

Food and Nutrition Studies Programme

Socio-economic and nutritional studies in Coast Province: summaries and recommendations

Proceedings of a dissemination seminar at
Diani, 28-30th November 1990

**Dick Foeken & Jan Hoorweg
(Editors)**

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**Food and Nutrition Planning Unit,
Ministry of Planning and National Development,
Nairobi, Kenya; and
African Studies Centre, Leiden, Netherlands**

Address

1. ASC/Food and Nutrition Studies Programme
P.O. Box 67214
NAIROBI, Kenya

Treasury Building (Room 839), Harambee Avenue
Tel: 338111 - Extension 466
2. ASC/Food and Nutrition Studies Programme
P.O. Box 9555
2300 RB LEIDEN, Netherlands

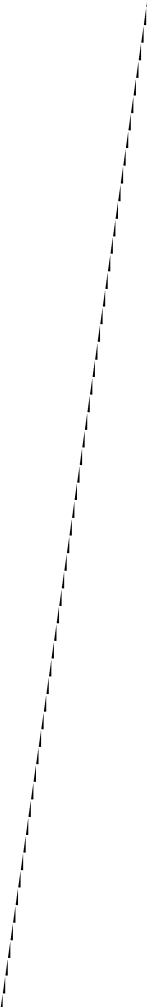
Wassenaarseweg 52
2333 AK Leiden

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1. Introduction

1.1. Food and Nutrition Studies Programme

The Kenyan Government has given priority to understanding the factors causing nutritional problems in the country and developing measures to alleviate hunger, malnutrition and poverty among vulnerable groups. The Food & Nutrition Planning Unit (FNPU) of the Ministry of Planning & National Development (MPND) is charged with the responsibility of integrating food and nutrition considerations into overall development policy and into planned or ongoing programmes.

In 1983, the MPND and the African Studies Centre, Leiden (ASC) started a programme of mutual studies. The Netherlands Government funded the first phase of the programme under the general agreement on technical co-operation with the Government of Kenya. The objective of the programme was to analyse current developments concerning food and nutrition in Kenya, notably regarding the interface between socio-economics, agriculture and nutrition. Since the start of the programme, 14 research projects were initiated, 10 studies having been completed by now. More than 30 reports have been compiled, together with other publications. The main subject areas are: - nutrition in rural development; - regional and seasonal fluctuations in food supply and nutrition; and - agricultural policies and agricultural production.

Phase 2 of the programme has been planned for the period 1989-1994 with an increased emphasis on institution building and training of manpower. Increased participation of local research institutes involves the Department of Research and Extension (Egerton University), the Institute for Development Studies and the Applied Nutrition Programme (both University of Nairobi). The programme is coordinated by an interministerial committee consisting of representatives of the participating institutions and ministries concerned with food and nutrition matters.

The research activities during Phase 2 will generally focus on the incidence and causation of food and nutrition problems among rural populations and disadvantaged groups with particular attention for relevant interventions. More specifically, the following general areas of interest have been identified: - nutrition and rural development; - nutrition and household resources; - seasonal variations in food supply and nutrition; - food production and marketing; and - district analysis and evaluation.

1.2. Seminar on studies in Coast Province

At the completion of several conjoint studies in Coast Province, a seminar was held in november 1990, under the title "*Sectoral discussions on seasonality, settlement and dairy development in Coast Province*" (Annex 1). On this occasion, the final results of several socio-economic and nutrition surveys during the period 1985-1987 were presented. The general objective of the seminar was to disseminate the study results among officers concerned with the social and economic development of the areas. A more specific objective was to offer the results for discussion and to formulate recommendations for policy and planning purposes.

Five main reports were presented concerning seasonality, settlement schemes, dairy development and women's groups in Coast Province, together with five earlier reports containing background information and support studies (Annex 2).¹

The FNSP office, together with the FNPU/MPND, was responsible for the organization of the seminar. The Coast Provincial Planning Officer performed the official opening, which was also attended by the Counsellor of the Royal Netherlands Embassy. The seminar was closed by the District Development Officer of Kwale District. About 50 participants from Coast Province, Kwale and Kilifi Districts, the FNSP partner institutes and several ministry headquarters attended the seminar (Annex 3).

Resource persons and rapporteurs were designated for each of the four main topics (Annex 4). They prepared short statements, including policy and planning recommendations. These served as guidelines for the ensuing group discussions between provincial, district and ministerial staff, resulting in recommendations at the final plenary session.

¹ During an earlier workshop, mid-1988, preliminary results for most studies had already been presented (FNSP, 1988).

2. General information

2.1. Introduction

As a result of population pressure on land resources, adverse climatic conditions and the impact of the world-wide economic recession, the performance of the agricultural sector in Kenya has deteriorated from the mid-1970s onwards (World Bank, 1983). The production of the country's major food commodities has been disappointing. Short-term production falls - such as the 1980/81 maize crisis which led to commercial and concessional food imports as well as food aid - are an indication of the delicate balance between national food output and the total demand for food (GOK, 1981). The pressure on land resources threatens the future balance between national food demand and national food production (World Bank, 1983).

The existing agro-ecological potential for rain-fed farming is quite limited and the country is, in fact, already short of good agricultural land (Ruigu, 1987). High and medium potential lands with good to fair prospects for crop production and intensive livestock activities cover only 20% of the land area. The rapid population growth, however, necessitates substantial increases in food production in the near future, together with increases in the production of export crops. The role of agricultural policies, notably of government pricing policies is of vital importance in this respect (Meilink, 1985; 1987). Meanwhile, production increases will depend on the possibilities of increasing yields per hectare, and of bringing remaining, often marginal, areas under cultivation (GOK, 1986).

The agricultural potential is unevenly distributed over the country. The high and medium potential zones are found in the Central Highlands, the plateau adjoining Lake Victoria and the Ugandan border, and the very narrow strip near the Indian Ocean. These lands are bordered by semi-arid, low-potential belts. In the latter areas, the annual rainfall, with its high variability and seasonal nature, offers only limited opportunities for rain-fed agriculture (Jaetzold & Schmidt, 1982; 1983). At present, almost the entire high and

medium-potential zones are under cultivation. As a consequence, cultivation has extended into semi-arid areas, notably the Foreland Plateau in Eastern Province, the hinterlands of Coast Province and parts of Rift Valley Province (Kliest, 1985).

Food production patterns in Kenya are characterized by considerable seasonal fluctuations which are closely related to environmental factors. Such fluctuations in output contribute to unstable levels of food availability, especially in those parts of the country where farmers are confronted with relatively short and risky cropping seasons. This instability in food production and food availability frequently results in local and more widespread food shortages. Such shortages, not surprisingly, occur in particular in the country's arid and very arid zones where arable agriculture is very marginal indeed.

Regional food shortages are generally thought to be a direct consequence of the climatological heterogeneity of Kenya (Akong'a, 1982). Food problems are drought-related and result from the variability and seasonality of rainfall patterns in the drier parts of the country. Several authors, however, hold that such problems rather find their cause in the organisation of food production and distribution (Wisner & Mbithi, 1972; O'Keefe et al., 1977). For example, recurrent food shortages in Eastern Province have been attributed to unequal regional economic development and increasing income disparities among the area's population rather than climatological and physical factors (Mutiso, 1977; Wisner, 1977).

