Another problem is access to health care especially for rural families. Most rural Kenyans live more than 2km from the nearest health centre (Kenya, 1982). Only urban areas are better-endowed with health facilities. Urban places also monopolize some 75 per cent of Kenya's health personnel.

The relatively lower fertility in the urban areas of Kenya reflects greater access of women to education and more years in school. Also, it partly tells of the desire by urbanites to have smaller family sizes because of the high cost of rearing children. The use of contraceptives is also higher in urban areas.

Most Kenyan women (90 per cent in 1989) have heard of contraceptives. However, only 27 per cent of currently married women use them. This is probably because of inaccessibility to delivery points, long distances to family planning clinics and a lot of work to do at home (Kenya, 1980; Gachuhi, 1975).

It may be pointed out, however, that matters of family planning in African families are not a preserve of women. It depends very much on husbands' attitudes toward family planning (Sindiga, 1985). Yet, with the notable exception of Greeley (1977), only recently did work on Kenyan men's attitudes toward family planning begin (see Kenya, 1989a).

Having sketched Kenya's fertility and population change patterns, I will now turn to the study area. The next chapter outlines background data on the people of Narok and their landscape. This is a prelude to the discussion on their fertility and population change.

4. STUDY AREA: NAROK - ENVIRONMENT AND PEOPLE

Physical Environment

Narok is one of the two districts inhabited by olmaa speaking peoples in Kenya (the other is Kajiado). It forms the western portion of Maasailand and is bordered by South Nyanza, Kisii and Kericho districts to the west, Kajiado to the east, and

Nakuru district to the north. The southern boundary is the Kenya-Tanzania border

Narok, which has an area of 18,513km^3, is separated from Kajiado by the Nguruman escarpment which rises to 2700m in altitude. The area to the West of the escarpment is hill territory which slowly merges into the Loita plains and Loita hills. The average altitude of this area varies from 1500m to 2100mm above sea level. The Western part of Narok is the elevated trans-mara plateau with an altitude of 1800m. In general, the Narok landscape rises gently from the south to north, with large plains in the area of Mara national game reserve dotted with hills, notably Loita and peaking at about 3000m in the Mau ranges.

Narok is a district of diverse ecological potentials and contains most of Kenya's moisture availability possibilities (Figures 4.1 and 4.2; Table 4.1). Annual rainfall varies between 500mm in the plains to 1800mm in the uplands.

The arable areas of the district are located near the borders. These include the Mau ranges with annual rainfall averages of between 1000 and 1750mm and trans-mara which receives rain nearly all year round. Rainfall in trans-mara ranges between 800mm and 2700mm.

The largest proportion of Narok district which is in the south and centre, including the Loita and central plain, is too dry for agriculture. Although the total average annual rainfall is between 500mm and 700mm, this is highly unpredictable in occurrence. In addition, evaporation at about 1800mm a year is too high to allow effective crop cultivation. Lack of sufficient rainfall in the Loita plains and the southeastern part of Narok retards development and is the basis for traditional pastoral practice.

Table 4.1: Moisture availability zones of Kenya

Zone	r/Eo (%)	Climatic classification	Average Annual rainfall (mm) r	Eo	Natural vegetation	Agricultural Potential	Area ('000 ha)	Proportion of Kenyan land area (%)
I	>80	humid	1100-2700	1200-2000	moist forest	very high	2,450	4.3
II	65-80	sub-humid	1000-1600	1300-2100	moist and dry forest	high	2,380	4.1
III	50-65	semi-humid	800-1400	1450-2200	dry forest and moist woodland	high to medium	2,570	4.4
IV	40-50	semi-humid to semi-arid	600-1100	1550-2200	dry wood-land and bushland	medium	2,870	4.9
V	25-40	semi-arid	450-900	1650-2300	bushland	medium to low/marginal	8,730	15.0
VI	15-25	arid	300-550	1900-2400	bushland, scrubland	low	12,640	21.7
VII	<15	very arid	150-350	2100-200	desert scrub	very low	26,530	45.6
Total							58,260	100.0

Key: r = average annual rainfall, Eo = average annual potential evapotranspiration

Sources: Sombroek et al (1982) and Appendix 2, Kenya Soil Survey Report El

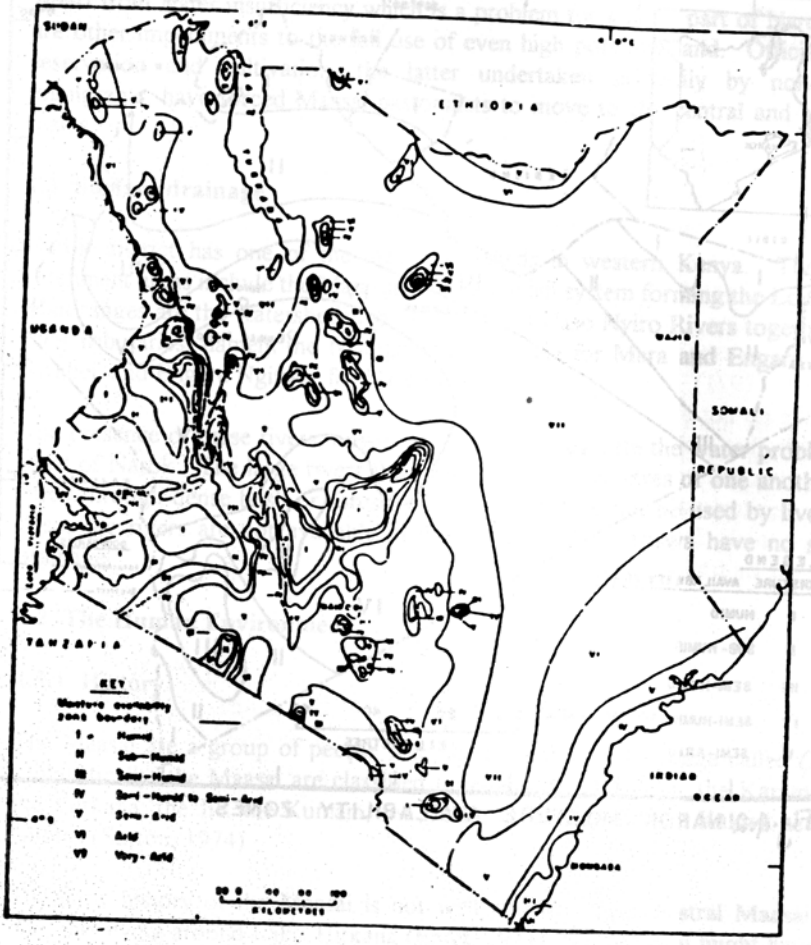

FIGURE 4.1 — MOISTURE ZONES OF KENYA (source: Kenya Soil Surveys)

