikkelingsgebied met tribale kenmerken in een overgangsfase", Groningen, 1976.

\(^2\) In the District Development Plan 1974-78 a survey is mentioned, which was done in 1977-78. Later another survey was done for the Kerio Valley Development Authority.
There were also some problems in the surroundings. The company had started a dispensary, which was free for all labourers, but not for the other inhabitants, although they only had to pay a nominal charge. But still this was hardly accepted by the local people. Also a private school was started, of rather high quality education. The demand for the school was so high that the admission had to be restricted. From academic and newspaper circles there were problems about the pollution caused by the effluents of the mine and a district doctor pointed to the medical problems for the labourers (lung diseases). The Ministry of Agriculture officials and the County Council made problems about the unlicensed food trade in the area; especially milk.

In September 1979 a new company was formed, wholly owned by the Kenya Government, the Kenya Fluorspar Company Ltd, which bought the assets of the old company and continued the operation. The major buyer became the Soviet Union and normally they even bought fluorite above the contract volume. But when they did not do that, the company had to close down for some months to avoid overproduction, as happened from December 1982 to April 1983 and afterwards.

The new company has 175 members of staff (people earning at least 2000 Shs/month), 300 permanent workers (earning between 450 and 2000 Shs/month) and 50 to 150 casual labourers (earning 2Shs50 to 6 Shs per hour). The turnover in 1981 was approximately 110 million Shs and in 1984 7 million Shs in every month working. Total salaries and wages are approximately 15% of turnover. For the area of Soy-Kocholwo this is a very important financial 'injection' every month. In the appendix of this profile we will give a picture of the overall effects of the company on the socio-economic situation of the area around the mine. We will use our interviews with labourers, farmers, market traders and shopowners, done in the period November 1982-January 1983.