Issues of seasonality have received increasing attention in recent years. Although many African societies traditionally had to cope with seasonal food shortages, the effects of seasonality appear to have worsened as a consequence of the introduction of commercial cropping and because of increasing population pressure. Certain groups, such as small farmers, appear to be more vulnerable to the vagaries of the seasons than others (Chambers et al., 1981; AMREF, 1982; Longhurst, 1985; Sahn, 1989).

An earlier FNSP-study, *Regional and Seasonal Food Problems in Kenya* (Kliest, 1985), assessed the national food situation in Kenya together with its seasonal dynamics at the provincial and district level. It called particular attention to the recent population movements into the drier zones against the background of the factual instability of food production in these marginal areas. The dangers of the invasion of more and more people into these environments are many, as evinced by regular food shortages. As a result, food relief through governmental and non-governmental agencies has become a matter of routine. The magnitude of such problems has been demonstrated with regard to

Machakos and Kitui District. Similar processes are thought to exist elsewhere, such as the dry hinterland zone of Coast Province.

2.2. Coast Province

Coast Province is the third area of major population concentration in Kenya, after the Central and Western regions of the country. The climatic and economic conditions of the region are quite different from those of the highland areas. Although Coast Province knows two rainy seasons, in most parts the short rains are very unreliable and many farmers do not plant at this time of the year (Kliest, 1985). Going inland, rainfall diminishes quickly while the potential evapotranspiration increases. Most soils are chemically poor and the fertility of the land tends to be low. The region comprises a variety of agro-ecological zones that can alternate over relatively short distances.

The relatively humid coconut-cassava zone has a wide potential for food and cash crops, mainly depending on local variations in soil fertility. In the somewhat drier cashewnut-cassava zone possibilities for crop production are more restricted. The livestock-millet zone and the ranching zones, covering more than 68% of the agricultural land, offer only limited potential for rain-fed agriculture. Farmers in the first two zones largely depend on the cultivation of food crops and perennial cash crops. Smallholders in the third zone usually combine livestock-rearing with the production of annual subsistence crops. The seasonal character and the low reliability of rainfall in the whole of the region, however, severely restrict the scope and intensity of agricultural activities. Although occasional surpluses are realized in good years, the population is regularly confronted with drought conditions (MENR, 1984a, 1984b). People in the drier zones, in particular, have to cope with the disruptive effects of shorter and longer drought periods.

In general, the economic development of the region has not kept pace with that of other parts of Kenya. Although the coastal lowlands were relatively prosperous in pre-colonial and early colonial times, the opening-up of the highlands by European settlers meant an inevitable shift of development towards the interior (Cooper, 1981). Afterwards and also in the post-independence period, economic development has stagnated due to a combination of political, economic and social factors. The industrial and services sectors are little developed (with the exception of the tourist sector) and employment opportunities outside the agricultural sector are limited (CBS, 1986). Coast Province, in fact, scores quite low on accepted development indicators such as child mortality,

childhood malnutrition and degree of literacy (CBS, 1983; 1986). The relative incidence of rural poverty is high and living conditions of the population in large parts of the province are harsh.

However, detailed information on how these conditions affect different population groups is not available. In an attempt to partly fill this gap, three main and three support studies were carried out under FNSP-auspices in the period 1985-1987. The studies concentrated on Kwale and Kilifi Districts, the two districts that account for more than two-thirds of the rural population in Coast Province. The individual studies are listed in Table 1.

Table 1
The FNSP-studies in Coast Province

| <i>Main study</i> | <i>Support study</i> | <i>Period of data collection</i> |
|--|--|----------------------------------|
| 1. Seasonality in the Coastal Lowlands of Kenya | | June 1985 - July 1987 |
| | - Protein-energy malnutrition and the home environment | 1986 |
| | - Farming systems and food security in Kwale District | Febr.- Sept. 1986 |
| 2. Economic and nutritional conditions at settlement schemes | | Aug. 1985 - Sept. 1986 |
| | - Women's social and economic projects | Sept.-Dec. '85, May-July '86 |
| 3. Nutrition and dairy development in Kilifi District | | May-July 1987 |

2.3. FNSP-studies, 1985-1987

Seasonality in the Coastal Lowlands

The objective of this study was to record, describe and analyse the effects of climatic seasonality on food consumption and nutritional status among the rural populations in the Kwale and Kilifi districts. A second objective was to collect information on food practices and nutritional conditions in the districts concerned. Attention concentrated on three agro-ecological zones - CL3 (coconut-cassava); CL4 (cashewnut-cassava); CL5 (livestock-millet zone) - which sustain more than 80% of the farm families in the districts (Jaetzold & Schmidt, 1983: 309, 350).

A total of 300 households were visited five times, in such a way that two harvest seasons (1985 and 1986) were covered. Information was collected regarding housing circumstances and living conditions, demographic characteristics of household members, farm characteristics, off-farm employment, food consumption and nutritional status. At the time of the seminar, three research reports had already been published (Hoorweg et al., 1988; Foeken & Hoorweg, 1988; Foeken et al., 1989). The fourth report was presented in final version for discussion at the seminar.

Two studies in support of the main study had been carried out in 1986 and had also been published earlier on. The first - *Protein-energy malnutrition and the home environment* - aimed at exploring the causal background of malnutrition in Kilifi District, concentrating on the role of economic, socio-cultural and home stimulation factors. One of the findings was that in households where no malnutrition had occurred, children were fed more regularly and were provided with more types of stimulation. Moreover, the findings indicated not only that a relationship between childhood malnutrition and home-stimulation exists but that it persists beyond the acute episode and subsequent rehabilitation (Peters & Niemeijer 1987). The second in-depth study - *Farming systems and food security in Kwale District* - aimed at a detailed description of the interrelations between agro-ecological conditions, agricultural potential and productivity, and off-farm employment in two rather different areas in Kwale District (Bongwe and Kibandaongo). The study showed that the areas differ considerably regarding agricultural performance and the role of additional incomes. These differences, however, appear to be caused only partly by differences in agro-ecological potential, but more by differences in socio-economic circumstances: the possibilities for off-farm employment in Bongwe being much greater than in Kibandaongo (Oosten, 1988).

Economic and Nutritional Conditions at Settlement Schemes

This study was carried out in four schemes located in the coastal strip. The main study objective was to survey economic and nutritional conditions in different settlement schemes compared to the general population. The aim was furthermore to study the existing differences in nutritional conditions between the schemes and the relations between household resources, food consumption and nutritional status. Specifically, the following aspects were taken into consideration: - the characteristics of the small farms in different schemes (land and labour use, cropping patterns, farm management practices, degree of commercialization); - the differentiation in socio-economic terms among the households; - the extent and nature of off-farm activities; - the variations in food