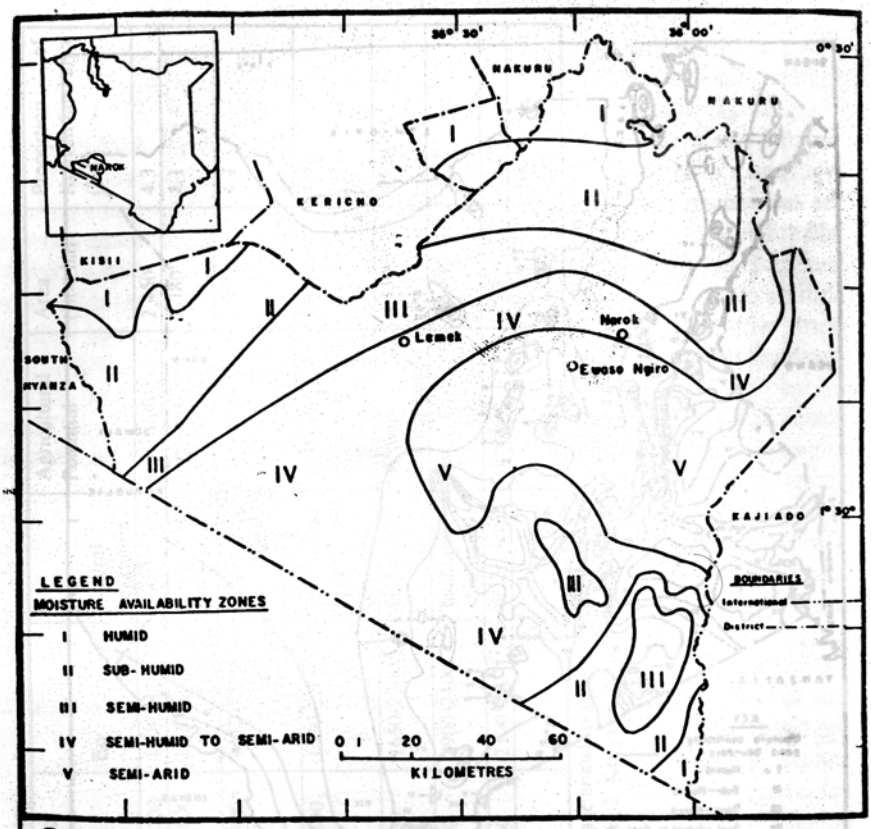

Fig. 4.2: NAROK MOISTURE AVAILABILITY ZONES

Apart from water insufficiency which is a problem for a large part of Narok there are other impediments to the full use of even high potential land. Official forest reservation and cultivation, the latter undertaken primarily by non-Maasai immigrants, have forced Maasai pastoralists to move to the central and southern plains.

4.1 Surface drainage

Narok district has one of the main watersheds in western Kenya. The water catchment areas include the Mau ranges and the hill system forming the Loita. The Mau ranges are the watersheds for the Mara and Uaso Nyiro Rivers together with their tributaries, namely the Nyangores and Amala for Mara and Engare Narok, Siyabei, and Engare Ngitwar for Uaso Nyiro.

The presence of these rivers, however, does not ameloirate the water problem for most of Narok. The large rivers flow within a few kilometres of one another and often through dense bush or forest where the water cannot be used by livestock. Also, the rivers are not available in the places such as Suswa have no surface drainage.

4.2 The Human Environment

4.2.1 History

The Maasai are a group of people who share a common language called *Olmaa*. Linguistically, the Maasai are classified together with the Teso, the Karamojong, the Turkana, the Jie, the Kumam, the Dodo, the Kuku and the Kakwa as Plains Nilotes (Sutton, 1974).

The early history of the Maasai is not well known. The anestral Maasai were probably living around Lake Turkana (Ehret, 1974). The Maasai might have been the last important settlers in the Kenya highlands, northern Tanzania and the Rift Valley before European incursion (Sutton, 1966). Basing his evidence on Maasai occupation in Tanzania; in Kajiado, Narok, Laikipia, Samburu and Baringo districts of Kenya, Sutton (1986:3) argues that the Maasai as a group "must be a recent phenomenon because of the relative consistency of the language over such

vast distances". It would appear that the Maasai occupied much of Kenya during the seventeenth century (Ehret, 1974; Sutton, 1966 and 1986).

Despite reports that the Maasai do not mix with other ethnic groups and "have maintained racial purity" (Biss, et. al., 1971: 694) empirical data speak to the contrary. The Maasai, just as many groups in East Africa, have in history assimilated other peoples who in due course lost their identity to the "conquerors" (Sutton 1986). Moreover, the Maasai frequently married women from other ethnic communities (Kantai, 1971: xi). What unites the Maasai is the common language (and associated cultural attributes) and a common mode of production, livestock-keeping. Although certain Maasai groups cultivate the land, e.g. the Nguruman, Arusha and the IL Chamus, all Maasai prefer pastoralism. According to Kantai (1971), the Maasai adopt other subsistence practices only when conditions do not allow pastoralism. However, it is known in Maasai mythology and beliefs that God gave all cattle to them and that no other ethnic group has a right to own and keep them. Consequently, the Maasai justify their raids in other people's territories to "retrieve" livestock. Nevertheless the Maasai are also known to enjoy cereals, for example, maize which is produced by neighbours. Such grain is obtained via trade.