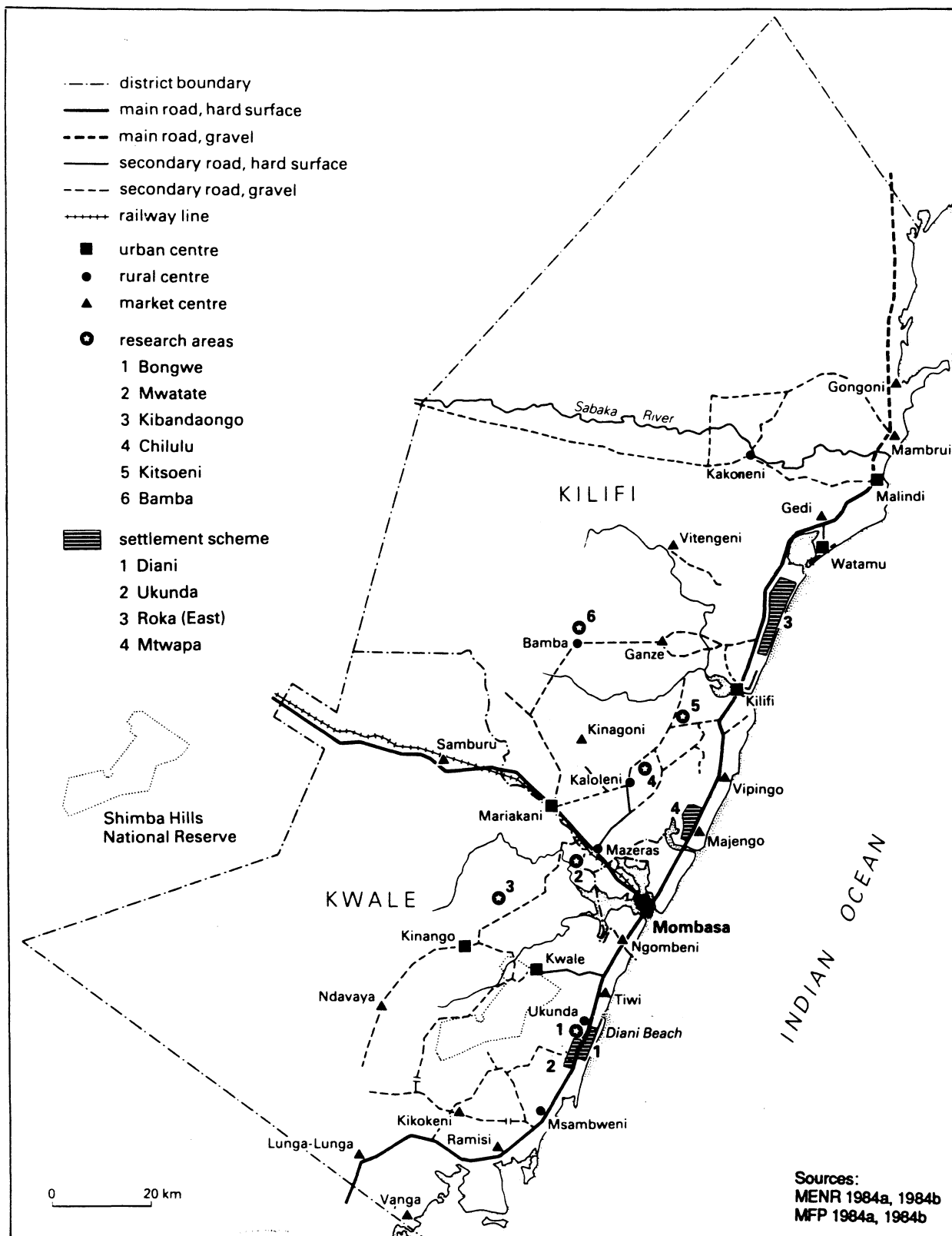
consumption; and - the variations in nutritional status of household members. The final draft of this report was presented at the seminar.

Women's Social and Economic Projects

The women's projects selected for study were situated in three of the four schemes of the previous study. The objective of the study was to investigate the role of women's groups in the process of social and economic development, and in particular to assess the contribution of the groups to the improvement of the living conditions. The final draft report was presented at the seminar.

Dairy Development and Nutrition

The objectives of this study were, firstly, to assess the importance of small scale intensive dairy farming compared with other types of dairy farming; secondly, to assess the importance of this type of dairy farming for the household economy and household nutrition among the participants, and thirdly, the importance of this economic activity for the nutrition of the local community. The final draft report of this study was presented at the seminar.



Map 1
Infrastructure

3. Socio-economic profile

The first presentation concerned the main demographic and economic characteristics of the study populations in Kwale and Kilifi Districts (see Map 1) - consisting of six research locations in three agro-ecological zones: Bongwe and Chilulu (CL3), Mwatate en Kitsoeni (CL4) and Kibandaongo and Bamba in (CL5). The data were collected as part of the seasonality study and were published in 1989 as part 3 of this series. The data concern 300 households, 50 in each location, and can be regarded as representative of most of the rural population in the two districts. They furnish the necessary household information against which to interpret variations in food consumption and nutritional status in section 4. The data also provide reference populations for the settlement and dairy development studies (see Chapters 5 & 7).

Households, on average, count about 9.0 members or 5.8 when expressed in consumer units¹ (Table 2). The average household in Kilifi is much larger than in Kwale. The

Table 2
General population: main demographic characteristics

| | Total (N=297) | Kwale (N=147) | Kilifi (N=150) |
|---------------------------------------|------------------|------------------|-------------------|
| - average number of household members | 8.9 | 6.7 | 11.1 |
| - average number of consumer units | 5.8 | 4.6 | 7.0 |
| - % of polygamously married heads | 33 | 18 | 47 |
| - % of single/divorced/widowed heads | 16 | 30 | 2 |

Source: Foeken et al., 1989: 18-19.

¹ In the present studies, household size is generally expressed in consumer units. A consumer unit is based on the daily caloric needs of adult males who are counted as 1.0 consumer unit. Other household members are weighted according to age, sex and residency.

reason for this difference can be found in the extended families and frequent polygamy in Kilifi, while in Kwale this is much less the case. Moreover, non-married heads of households (be it single, divorced or separated) are quite common in Kwale, but exceptional in Kilifi.

On average, households have 8.2 acres at their disposal but in the CL3 and CL4 zones, closer to the coast, 40% of the households have less than 3 acres (Table 3). About one-third of the land is used for food crop cultivation, predominantly maize but also cassava. On average, only 45% of the food energy requirements of the households was covered by own food crop production, leaving more than 50% to be purchased. The two areas with the lowest degree of food self-sufficiency are also areas that differ very much in agro-ecological characteristics: a remote, inland area, dry and not suitable for agriculture; and a fertile area in the palm tree zone but densely populated.

Table 3

General population: farm characteristics

| | <i>Total</i> | <i>Bongwe (CL3)</i> | <i>Chilulu (CL3)</i> | <i>Mwatate (CL4)</i> | <i>Kitsoeni (CL4)</i> | <i>Kiband'o* (CL5)</i> | <i>Bamba (CL5)</i> |
|--|--------------|-------------------------|--------------------------|--------------------------|---------------------------|----------------------------|------------------------|
| <i>Farm size (acres)</i> | | | | | | | |
| - total | 8.2 | 6.8 | 2.8 | 4.0 | 5.0 | 9.4 | 21.0 |
| - food crops | 2.8 | 2.4 | 2.0 | 1.4 | 3.8 | 2.9 | 4.4 |
| <i>Degree of food self-sufficiency (%)</i> | 46 | 36 | 32 | 43 | 77 | 72 | 14 |

Source: Foeken et al., 1989: 29, 31, 35, 42, 43.

* Kibandaongo

Agricultural production varies considerably between zones (Table 4). The value of the farming activities in the different locations varies from slightly more than sh.2,000 to more than sh.4,500 per household per year. Agricultural returns for land and labour also show considerable differences. This indicates not only differences in agro-ecological potential, even in the same zone, but also large differences in the way people choose to utilize available resources. For example, in Bongwe, in the CL3 zone, despite good returns for labour, households do little work on the farm and consequently realize low returns per acre.

Table 4

General population: agricultural production

| | <i>Total</i> | <i>Bongwe (CL3)</i> | <i>Chilulu (CL3)</i> | <i>Mwatate (CL4)</i> | <i>Kitsoeni (CL4)</i> | <i>Kiband'o* (CL5)</i> | <i>Bamba (CL5)</i> |
|--|--------------|-------------------------|--------------------------|--------------------------|---------------------------|----------------------------|------------------------|
| <i>Production value (sh/household)</i> | | | | | | | |
| - food crops | 2207 | 1294 | 2144 | 1762 | 3817 | 2980 | 1244 |
| - cash crops | 466 | 666 | 1175 | 47 | 644 | 115 | 126 |
| - livestock | <u>792</u> | <u>164</u> | <u>130</u> | <u>486</u> | <u>176</u> | <u>1289</u> | <u>2505</u> |
| - total | 3465 | 2125 | 3449 | 2295 | 4635 | 4385 | 3875 |
| <i>Productivity (sh)</i> | | | | | | | |
| - return/acre ¹ | 326 | 287 | 1171 | 447 | 895 | 328 | 65 |
| - return/labourer | 1153 | 1121 | 978 | 1167 | 1583 | 1466 | 829 |

1. Excludes livestock production.

* Kibandaongo

Source: Foeken et al., 1989: 29, 31, 35, 42, 43.

Overall, income from farming is low in comparison to two critical income levels: the food poverty line and the minimum existence level. The food poverty line is the income level which covers the minimum food requirements of the members of the households (but no more, being only sufficient for survival). In 1985/86 at the Kenya Coast the food poverty line was calculated at sh.1,000 per consumer unit. The minimum existence level includes certain minimum expenditures other than food, and was estimated at sh.1,450 per consumer unit. Table 5 shows that for most households the income from farming remains below the food poverty line, leave alone the minimum existence level. In other words, most households must find a source of income outside the farm.

In areas with low agricultural returns people are more or less forced into wage employment; in other areas where agricultural returns are higher but employment opportunities exist nearby, many people appear to be drawn away from agriculture. Table 5 shows that, on average, 60% of the household income is derived from off-farm

Table 5

**General population: household income
(sh./consumer unit/year)**

| | <i>Total</i> | <i>Bongwe (CL3)</i> | <i>Chilulu (CL3)</i> | <i>Mwatate (CL4)</i> | <i>Kitsoeni (CL4)</i> | <i>Kiband'o* (CL5)</i> | <i>Bamba (CL5)</i> |
|--------------------|--------------|-------------------------|--------------------------|--------------------------|---------------------------|----------------------------|------------------------|
| - farm income | 730 | 643 | 561 | 569 | 983 | 1139 | 488 |
| - wage income | <u>1180</u> | <u>1911</u> | <u>791</u> | <u>1553</u> | <u>642</u> | <u>641</u> | <u>1544</u> |
| - total hh. income | 1910 | 2554 | 1352 | 2123 | 1626 | 1780 | 2032 |

Source: Foeken et al., 1989: 52.

* Kibandaongo

employment.² Only in Kitsoeni and Kibandaongo is this percentage lower - less than 40%. In these two areas the total household income hardly exceeds the minimum existence level. In Chilulu, this level is not even reached. Here, the already low agricultural production is insufficiently supplemented by income from off-farm employment. In the three remaining areas - Bongwe in CL3, Mwatate in CL4 and Bamba in CL5 - households do succeed in realizing sufficient income from off-farm employment.

Households can be classified according to income level and income composition (Table 6). Three income levels were distinguished: below sh.1,000/- per consumer unit ('poor' households), between sh.1,000/- and sh.4,000/- per consumer unit ('middle income'), and sh.4,000/- per consumer unit and over ('rich' households). The middle income households were further subdivided according to income composition; whether primarily farm income, wage income or a mixture of both. Thus calculated, the percentage of poor households amounts to 40% which is very similar to the results of an earlier survey in 1978/79 (Greer & Thorbecke, 1986).

Chilulu has the highest percentage of poor households. Mwatate, Kitsoeni and Kibandaongo also have a large contingent of 'poor' households. Bongwe and Bamba have a large percentage of wage earners and fewer 'poor' households. Kitsoeni has the

Table 6
General population: household economy
(%)

| | <i>Total</i> | <i>District</i> | | <i>Agro-ecological zone</i> | | |
|-----------------|--------------|-----------------|---------------|-----------------------------|--------------|--------------|
| | | <i>Kwale</i> | <i>Kilifi</i> | <i>(CL3)</i> | <i>(CL4)</i> | <i>(CL5)</i> |
| Poor households | 41 | 37 | 46 | 41 | 42 | 41 |
| Farmers | 10 | 10 | 11 | 9 | 14 | 8 |
| Wage earners | 20 | 21 | 18 | 21 | 18 | 19 |
| Mixed economies | 18 | 18 | 17 | 20 | 13 | 19 |
| Rich households | 11 | 14 | 9 | 9 | 12 | 12 |
| | 100 | 100 | 100 | 100 | 100 | 100 |

Source: Foeken et al., 1989: 64

² In most of the rural areas little employment is to be found nearby and workers - the adult men - move to live near the place of work. Because of the living costs involved, this is only an option if the salary is sufficiently high, so that a balance remains to be taken home. Generally speaking, higher household incomes are realized in the case of workers with regular jobs (offering the highest wages, mainly in Mombasa) and workers who still reside in the compound (so that all of the wage income may benefit the household).

largest percentage of 'farmers'; and Kibandaongo the highest percentage of 'mixed' households.

When aggregated by district, the distribution of households according to economy type is largely the same, with the exception that there are more poor households among the sampled cases in Kilifi (Table 6). The difference is not large and results mainly from the many poor households in one area: Chilulu. This does not confirm the generally existing perception that Kwale is the poorer of the two districts, and this undoubtedly has to do with the employment opportunities in two of the Kwale areas studied. In fact, the Rural Household Budget Survey of 1981/1982 also found that household incomes in Kwale were higher than in Kilifi, because of higher incomes from salary and wages (CBS, 1988: 34).

When grouped according to ecological zone there is little or no difference in the prevailing household economies despite the differences in agricultural potential (Table 6). The number of poor households in the three zones studied is virtually the same at 40%, as is the number of affluent households (about 10%). The number of households classified as 'farmers', 'wage earners' and 'mixed' are also very similar, with the exception that there are slightly more farming households in the CL4 zone.

The similar distribution does not mean that the agricultural and economic activities in the zones are the same; obviously they are not. Rather, it means that in each of the zones a similar number of households fail to rise above the poverty line. Among the households that manage to do so, wages form the major income component, and since employment opportunities are not location-bound the similarity in prevalent household economy is not surprising. What is surprising is that in each zone so few households manage to make an existence from farming only.

To summarize, household income averages about sh.10,000 per household per year (sh.2,000 per consumer unit). Wage income contributes 60% to the total, the value of food crops accounts for 25%, cash crops and livestock for the remaining 15%. Compared with earlier surveys there is no increase in income; more than 40% of the rural population still live in dire poverty. Only 20% of the rural population manage to realize an income from agriculture that is above the food poverty line. Households that depend on farming are mostly low income households, and they are generally unable to meet household

needs - with exceptions. Higher incomes are realized through wage employment, not farming.