4.2.2 Organization

Maasailand is divided into territorial units or sections called *iloshon*. Narok district is inhabited by some eight sections, namely Iloita, Ildamat, Ilpurko, Isiria, Ilwuasingishu, Ilmoitanik. Ilkeekonyokie and Ilaitayiok (Kantai, 1971:x; Kipury, 1983:ix). Each section is composed of several clans (*ilgelat*). A number of families (*ilmarei*) make up a clan (Lewis, 1967:68). The clans operate as patrilineal exogamous groups.

Each *iloshon* is a separate entity with its own territory. However, the Maasai frequently share herding resources in the territory of other sections especially during times of drought. Also, each section would have its own peculiar dress, weapons, beadwork, ways of conducting its ceremonies and even constructing housing (see, Mol, 1978:viii).

The Maasai settlement pattern is dispersed. A number of families live together in a village (*enkang*) which comprises of a ring of huts surrounded by a circular thorn

fence[3] An *enkang* may have a variable number of people and herd size. One family is made up of a man, his wife or wives and unmarried children. One of the reasons for staying together in an *enkang* is to protect one another against wild animal attacks and also to protect livestock from theft. The Maasai own cattle as individual families, but members of an *enkang* usually take their livestock together to the pastures and water; the latter being held as commons.

4.2.3 Housing

Traditional Maasai houses are dome shaped structures with walls made of saplings. The structure stands some 6 feet on the ground. The roof is smeared with cow dung.

The interior of the house is partitioned to accommodate the main room at the centre where the fireplace is located, a bedroom for the lady of the house and a children's bedroom. A Maasai house contains no windows or any form of ventilation, save form a small hole in the wall for watching over the livestock at night.

The Maasai keep calves and shoats in the houses at night. Consequently the inside of the house becomes wet and moist and this creates ideal conditions for the infestation of infectious diseases in general and respiratory disorders in particular. These problems become more acute during the rainy periods when the house tops leak heavily creating good ground for pneumonia.

In an *enkang* people share space with livestock. Inevitably, animal droppings and trampling make the place a quagmire of mud particularly in the wet season. Flies abound and mosquitoes can survive. These foster eye diseases, diarrhoea, malaria and other infectious diseases.

4.2.4 The Health Environment

The primary causes of morbidity and mortality are infectious communicable diseases (Table 4.2). These reflect the problems of environmental sanitation, unavailability of sufficient clean water and the relatively low level of personal hygiene.

Table 4.3 provides rankings of ten leading diseases in Narok district as per the records of health facilities. These rankings are based on the number of cases treated during 1983 and 1987. For these two years, diseases of the respiratory system and malaria were the leading causes of morbidity. Other important diseases are intestinal worms, diarrhoeal problems and skin ailments. The following is an attempt to take accounting of the leading diseases afflicting the people of Narok district.

Table 4.2: Narok district: cases of diseases reported in 1986*.

Disease	Number	Disease	Number
Malaria	44863	Diseases respiratory system	55633
Diarrhoea	13977	Pneumonia	7800
Tuberclosis	184	Abortion	816
Leprosy	14	Diseases of puerperium and child birth	433
Whooping cough	312	Neoplasms	2
Tetanus	3	Mental disorders	36
Meningitis	31	Dental disorders	439
Poliomyelitis	34	Diseases of skin	18086
Chicken pox	550	Rheumatism, joint pains	4496
Measles	2252	Congenital anomalies	80
Infectious hepatitis (jaundice)	23	Pyrexia of unknown origin	830
Mumps	639	Poisoning	620
Gonorrhoea	11510	Accidents, fractures, burns etc.	6396
Urinary tract infections	2286	Brucellosis	-
Schistosomiasis	147	Syphilis	-
Intestinal worms	16235	Anthrax	433
Malnutrition	554	Tonsolitis	3395
Anaemia	1716	Bronchitis	211
Eye infections	6484	All other diseases	49705
Cataract	122	Total new cases	98276
Ear infections	3345	Total number of revisits	77709
Diseases of circulatory system	583		

Note: * These cases probably do not provide the full picture of the incidence of these diseases because the Maasai, who form some 56 per cent of the population of the district - the rest being immigrants - live far away form health facilities. Also, quite a large proportion of the Maasai seek therapy in traditional medicine.

Source: Republic of Kenya, 1988: 139.

Table 4.3: Ranking of ten leading diseases in Narok, 1983 and 1987

Disease group	Rankings	
	1983	1987
Diseases of respiratory system	1	1
Malaria	2	2
Intestinal worms	3	4
Diarrhoeal diseases	4	5
Pneumonia	5	7
Skin diseases	6	3
Gonorrhoea	7	6
Eye infections	8	8
Accidents, fractures, burns	9	9
Rheumatism, joint pains	10	10

Notes: 1. These rankings are based on people who received treatment at health facilities.
Source: Republic of Kenya. no date. Narok District Development Plan 1989-1993. Nairobi: Ministry of Planning and National Development.

4.2.5 Diseases of the respiratory system

The Maasai live in small round huts with hardly any ventilation. They share these with shoats and calves. Such overcrowding is worsened by lighting fires which produce smoke. These conditions lead to various respiratory tract infections including pneumonia, tuberculosis, flu and common colds.

4.2.6 Malaria

Malaria mosquitoes find ideal habitats in the bushes, forests and swamps which characterise Maasailand. Also, mosquitoes can and do survive in pits and quarries, and along roads where water stagnate, since a large part of Narok is usually dry and discourages large mosquito breeding the latter increase dramatically following the rainy season causing malaria epidemics.

4.2.7 Intestinal worms

The Maasai eat considerable amounts of meat in their normal diet and also during ceremonies. However, much of this meat is either eaten raw or is poorly cooked. Yet the cycle of food contamination with various worms cannot be broken without higher personal hygiene and cleaner water supplies. Save for very few exceptions,

the Maasai in Narok do not have would graze. All kinds of worms including hookworms, tapeworms and roundworms are present.

4.2.8 Diarrhoeal diseases

As already indicated, water is a serious problem in Narok. This is worsened by lack of latrines and overcrowding in houses. Overcrowding especially encourages flies which abet the spread of fly-born diseases including diarrhoea and vomiting.