4. Seasonality in food consumption and anthropometry

According to generally accepted opinion, a so-called 'hunger season' occurs in many parts of the Third World. In the rural areas, food stocks are depleted towards the end of the agricultural year, before the rains start and during the rainy season itself. At the same time, much labour is needed for the new crop. Food is scarce and food prices are high. Moreover, diseases such as malaria and respiratory infections become more frequent at this time. In short, for many rural households, the rainy season is a time of hardship. After the cessation of the rains and once the harvest is in, the situation improves again.

The Kenya Coast is generally characterized by a uni-modal distribution of rainfall, i.e. one wet and one dry season annually. There is a marked dry period in January and February and a rainy season in April and May, the so-called long rains. More inland, a second, moderate, peak of rainfall occurs in October and November (the short rains) after a relatively dry period from July onwards. In order to observe existing seasonal patterns regarding food consumption and nutritional status in Coast Province, 300 households in 6 different locations were visited five times during a period of fourteen months (Table 7).

Table 7
Survey rounds

| <i>survey round</i> | <i>period of data collection</i> | <i>season covered (retrospectively)</i> | <i>season during survey round</i> |
|---------------------|----------------------------------|---|-----------------------------------|
| 1 | 1985, July-August | short rains 1984 | before long rains' harvest |
| 2 | 1985, November-December | long rains 1985 | short rains' land preparation |
| 3 | 1986, February-March | short rains 1985 | end of dry season |
| 4 | 1986, May-June | long rains 1986* | long rains' labour peak |
| 5 | 1986, September-October | long rains 1986 | long rains' harvest completed |

* Pre-harvest

Food Supply and Consumption

Figure 1 (p. 24) confirms that food supply from the own farm is highest in the period immediately after the long rains' harvest, i.e. from July to October. After that, food consumption from the own farm continuously decreases and reaches a minimum shortly before the new long rains' harvest. Curiously, the seasonal variation in purchased foods is as high, if not higher, than the variation in food from the own farm and this more than compensates for the shortfalls before the harvest. Apparently, the rural households in Kwale and Kilifi are able to buy food when they need it, and they are able to do so because of the fact that a large part of the households' income consists of wages.

Examination of the figures for total energy intake over the year reveals several important findings (Figure 2, p. 24). Firstly, food consumption is *not* less during the rainy season (May-June); on the contrary, both energy intake and protein intake reach a maximum during that period and this is the case in each of the locations, with only one exception. Secondly, even when the average level of energy intake shows a peak, it is almost 200 kcal per consumer unit below the required level (which was calculated at 2960 kcal/cu per day). And when average energy intake is at its lowest, the 'deficit' is no less than 500 kcal/cu per day. This points to a level of energy intake that is chronically low. Thirdly, food consumption is lowest from July to October, the time when the harvest takes place and stocks are plenty. Fourthly, more than half of the energy intake comes from food not grown on the own farm; this percentage ranges from 55-60% in July-October to almost 80% in May-June. In other words, most food is bought, not only in the period that food stocks are (nearly) empty but actually the whole year through. Wage income is clearly an important, and probably the most important, coping mechanism to prevent seasonal stress.

It was noted before that Kitsoeni and Kibandaongo had the highest degree of food self-sufficiency. This is clearly reflected in the relatively high amount of energy that comes from homestead production in these two areas.(Table 8, p. 24). Not surprisingly, these areas also show the largest fluctuations in this respect, contributing 80% during and immediately after the harvest in July-August, gradually diminishing to less than 20% before the following harvest in May-June. In the other four areas, the energy derived from home production is low throughout the year.

Table 8 also shows that the average energy intake in the three Kwale areas is higher than in the three Kilifi areas. This is largely caused by the existing differences in household size. The results so far have been calculated per consumer unit thus standardizing to some

Figure 1
Source of food energy,
by survey round (1985-86)
 Source: Niemeijer et al., 1991: 97

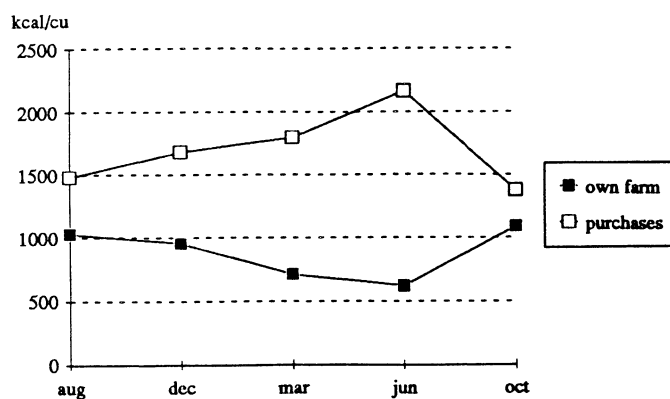


Figure 2
Food consumption,
by survey round (1985-86)
 Source: Niemeijer et al., 1991: 30

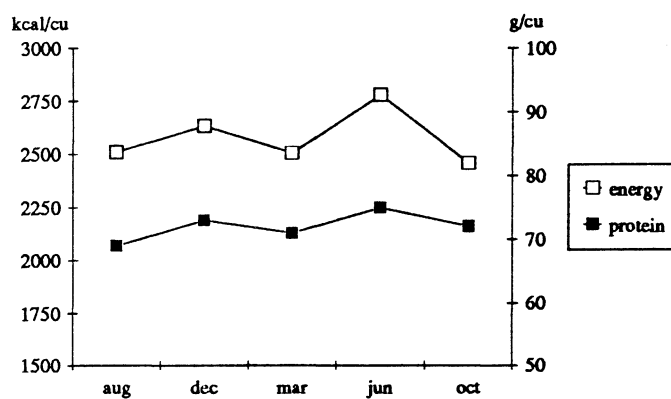


Table 8
General population: energy intake, by research area
 (kcal/consumer unit/day)

| | <i>Bongwe</i> (CL3) | <i>Chilulu</i> (CL3) | <i>Mwatate</i> (CL4) | <i>Kitsoeni</i> (CL4) | <i>Kiband'o*</i> (CL5) | <i>Bamba</i> (CL5) |
|-------------|------------------------|-------------------------|-------------------------|--------------------------|---------------------------|-----------------------|
| - homestead | 437 | 821 | 751 | 1121 | 1542 | 629 |
| - purchases | <u>2176</u> | <u>1573</u> | <u>2106</u> | <u>1210</u> | <u>1120</u> | <u>2018</u> |
| - total | 2613 | 2394 | 2857 | 2331 | 2662 | 2647 |

Source: Niemeijer et al., 1991: 59-60

* Kibandaongo

extent for household size. However, there still remains a strong relation between energy intake and household size - but negative (Table 9). Energy intake per consumer unit drops from 3000 kcal in small households to about 2000 kcal in large households. This kind of effect has also been demonstrated elsewhere and means that in large households more food is prepared but not enough for the greater number of people.

Table 9
General population: energy intake, by household size
(kcal/cu per day)

| <i>Nr. of consumer units</i> | <i>energy intake</i> |
|------------------------------|----------------------|
| <3 | 2966 |
| 3-5.9 | 2605 |
| 6-8.9 | 2427 |
| 9-11.9 | 2092 |
| 12+ | 2146 |

Source: Niemeijer et al., 1991: 99

Nutritional Status

Table 10 presents the weight results for the adult women in the 300 households. Average weight-for-height ranged between 88% and 92% during the five survey rounds, with a low point in May-June. Apparently, the higher food consumption level during this period is not sufficient to prevent a slight fall in nutritional condition at this time of the year, i.e. the period of planting and weeding during the long rainy season.