4.2.9 Skin diseases

Skin diseases such as scabies, measles etc. are prominent because of lack of clean water and low personal hygiene. Also, there is little supply and consumption of fresh fruits and vegetables among the Maasai.

4.2.10 Pneumonia

This is related to overcrowding in houses. Maasai houses are smeared with cow dung on the roof and are particularly troublesome during the rainy periods. They leak heavily. These conditions are ideal for pneumonia and upper respiratory tract infections. Sometimes, the Maasai cover the tops with cow hides as shelter against rain. This, however, does not provide complete protection and the houses become a muddy mess, thanks partly to urine, dung and animal trampling.

4.2.11 Gonorrhoea

Gonorrhoea, a sexually transmitted disease, has been known to be widespread among the Maasai since the colonial time. This is associated with the relatively open and liberal sexual mores of the Maasai (see chapter 5). Although the Maasai claim that they have a treatment for the disease, it is likely that a cure is not obtained and the disease tends to perpetuate itself in chronic form.

4.2.12 Eye infections

Trachoma or eye infection is common among the Maasai. It is associated with the poor conditions in the Maasai living environment whereby the many houseflies transfer the disease from person to person.

4.2.13 Accidents

Accidents take place at home and on the range. Such include mauling by wild animals and resultant fractures.

Other important diseases among the Maasai are tuberculosis, whooping cough and anaemia. The latter appears to be a complication of several diseases including intestinal worms, hookworms and even malnutrition and undernutrition. The worms suck blood and leave intestinal walls bleeding. Marasmus, kwashiorkor and underweight which are frequently encountered among Maasai infants and children reflect protein energy malnutrition and are most severe during long dry seasons or drought periods.

4.3 Health Services

Despite the health problems discussed above, Narok district is poorly served with health facilities. Table 4.4 shows the numbers of various categories of health facilities available. There are only two hospitals - Narok district hospital with a bed capacity of 150 and St. Joseph's hospital at Kilgoris, a Roman Catholic Church Institution with a bed capacity of 175 in 1986 (Kenya, 1984c: 25; St. Joseph's Hospital, Kilgoris, 1987).

Narok's health facilities are far removed from the centres of population. Most people travel a distance of 15km to reach the nearest health care facility. This is made more difficult by the unavailability of access roads and thus automobile transport. People must walk on foot through grassland and scrubland to reach a medical facility. The problem is worse in the drier parts of the district which are far removed from health facilities.

By most accounts, the existing health facilities in Narok are underutilized (see for example, Kenya, 1979: 83-84). A decade ago there were 31 existing health centres and dispensaries in the district. Of these, only 16 were described as either "adequately used," "fully used", or "used to the maximum". Nine of the total number were described as underused. A total of 2 health centres and 4 dispensaries were not being used at the time. Of the former, only one, Mulot health centre was under construction. The rest lacked either health personnel or

both health personnel and water. These same reasons were ascribed to the underutilized facilities (see Kenya, 1979a:83-84).

Table 4.4: Medical facility to population*

Facility	Number	Facility: population (1989)
Hospitals	2	1: 177,000
Health centres	10	1: 35400
Dispensaries	36	1: 9800

* The facility to population ratios are calculated on the projected population of 353,994 for Narok in 1989. This projection assumes constant levels of fertility and mortality (Kenya, 1983b: 143).

Table 4.5: Number of out-patient visits per day by level of facility

Facility	Average daily attendance
Health Centres	
Olokurto	20
Nairage-Engare	72
Naroosura	30
Ololulunga	20
Lolgorien	33
Kilgoris	35
Keekorok sub-centre	20
Enabelbel sub-centre	24
Emarti sub-centre	60
Angata Baragoi sub-centre	45
Naikara sub-centre	15
Ilkerin sub-centre	15
St. Anthony	16
Dispensaries	
Government Prison	10
Ewaso Nyiro	12
Ol Choro	15
Oloolpirontio	17
Mosiro	15
Sakutiek	20
Naibor Ajijik	10
Kojonga	22
Siyabei	15
Olposimoru	18
Maji Moto	10
Health Centres	Average daily attendance
Morijo Loita	20
Entasekera Loita	15
Olmesutie	13
Megwara	16
Lemek	15
Aitong	12
Mara Serena	10
Enoosaen	12
Ole Reko	10
St. Theresa	20
Endonyo Erinka	10

Source: Kenya, 1984C: 82

In general there is low outpatient attendance at various facilities (Table 4.5). This is curious in light of the existent numerous environmental health problems. It appears that areas with high population densities are the ones with local health facilities fully utilized. As will be shown later, such areas are settled by non-Maasai immigrants some of whom have been assimilated. Such is the case for Kilgoris, Lolgorien and Angata Barigoi. There are health facilities in ecologically better-endowed areas but which are not fully utilized for lack of drugs, water or personnel

In the Maasai - occupied dry areas of Narok, access to health care is problematic. However, the Maasai themselves add to the problem; a large proportion does not go to health facilities. It procures treatment of common ailments at home. There is heavy patronage of herbal medicine. Each Maasai youth is taught about the medicinal value of herbs as part of youthful education (see Sankan 1971). As such the Maasai know certain herbs which treat several common ailments, for example diarrhoea and vomiting, malaria etc. Belief in the efficacy of traditional medicine, illiteracy, inaccessibility of health facilities, and lack of health personnel all contribute to perpetuate Maasai beliefs and actions to the detriment of their health.

For the vulnerable groups of expectant mothers, infants and children, life is no better. There are scant maternal-child health facilities. Only about 32 immunization centres are in place in Narok with a coverage of about 32 per cent during the last review done in 1987 (District Health Education Officer, personal interview, 1990). However the Ministry of Health targets an immunization coverage of 60 per cent of the district. By 1993 it is expected that there will be 40 immunization centres (Kenya, 1989c:146).

5. POPULATION CHANGE IN NAROK

5.1 Recent Trends

Narok district counted some 210,306 persons in the 1979 census. Of this total over 60 per cent was aged under 20 (Table 5.1). The total population was estimated to be 336,923 in 1988 (Kenya, 1989C:7) whereas the projected total in 1989, assuming constant levels of fertility and mortality, was 353,994 (Kenya,

1983b: 143). The 1979 data revealed a district-wide total fertility rate of 6.57 children compared to 7.29 for the Rift Valley province and the national figure of 7.17 (Kenya, 1988: 93)

Although the TFR of 6.57 for Narok is lower than that of the province and Kenya as a whole, it is still thought to be somewhat high for the Maasai people themselves. Narok district has a mix of non-Maasai ethnic groups which formed 44 per cent of the population in 1979 (Table 5.2). Most of these people are immigrants from neighbouring cultivator communities who have moved into the ecologically wetter areas of Narok (chapter 4). Such people record higher fertility than the Maasai people themselves. As can be gleaned from Table 5.2 the total share of the non-Maasai population increased from 21.3 per cent in 1962 to 33.5 per cent in 1969 and to a staggering 44 per cent in 1979. Between the intercensal years of 1969 and 1979 the non-Maasai population grew at an annual growth rate of 8.2 per cent whereas the data show the Maasai people themselves, as having grown at a slower rate of 3.6 per cent. It is not clear whether the latter figure represents Maasai rate of natural increase; however given that some parts of Narok were undercounted in 1969 because of physical remoteness and taboo against counting (Kenya, 1980a) the actual figure could be lower.

Table 5.1: Narok district: Population by sex and age grouping, 1979.

Age group	Male	Female	Total
0 - 4	21316	21836	43152
5 - 9	18412	18155	36567
10 - 14	14031	12125	26156
15 -19	10266	10219	20485
20 - 24	7759	9619	17378
25 - 29	6767	7727	14494
30 - 34	5166	6051	11217
35 - 39	4473	4718	9191
40 - 44	3698	3667	7365
45 - 49	3274	3133	6407
50 - 54	2424	2304	4728
55 - 59	2116	1737	3853
60 - 64	1503	1374	2877
65 - 69	1260	928	2188
70 - 74	857	732	1589
75 +	1261	1140	2401
Age not stated	144	114	258
Total	104,727	105,579	210306

Source: Republic of Kenya, 1981. Kenya Population Census, 1979; Volume I Nairobi; Central Bureau of Statistics, Ministry of Economic Planning and Development, p.218.

Table 5.2: Ethnic composition of Narok district, 1962-1979

Group	1962		1969		1979	
	Number	Percentage	Number	Percentage	Number	Percentage
Maasai	86,472	78.7	83,243	66.5	118,091	56.0
Kalenjin	20,766	18.90	32,242	25.7	59,921	28.0
Kikuyu	670	0.60	4,578	3.66	17,387	8.0
Gusii	251	0.23	816	0,65	4,525	2.0
Luo	151	0.14	834	0.66	2,812	1.0
Luhya	100	0.09	282	0.54	1,821	0.9
Kuria	167	0.15	429	0.34	1,426	0.7
Okiek	871	0.8	1,024	0.82	1,528	0.7
All others	426	0.4	1,371	1.09	2,785	1.0
Totals	109,874		125,219		210,306	

Source: Sindiga, 1986:166

Adding to the complexity of unraveling the fertility of Maasai people is the fact that the Maasai have for generation sought and married Kikuyu women who appeared to record higher completed fertility than their own women. Also, there are numerous cases of Kikuyu people who have moved into Narok, changed their names and adopted the local language. They, however, are mixed farmers and petty traders; effectively engaged in a different mode of production. Such people pass as Maasai-speakers.

If establishing the current Maasia fertility rate is an uncertain exercise, attempting to sketch fertility and population growth trends during the pre-colonial and colonial periods appears futile. All that is known is that the Maasai occupied much of Kenya during the seventeenth century (chapter 4 above). By the mid-nineteenth century they were at the peak of their power in East Africa. The Maasai must have been slowly increasing in numbers and probably amassing more livestock. These seem to have enabled them to cover such a wide territory. They also assimilated other groups in the process.

Towards the end of the nineteenth century the Maasai suffered from the demographic catastrophe discussed in chapter 3. A series of protracted civil wars among Maasai *iloshon* broke out beginning around 1815. These wars were apparently about the control of resources. Nevertheless they led to severe population loss. Then disease epidemics afflicted East Africa. Specifically, the smallpox epidemic of 1892 reduced the Maasai population by half (Sorrenson, 1968:190). These misfortunes were exacerbated by drought and consequently famine. Maasai refugees scattered over a large area among neighbouring peoples (Sindiga, 1984:27). By the time of European incursion in Maasailand the Maasai were only beginning to recover their population.

5.2 Growth Trends in Colonial Period

Narok district was established in 1913. It was administered as part of the Maasai reserve until 1953 when it fall under the aegis of the southern province. However, British overlordship on the Maasai had begun in 1895. During this general period it was difficult to determine the population of the Maasai in general and that of Narok in particular.

Table 5.3 provides estimate of the total population of Narok and that of the Maasai from 1919/1920 to the time the first census involving Africans was taken in 1948. The years represented on this table are only those for which data are available in archival records. These estimates are fraught with many difficulties. They were based on incomplete tax rolls. The standard colonial practice in Kenya was to estimate total population by obtaining the number of huts, multiplying by three, and adding the total number of *ilmurran* or warriors on tax registers. Thirty seven per cent of the population was assumed to be made up of children. As custom prohibited counting, figures of women and children given to hut enumerators were deceptive. Also, the Maasai shifted frequently and there was little way of making accurate estimates as to their population.

With the caveats noted above, the data on Table 5.3 are merely rough estimates. Whatever statements may be made on fertility and population growth trends of the Maasai will be at best speculative. The validity of the generalizations will derive only with comparative observations of neighbouring ethnic groups.