The dip in nutritional condition of the adult women during the May-June period occurs in each of the six research areas, but to different degrees. The strongest fluctuation was

Table 10
General population: adult women: weight-for-height, by survey round

| | <i>Jul/Aug '85</i> | <i>Nov/Dec '85</i> | <i>Feb/Mar '86</i> | <i>May/Jun '86</i> | <i>Sep/Oct '86</i> |
|-----------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| - average weight-for-height | 92.1 | 90.6 | 90.5 | 88.4 | 90.2 |
| - % women with wh<80% | 13 | 17 | 15 | 23 | 16 |

Source: Niemeijer et al., 1991: 37

found in Kibandaongo. This is an area with a relatively high food production, and the authors attribute the weight-for-height variation to the heavy labour during the cultivation season.

From earlier surveys it is known that the nutritional condition of the children in Kwale and Kilifi is poor, when compared with other districts in the country. According to the Third Rural Child Nutrition Survey, the two districts have the highest percentage of stunted children (height-for-age ratio below 90% of the reference): 39% and 42% respectively. In respect of wasted children (weight-for-height below 80%), Kilifi ranked third and Kwale fifth, both with about 5%. The results of the FNSP survey in 1985/86 by and large confirm these earlier findings: in Kwale, 31% of the children aged 6-59 months was stunted and 6% wasted, while the concomitant figures for Kilifi were 39% and 7%, respectively.¹ There is little difference between the different locations in this survey: both height-for-age and weight-for-height averaged about 91-92 (except Bongwe with a height-for-age of 94.6 and Mwatate and Kibandaongo with a weight-for-height of 95).

The weight-for-height pattern of young and very young children over the year is more or less the same, showing a dip in February-March (Figure 3). This dip occurs earlier than the dip in weight-for-height among the adult women. After the long rains have ended, the children's weight-for-height recovers, be it that the very youngest children take longer.

The drop in weight-for-height in the period December-February goes together with a slight improvement in height-for-age, at least among the children of 2-5 years (Figure 4). This reflects differential growth patterns as regards weight and height among children of this age group. Height growth is at its maximum during the period December-February which effectively is the end of the dry season (Figure 5). On the other hand, weight growth is minimal during this period but reaches a maximum a few months later between March and May (Figure 6), a time of the year when household energy intake is higher than in the rest of the year, but is also the rainy season.

Income level is generally regarded an important determinant of the degree to which seasonal fluctuations are felt. Average energy intake in more well-to-do households is

¹ The original report also contains data on older children (60-119 months) which are not discussed here.

Figure 3
Weight-for-height,
by age group and
survey round
 Source:
 Niemeijer et al., 1991: 120

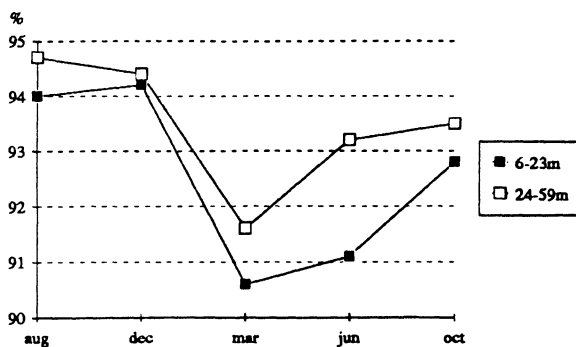


Figure 4
Height-for-age,
by age group and
survey round
 Source:
 Niemeijer et al., 1991: 121



Figure 5
Height growth,
by age group and
period of the year
 Source:
 Niemeijer et al., 1991: 124

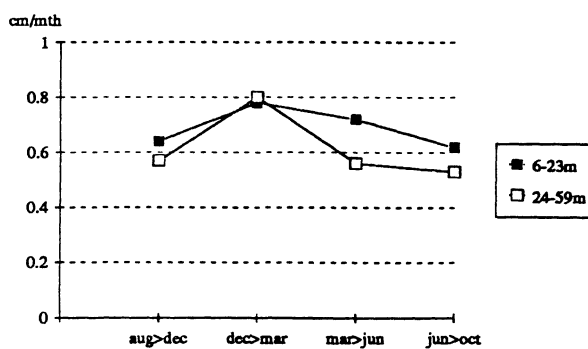
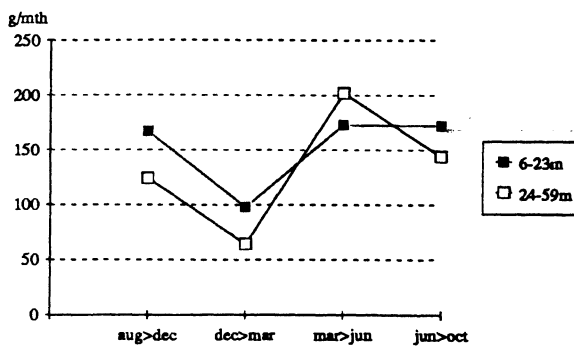


Figure 6
Weight growth,
by age group and
period of the year
 Source:
 Niemeijer et al., 1991: 123



indeed higher than in less prosperous households by about 200 kcal/cu per day.² Moreover, the energy intake peak in May-June is most pronounced in middle-income households dependent on farming. In the poorest households, however, there is little variation in food consumption and in these households rural casual labour is an important means of income to purchase food.

In general, there is a relationship between household income level and nutritional status of women, in that women in richer households have higher weights than women in the poorer households. The women in the higher income groups, however, show stronger weight-for-height fluctuations than the women in the lowest income group. The authors suggest that this may be due to the overall low level of food consumption, coupled with a supposedly low level of physical activity.

Regarding the relationship between household income level and the nutritional condition of the children, two observations can be made. Firstly, the general picture appears to apply to all income categories: between December and February, a spurt in height growth occurs, while from March to May, weight growth accelerates. Secondly, the degree of growth fluctuation varies for different income groups with the fluctuations in the highest income category being smaller than in the other income classes. Children in the two middle income categories have a relatively high seasonality in weight growth, but a low seasonality in height growth. Finally, for children in the lowest income class both weight growth and height growth show relatively high fluctuations and they grow very unevenly throughout the year. According to current insights (see, for instance, Payne 1989: 25), these children are considered to be more at risk.

² For this analysis household income was divided in five categories.

5. Economic and nutritional conditions at settlement schemes

Land distribution is generally regarded an important component of rural development and the Kenya Government indeed made it one of her top priorities after Independence in 1964. In the coastal districts land distribution has, in fact, been one of the main development activities of the past 20 years. The prevailing schemes in the region are so-called Haraka schemes, that is low cost/high density settlements. At present, there are more than 15 schemes, differing greatly as regards size and local conditions.

The coastal settlement schemes have generally received little attention from researchers who have focused mainly on land distribution in the former 'white highlands'. This is regrettable because the coastal schemes are situated on less fertile lands than the highland settlements. In that sense, conditions are closer to those in certain semi-arid areas elsewhere in the country that have recently shown an influx of settlers.

By local standards, the farmers in most coastal schemes operate under rather favourable conditions, having sizeable holdings that are situated on relatively fertile land, and having started out on new land. However, at the same time they experience the same limitations on agriculture, notably agro-ecological and infrastructural restrictions, but also historical restrictions that determine local attitudes to farming. Since the farmers in the schemes have received only moderate development support under the prevailing settlement policy of the government, the schemes mark the potential and the limits of agricultural development under prevailing regional conditions.