Table 5.3: Narok population, 1919 to 1948[1]

Year	Total	Maasai	Other African Kenyans	Europeans	Asians
1919/20	26,112	26,000	N/A	9	103
1930	33,694	30,046	3648	22	108
1941	23,614	22,817	621	36	140
1942	24,502	23,619	617	35	231
1943	24,817	23,900	664	26	227
1944	23,263	22,449	544	29	241
1945	23,924	23,047	607	29	241
1946	27,654	26,874	500	20	260
1948[3]	34,810	N/A	N/A	N/A	N/A

1. These figures represent only years for which data are available. There was no census involving Africans in Kenya until 1948. Most of the figures for the non-European and non-Asian population are crude estimates based on incomplete data derived mainly from hut tax rolls. Thus the estimates for 1919/20 and 1930 might have been highly exaggerated.
2. These were mainly non-Maasai people such as the Kikuyu, Kipsigis, Somali and so on.
3. The first census involving Africans was conducted in 1948. Even then, the figures on the Maasai may be inaccurate because of the sparse population distribution in vast, remote and largely dry area; taboo against counting; and clerical errors. It may be noted also that in this particular census, clerks combined counting with tax collection (District Commissioner, Narok, 1948). The latter makes it imperative to read the figures with caution as people may have canceled others for fear of tax payment.

Source: District Commissioner, Annual Report of the Narok District, 1919-20; 1930; 1931; 1941; 1942; 1943; 1944; 1945; 1946; 1949. File No. Dc/NRK/1/1/1.

The data on Table 5.3 suggest that Maasai population was more or less static until the first census was done in 1948. The shortcomings of these data have already been highlighted above. For Kenya in general, Governor Philip Mitchell estimated that during the early 1950s population in ecologically better-endowed areas was growing at about 2 per cent per year. But this figure was disputed both by the demographer R.R. Kuczynski (1977) and the East Africa High Commission (Great Britain, 1961). In the early 1930s the Kenya Land Commission noted that population was growing at 1.5 per cent per year (Great Britain, 1934). Again, Kuczynski suggested a much lower rate of 0.5 per cent per year in 1948 (Great Britain, 1961).

Whatever evidence is available from archival records suggests that Maasai fertility and population growth rate were much lower than for peoples in ecologically wetter areas. The officer in charge of Maasai extra territorial district, for example, noted that Maasai birth rate was lower than that of other African peoples (Maasai Annual Report, 1924-5). In the words of an earlier report, Maasai birthrate was an "extraordinarily low one" (M.A.R. 1921-9). It would seem that the population of the pastoral Maasai was growing much more slowly than the neighbouring cultivator groups or even among Maasai men who married Kikuyu wives (District Commissioner, Narok, 1953:14). The reason given for the conclusion is that the non-Maasai experienced less infant and child mortality than the Maasai. As to the Maasai marriages to the non-Maasai, it is not clear what motivated the men to do so. It would appear that part of the explanation is the high level of sterility among Maasai women. The Maasai are known to have intermarried with many other groups notably the Kikuyu and the Kipsigis. Indeed, Maasai men married from any ethnic group provided the women were circumcised. Be that as it may, the Kikuyu women who were married among the Maasai tended to keep their customs and cultivated land (DC, Narok, 1953:7).

A health survey conducted among the Maasai between November 1930 and April 1931 revealed evidence of high levels of sterility and extremely high child mortality(Kenya, Colony and Protectorate, 1933:25-26). The medical officer conducting the investigation visited not just Narok district but all parts of Maasailand. He concluded that "about 34 per cent of the women appear to be sterile" and "almost certainly the folk are not increasing in numbers----" (Kenya, 1933: 25). He noted that child mortality "bordered on 500 per 1000 live births". While the cause of the high level of sterility was identified as gonorrhoea, the

reasons for the high infant and child mortality were not explicitly identified. However, environmental sanitation was poor with high rates of infection with hookworm, tapeworm, eye infections and gonorrhoea (Kenya, 1933). The prevalence of diarrhoea and pneumonia was high. In addition there was no intake of vegetables and fruits which provide the body with vital vitamins and minerals (Kenya, 1933).

Another study was conducted during 1951 by Dr. Mackay, Medical Officer of Health in Narok district, to inquire into fertility and child mortality. His report did not provide figures of completed fertility. But while concluding that the number of births among the Maasai was normal he noted that "infant wastage rate is (sic) in the region of 400 per 1000" (quoted in District Commissioner, Narok 1952:19). This conclusion might appear to be supported by the results of a sample survey of 256 Maasai women taken at the end of the 1950s. It showed a total fertility rate of eight children per woman; however, only three survived beyond 10 years of age (see Molnos, 1972:241). According to estimates, half of all children born alive died by the end of the first year essentially from diarrhoea and pneumonia (Molnos, 1972: 241).

5.3 Fertility Determinants Among the Maasai

5.3.1 Patterns of Marriage

In order to understand patterns of marriage and sexual unions among the Maasai one needs to examine their societal structure. Maasai society is organized hierarchically with male elders holding the ultimate control (see chapter 2). Traditionally, male elders are heads of households and keep the ultimate ownership of family herds and flocks. This translates into control over bride wealth and the ultimate authority to sanction the marriage of younger men.

Younger men must undertake a period of residence as warriors and go through obligatory ceremonies and rites of passage before obtaining elder permission to marry. A Maasai young man first becomes circumcised at the age of 16 or 17 or higher (Fosbrooke, 1938:31). He then teams up with other initiates to form an encampment or *emanyatta*. The time between circumcision ceremonies and the formation of such a *manyatta* is, on average, 3 years (District Commissioner, Kajiado, 1948). In the *Manyatta* the warriors are instructed and guided by *ol*

piron. The latter are all the elders whose age set takes responsibility for a particular age-group of warriors and is usually one age set above the most junior elders (District Commissioner, Narok, 1948; Fosbrooke, 1938).