The survey covered four schemes: Diani and Ukunda in Kwale District, and Roka and Mtwapa in Kilifi District (Map 1, p. 15). These schemes differ in agricultural potential, plot size and other characteristics. They can be regarded as representative for the older, established schemes in the two districts. Some major characteristics of the schemes are summarized in Table 11. In each scheme one hundred households were visited and

information was collected on socio-economic conditions in the households, on food consumption and on nutritional status. The data collection was phased over a full year in order to allow for seasonal variations. The data from the companion surveys on seasonality discussed in section 3 and 4 were available for comparison purposes.

Table 11
Summary characteristics of selected schemes

| | <i>Diani</i> | <i>Ukunda</i> | <i>Roka (E)</i> | <i>Mtwapa</i> |
|----------------------|--------------|---------------|-----------------|---------------|
| District | Kwale | Kwale | Kilifi | Kilifi |
| Starting date | 1978 | 1968 | 1962 | 1969 |
| Number of plots | 446 | 123 | 843 | 607 |
| Plot size (ha) | 2.0 | 4.8 | 4.8 | 4.8 |
| Soil condition | shallow/deep | deep | shallow/deep | deep |
| Annual rainfall (mm) | 1200-1300 | 1200-1300 | 900-1000 | 1200 |
| Population | Digo/mixed | Digo | Giriana | Giriana/mixed |
| Donor assistance | no | no | yes | yes |

Source: Hoorweg et al., 1991: 21

The scheme households generally avail of farms that are larger in size than the general population, particularly if compared with farms from the same agro-ecological zones. About half the households live in the situation that the scheme planners must have had in mind, resident on the plot of land they own, no more land, no less (Table 12). Many tenants have either sold a part of the plot or rented a part out. Some have even sold out completely. Others have managed to enlarge their land by leasing or buying. The schemes differ considerably as regards plot tenure. In Diani almost half the plots are lying fallow or owned by absentee owners. In the other schemes, 15 to 25% of the plots are owned by absentee owners. In Ukunda considerable land fragmentation has occurred. In Roka and Mtwapa there is a reverse trend, namely towards land accumulation.

Table 12
Settlement schemes: plots

| | <i>Total</i> | <i>Diani</i> | <i>Ukunda</i> | <i>Roka(E)</i> | <i>Mtwapa</i> |
|-------------------------------|--------------|--------------|---------------|----------------|---------------|
| - average farm size (acres) | 9.6 | 4.1 | 8.8 | 14.7 | 10.7 |
| - changes in plot size (%) | | | | | |
| - smaller than original issue | 34 | 39 | 47 | 17 | 34 |
| - original issue | 49 | 50 | 44 | 58 | 43 |
| - larger than original issue | 17 | 11 | 9 | 25 | 22 |

Source: Hoorweg et al., 1991: 35, 45

Food crop production in the schemes covers only 60% of the staple food requirements with maize and cassava being the main crops cultivated. As regards cash crops, these consist mostly of tree crops, i.e. of coconut palms, cashewnuts and to a lesser extent, citrus trees. The scheme households have a higher production of food crops and cash crops than households in the general population (Table 13). Taking household size into account, the estimated income from farming is higher than the minimum existence level in three of the four schemes. In Diani, this is not the case, and, on average, the combined value of food crops and other crops remains below the lower critical level, known as the food poverty line (Table 14). This means that the average household in Diani is not able to exist from agriculture.

Table 13
Settlement schemes: annual agricultural production

| | <i>Total</i> | <i>Diani</i> | <i>Ukunda</i> | <i>Roka(E)</i> | <i>Mtwapa</i> |
|---|--------------|--------------|---------------|----------------|---------------|
| <i>Degree of food self-sufficiency (%)</i> | 61 | 42 | 78 | 54 | 70 |
| <i>Value agricultural production (sh/household)</i> | | | | | |
| - food crops | 3281 | 1824 | 2649 | 2882 | 5768 |
| - farm income | <u>4317</u> | <u>1661</u> | <u>4484</u> | <u>5446</u> | <u>5691</u> |
| Total | 7598 | 3485 | 7133 | 8328 | 11459 |
| <i>Productivity (sh)</i> | | | | | |
| - return/acre ¹ | 753 | 823 | 762 | 537 | 1018 |
| - return/labourer | 3039 | 1936 | 3963 | 2524 | 3952 |

¹ Excludes livestock production
Source: Hoorweg et al., 1991: 113, 119.

Rural households in Kenya, if they can, generally prefer to diversify their resources. To counter the risks inherent to agriculture, one or more members may seek wage employment. In turn, crop cultivation safeguards against unemployment and eases food expenses. Off-farm employment plays a very important role in the economy of rural households in the coast: this is not different in the settlement schemes. Nearly all the households (85%) have income from employment and almost half the households have 2 or more persons with some kind of employment. Employment can take various forms: regular employment, non-regular employment in industry, local casual labour and self-employment. In first instance, it is the men who have to find employment outside their locations, but in the case of the present schemes employment opportunities are relatively

nearby and many workers stay at home. This means that they incur less costs and are able to take a larger part of their income home. Household income in the schemes consists for two-thirds of wage income and for one-third of farm income (the latter does not include the value of food crops). But in this respect there is considerable difference between the schemes, wage income contributing 64% in Ukunda but 84% in Diani (Table 14).

Table 14

Settlement schemes: household income estimates
(sh./consumer unit/year)

| | <i>Total</i> | <i>Diani</i> | <i>Ukunda</i> | <i>Roka(E)</i> | <i>Mtwapa</i> |
|------------------------|--------------|--------------|---------------|----------------|---------------|
| - farm income | 922 | 464 | 1235 | 946 | 1046 |
| - wage income | <u>2339</u> | <u>2463</u> | <u>2171</u> | <u>2054</u> | <u>2671</u> |
| total household income | 3261 | 2927 | 3406 | 3000 | 3717 |

Source: Hoorweg et al., 1991: 119, 125.

Surveys among the general population have estimated that about 40% of the local households fall below the food poverty line taking all income sources into account (Section 3). In the settlement schemes this percentage is about 15%, which is considerably better. Nevertheless, the variation in incomes and income composition is great: the lower third of the households averaging sh.750 per consumer unit; the upper third average sh.7,500 per consumer unit. As among the general population, few households manage to realize a sufficient income from farming only - in this case only 10%. These 'farmer' households barely manage to stay abreast of the 'poor' households who have little or no income, and who depend more on their subsistence crops. This does not mean that there are no other households with sizeable farm incomes, but these households usually avail of income from employment as well. In this way, thirty percent of the households depend on a mixed economy. More than a quarter of the households, however, do not have farm income of any size, and fully depend on wages. Finally, some twenty percent of the households have an income of more than sh.5,000 per consumer unit and this is not only because of higher wage income in these households but also because they are much smaller in size.

The daily diet consists of maize which provides, on average, two-thirds of the energy intake. Although cassava is widely cultivated, it accounts for no more than 10% of the energy intake. In all, carbohydrates contribute 75% of the energy intake; energy intake consists for 30% of foods produced on the own farm. On the whole, the scheme

households have higher energy intakes than the population in general and they also manage to have a greater variation in foodstuffs. An average intake of 2835 kcal per consumer unit, as reported, is below, but not far below, requirements. However, on a given day, 27% of the scheme households had an energy intake of less than 70% of the calculated household requirements (Table 15). The recommended protein intake on the other hand was realized in most households.