The next step for the il murran is to go through the *eunoto* ceremony. The time lag between the formation of the *emanyatta* and *eunoto* varies from one Maasai *iloshon* to another; however, it varies from 3 to 7 years (Holford Walker, 1959). The *eunoto* ceremony is a blessing festival bestowing rights of marriage to warriors. Effectively, the *eunoto* marks the promotion of junior warriors into senior warriors. During the ceremony, *moran* and girls assemble and spend the day dancing. Elders eat and drink. After the *eunoto*, a moran gains senior warrior status and remains so until the "drinking of milk" ceremony. The latter really is the marriage ceremony and usually takes place 2 years after the *eunoto*. After individual senior morans have married, another ceremony called *ol ngesher* takes place. Upon this ceremony, members of the entire age-set or the group circumcised together officially become elders.

It is clear that young men spent many years, infact up to 10 years in warriorhood and this inevitably delayed their marriage. On average, a Maasai male could marry at between 25 and 35 years of age (Jacobs, 1973:399; Hollis, 1943:121). This high age at first marriage for men allowed sub-fecund male elders to accumulate more livestock and marry other, younger wives with adverse effects on fertility. As will be seen below, dowry is not really heavy; however a rich elder who is able to give gifts to the prospective father-in-law stands in better stead to consummate a marriage than either a poor elder or *il murran* (see Kituyi, 1990:126). Hence the significance of accumulating livestock, a sign of wealth among the Maasai. It should be understood that marriage among the Maasai is an affair organized between male parties, that is, the bride's father and local elders and either the suitor or his patrilineal representatives (Kituyi, 1990:124). Such arrangements are made before a girl is circumcised or during the period of convalescence for the female initiate.

A Maasai woman (save for a few Christians now) cannot get married before she is circumcised. Also, it is a shame for a woman to have sex if she is uncircumcised. Any love making and petting taking place between uncircumcised girls and warriors in a manyatta is expected to preclude coitus (Jacobs, 1973). Similarly, a Maasai woman is not expected to have a child if she is not circumcised. Thus, the

period of wound recovery after circumcision is the time when a number of potential suitors arrive at the home to negotiate marriage. It is upon the father and close male relatives to select a future husband for the daughter. The would-be-bride may or may not have knowledge about the future husband. But she has no say in the ultimate choice.

From fieldwork in Kilgoris division in 1989, I gathered that poor old men are not able to marry many wives. The parents of prospective subsequent wives would not agree. Hence the necessity to accumulate livestock. Among the Uasin Gishu iloshon, dowry payable in the olden times was 5 head of cattle. Currently, the maximum number is 9 head outside an assortment of other requirements. Dowry composition is something like the following: 8 cows, one bull, one sheep (for the mother of the girl because the cattle belong to the father), one *osurutial* or wire ring for the arm of the girl's mother, one blanket and one hundred Kenya shillings for the father. Fosbrooke (1938) found that among the Tanganyika Maasai, dowry consisted of 2 heifers and one bullock. However, a richer elder was preferred to a poor *il murran*.

The Maasai hierarchical structure was stable because young men themselves aspired to become elders upon which they would be accorded the same status and enjoy the benefits appertaining thereto.

Average age at first marriage for women is 17 to 18 years. But this relatively young age does not always insure high completed fertility. Taboos related to postpartum sexual intercourse and polygyny traditionally kept fertility relatively low. Also, as seen in chapter 2 above, early marriage may mean a period of infertility for the woman and/or come with childbirth complications because of an immature pelvis.

Among the Maasai, widows are usually not remarried. In case of a younger woman, the elders appoint a person, often a cousin to the deceased, to father children. The widows are not expected to run away. However, widowers can remarry.

5.3.2 Postpartum taboo

The Maasai avoid coitus during the first six months after parturition. The actual period of sexual abstention according to field informats varies from 4 to 6 months.

For the time the postpartum taboo is in force, a man seeks coitus with another wife. Partly for this reason, polygyny is a universally approved practice among the Maasai. The number of wives a man marries depends on his wealth. Other reasons for polygyny are every African's desire to have many children and the socio-economic roles of women in the Maasai society. The women tend family livestock; and attend to household chores such as cleaning gourds, fetching water and firewood, milking cows, cooking, and brewing *busaa*, traditional beer. They construct housing apart from cutting tree saplings and carrying these to the site. In addition, some women are beginning to cultivate land especially in ecologically wetter areas.

Even in monogamous families, the postpartum taboo discouraged sexual intercourse for several months (Jacobs 1973: 403). However, there may be limited sex between couples through the practice of coitus interruptus. This is allowed providing that there is no resulting conception. Thus, the postpartum taboo ensured reasonable child spacing which had the overall effect of lowering fertility.

5.3.3 Frequency of intercourse

The regularity or otherwise of sexual intercourse has a significant effect on fecundity. The latter rises with more frequent coitus and declines with infrequent intercourse (see chapter 2 above).

The Maasai live on land where herding resources (pastures and water) vary spatially and temporally. During the dry season between January and March the men must move with livestock farther a field into Kajiado and even across the border into Tanzania, leaving their wives behind. This separation of spouses, sometimes for several months reduces coital frequency and may ultimately lead to lower fecundity (Lesthaeghe et. al., 1981:5; Menken, 1979; chapter 2 above). Also, allowing for the fact that a woman's fecundity declines with age, long separation will tend to reduce the chances of conception (Lesthaeghe et. al., 1981).

Another factor influencing the frequency of intercourse is age which is associated with polygyny. As noted above, polygyny is a prevalent practice and old sub-fecund men marry young, adolescent brides. Such men are highly unlikely to have coitus frequently because of their declining sexual libido (see Bulatao, 1984 61). This will affect chances of conception even for young brides. Frequency of intercourse for any one woman would, on average, decline significantly if the husband has more than two wives because of the time it takes to visit with one of them.

Yet a related problem which may hinder conception is the Maasai conservative coitus position. Maasai couples reportedly sleep side by side facing one another thus hindering full penetration (Jacobs, 1973: 399).

5.3.4 Nutrition

It was shown in chapter 2 above that nutrition may have a significant effect on fertility. The Maasai experience seasonal food shortage. During the past two decades, there were periodic droughts notably in 1976, 1980 and 1984. The Maasai lost most of their herds because of insufficient fodder. In a survey conducted in Maasiland in early 1984, 43 per cent of the respondents said that the food produced in their farmsteads in the previous year was not sufficient to feed the family members (Sindiga, 1986). However, about half of the respondents reported that the 1983 food harvest was normal suggesting that food shortages are a recurrent problem among the Maasai. Under nutrition may lead to anaemia and weight loss among expectant mothers and translate into weak and under weight infants. These problems combine with other environmental health hazards in Maasailand (chapter 4) to cause high infant and child mortality.

For pregnant women, the Maasai have a taboo against eating certain foods. Such include fresh milk which may make the foetus too big. It is believed that this will sap the energy of the expectant mother and end up in a large sized baby which would cause problems during delivery. An expectant woman is expected to be slim. She is given sour milk which is skimmed to remove the butterfat content. Occasionally, a Maasai expectant mother is given boiled meat mixed with blood (*monono*). This is believed to strengthen the foetus. Starch foods such as *ugali* (maize meal) and potatoes may be eaten where these are available. The reason for

this appears to be that the Maasai are unaware of the fattening attributes of starch foods (Sankan, 1971: 52).

In the effort to keep pregnant women slim, the women may be denied fresh milk, the only food source available especially in the drier areas of the range. The result is undernourishement which may lead to pregnancy wastage and underweight children with increased chances of early deaths. Indeed, Maasai women themselves suffer from "acute anaemia shortly after childbirth" (Jacobs, 1973: 403). This is caused by undernutrition and lack of a balanced diet; one which also supplies minerals and vitamins. Fresh fruits and green vegetables, for example, are rarely consumed.

5.3.5 Disease

As shown at the head of this report, PID is the primary gynecological disorder in tropical Africa. It is common among the Maasai (Doenges and Newman, 1989). In general, sexually transmitted diseases especially gonorrhoea are common among the Maasai. This problem has persisted since the colonial time. Hollis (1943), noted that STDs were a common problem in Maasailand in colonial time. Most administrative reports for the period noted STDs to have been one of the leading health problems; others were eye diseases and intestinal worms. An estimated one in five adults had venereal disease (Gulliver, 1979: 31).

One of the problems of coping with venereal disease was the inability to obtain sufficient penicillin supplies (see for example, DC, Narok, 1952). Also, most of the people could not present themselves for treatment because of long distances to the few existing health facilities. However, it was common for a man to present himself for treatment and leave his spouse back (DC, Narok, 1952). This tended to perpetuate the infection. Finally, since the Maasai are migratory in nature, they were unable to complete their prescription and obtain a cure.

STDs are still widespread among the Maasai. A decade ago, eye ailments and venereal diseases accounted for most of the drugs ordered in Narok district (Kenya, 1980a: 53). Even at the present time, gonorrhoea is one of the leading ten diseases treated in the Narok district health facilities (see Table 4.3). But what is the accounting for the prevalence of venereal diseases?

Among the Maasai, males of the same age-set are allowed to have sexual intercourse with the wives of their contemporaries[4]. This is especially so with visitors from a distant place. The male host moves away to sleep in another village and leaves the wife with the visitor. Also, a man could visit and have sex with a woman whose husband was away on safari provided that the men are of the same age-set. Such arrangements are tacitly approved in traditional Maasai society. It is believed that this group sexual behaviour leads to the expansion of venereal diseases which could contribute to depressed fertility.

Although not approved, it is widely acknowledged that the *il murran* have coitus with unmarried girls. Also, the warriors make arrangements to have sex with married women belonging to men of another age-set. As noted earlier high sexual mobility is a probable cause of the wide expansion of venereal diseases which in turn cause infertility.

There are a number of other health problems which have a bearing on fertility and infant and child survival. Personal hygiene is low especially because of lack of enough water and because of the housing circumstances (chapter 4 above). The relatively poor sanitation leads to a high incidence of infectious and parasitic diseases which are the major causes of morbidity in Narok. Malaria, which is a suspected cause of infertility (chapter 2 and 3), is for example, a major problem among the Maasai.

5.3.6 Implications of Population Change

Although the Maasai fertility and population growth rate have been comparatively low, this cannot be said for Narok district as a whole. Population has been growing rapidly over the past several decades. The engine to that growth has been the immigration of cultivators from neighbouring communities.

Immigration has had a number of consequences:

1) alienating most of the wetter areas of Narok from pastoral use. The immigrants, and now some Maasai themselves, cultivate the land thus keeping away livestock.

2) forcing the pastoralists to move to the drier areas of the range. These areas which previously were used for only wet season grazing (while the wetter areas served as dry season grazing) have now to be used continuously with adverse consequences both to the landscape and the people.

Sindiga's (1986) work in Maasailand using carrying capacity estimates and indicators of population pressure revealed that areas suffering the greatest pressure are the semi-arid and arid parts. Here, overgrazing and soil erosion were obvious on the landscape. The people were not self-sufficient in food production and there were hardly any surpluses. A large proportion of herders supplemented ranch production with off-farm income derived primarily from petty trading.

It is clear that the Maasai are slowly experiencing higher fertility than previously. Should this trend pick up, it will add to the population of the district with negative consequences. It is expected that with greater sedentarization of the Maasai and higher food production, fertility will increase (see chapters 7 and 8). This will put additional pressure on the available resources.

6. FIELD METHODOLOGY AND STUDY DESIGN

Fieldwork for this study was conducted in Narok district. The latter is one of the two districts in Kenya inhabited mainly by the Maasai-speaking peoples (chapter 4). Narok was selected as a place for field focus because its biophysical environments span from the arid and semi-arid in the southern, central and some eastern parts of the district to the humid in Mau Narok and trans-Mara.

In the semi-arid and arid parts of the district, the Maasai practise a pastoral economy. They rear a mix of livestock comprising of sheep, goats and cattle. While the latter are the main stay of the Maasai economy through the provision of milk, blood, hides and skins; the role of shoats is equally significant, albeit frequently underestimated. Shoats are quite hardy in semi-desert conditions. Goats in particular, browse thereby utilizing leaves of shrubs and trees left on the range through the selective grazing of cattle. Shoats are slaughtered for meat and can provide milk. In addition, they are sold to provide cash for other household requirements.