Table 15
Settlement schemes: energy intake

| | <i>Total</i> | <i>Diani</i> | <i>Ukunda</i> | <i>Roka(E)</i> | <i>Mtwapa</i> |
|---|--------------|--------------|---------------|----------------|---------------|
| - average energy intake (kcal/cu) | 2825 | 2929 | 3223 | 2494 | 2660 |
| - % households with energy intake below 70% of requirements | 27 | 24 | 16 | 37 | 30 |
| - % of energy intake from own farm | 28 | 21 | 20 | 38 | 33 |

Source: Hoorweg et al., 1989: 143, 147.

Differences exist between the Kwale and the Kilifi schemes, the energy intake per consumer unit being considerably higher in the first district. The Kilifi households consume more foods from the own farm but the households in the Kwale schemes more than compensate this by food purchases. The differences in food consumption occur because of several factors: food habits, resource composition, and - important - differences in household size which make that people in large households have considerably lower energy intakes. The higher intake in the Kwale schemes is, in fact, responsible for the earlier mentioned differences with the general population. Ironically then, it is the schemes with relatively little food production that are the most dependent on off-farm employment and that are doing better nutritionally. This finding is in line, though, with the noted importance of food purchases.

The children in the schemes show a better nutritional status than the children in the general population. There are significant differences in height-for-age between the settlement schemes and general population, but also between the Kwale and Kilifi schemes (Table 16). The differences with the general population are related to differences in height of the mothers and differences in the standard of living. The district differences, however, disappear after correction for mother's stature, meaning that there are no

Table 16

Settlement schemes: anthropometry

| | <i>Total</i> | <i>Diani</i> | <i>Ukunda</i> | <i>Roka(E)</i> | <i>Mtwapa</i> |
|-----------------------|--------------|--------------|---------------|----------------|---------------|
| <i>A) adult women</i> | | | | | |
| - height (cm) | 154.8 | 156.6 | 156.1 | 153.5 | 154.0 |
| - weight-for-height | 92.8 | 91.7 | 95.5 | 92.2 | 92.4 |
| <i>B) children</i> | | | | | |
| - height-for-age: | | | | | |
| 6-23 mths | 93.6 | 94.8 | 94.5 | 92.2 | 93.5 |
| 24-59 mths | 93.2 | 94.5 | 92.6 | 92.7 | 93.2 |
| 60-119 mths | 93.4 | 94.6 | 93.7 | 93.7 | 92.1 |

Source: Hoorweg et al., 1991: 155, 163.

specific conditions at individual schemes that influence the nutritional status of children. Further analysis shows that there is a complex pattern of relations between household size, household income and nutritional status and that the nature of these relations differs in the two districts. Households with different types of economies, however, each appear to pose rather balanced adjustments to the given local circumstances, there being no great difference in energy intake or nutritional status in respective groups of farmers, wage earners and mixed households.

6. Women's social and economic projects

Over the past years the Kenyan Government has pursued a policy to stimulate the participation of women in the process of development. The so-called women's groups have been the main focus of government policies in this regard. These groups are seen as important agents in promoting the participation of women in the economic and social development of Kenya. In Coast Province, the number of women's groups showed a considerable growth during the first half of the 1980s: from about 150 in 1980 to about 800 in 1984, organizing about 40,000 women in the latter year. However, these numbers are still low when compared with Central Province, for example.

The present study examines five groups; three in Mtwapa Settlement Scheme in Kilifi District and two in the adjoining Diani-Ukunda Schemes in Kwale District, organizing 122 women in all. Mtwapa is an example of a well-developed scheme, whereas the Diani-Ukunda schemes are economically less developed.¹ The objective of the study was to investigate the role of these groups in the process of social and economic development, and to assess their contribution to the living standards of the members, their families and the community as a whole. The research focused on the history of the groups; objectives and organization of activities; labour and capital input; output, marketing and profits; social and economic characteristics of members and their families; members' motivations and the groups' relations with governmental and non-governmental organizations.

All five groups were established in response to government initiative. The groups were started by government officers or teachers (Diani-Ukunda) or by educated women having dealings with government officers (Mtwapa). Some of the members had been organized before in so-called work parties, rotating savings clubs and dance groups. The groups usually consist of between 20 and 30 members; only women are allowed to participate. All groups have a formal leadership structure. Members choose a committee consisting of a chairlady, a secretary, a treasurer and five common members. These positions are all

¹ See preceding chapter.

held by women and officially registered at district and local government offices. The groups meet more or less regularly to discuss organizational and financial matters. To become a member of a women's group one pays an entry fee, and the groups often continue to ask for contributions either on a regular basis or occasionally for special purposes. The entry fees are used to register the group at the district headquarters and to open a bank account. Groups also need "pocket money" to finance members' travel expenses and to participate in local *harambee* meetings.

As a general rule, women's groups in the area aim to realize some kind of major project, for example a grain mill, a poultry farm or a community centre. These can easily require capital inputs to the amount of sh100,000 or more. In order to raise this kind of money the groups usually start with activities like farming, handicrafts production, etc. Once they have saved some money they may next start a small business like selling charcoal or water to raise the necessary funds for their main project. Apart from their own contribution, groups can apply for funds from the central governments and district administration as well as private organizations. Such grants may range anywhere between sh10,000 and sh500,000. To qualify for funding, groups should have their own savings or should have started construction of a building for project purposes, as proof of the seriousness of their intentions.

The projects usually aim at two different objectives: to generate an income for the individual members and/or to provide the community with essential services like water or health care. The majority of the members, however, do expect projects to bring them an income, and regard community development objectives as coming second. The private organizations and government officers generally do not question this directly but when judging groups' projects for funding they often stress the communal and educational aspects.

In the settlement schemes about 15% of the female population is organized in women's groups. The groups mainly organize married women who are between 30 and 60 years of age. Younger and older women rarely participate. As a consequence, single women are under-represented and members differ somewhat from the general female population as far as employment and level of income of husbands are concerned. There is some indication that the women's groups do not organize the poor and very poor.

On four of five characteristics examined - age, marital status, employment and level of income of the husbands - the women's groups in Mtwapa and Diani-Ukunda showed

similar patterns. They differ as far as educational level of the members is concerned. In Mtwapa far more literate women are members of the groups than in Diani-Ukunda.

Table 17 offers an overview of the activities of the five groups; the groups differ substantially in this respect. The groups in Mtwapa have been able to realize a multi-purpose centre, a bakery, two water projects, a shop and they provide for health care and family planning consultations and organize children's nurseries. The groups in Diani-Ukunda schemes are engaged in various activities, but have not yet realized any major project. The groups in Mtwapa are apparently more successful than the groups in Diani-Ukunda, certainly in the opinion of the group members themselves and their relatives. The Mtwapa members consider their projects to be useful contributions to the development of their communities. The women in Diani-Ukunda do not regard their group in this way at all.

Table 17
Activities of women's groups

| LOCATION | GROUP | START | ACTIVITIES |
|---------------|-------------------|-------|--|
| <i>Mtwapa</i> | Group 1: Makiwo | 1974 | Construction and management of a multi-purpose building; nursery; tailoring class; water kiosk ; farming; extension on nutrition, child care and family planning; handicrafts production; sale of charcoal |
| | Group 2: Nyayo | 1984 | Production of palm-tree roofs (makutis); water kiosk ; shop; farming |
| | Group 3: Umoja | 1984 | Bakery; farming |
| <i>Ukunda</i> | Group 4: Mvinden | 1979 | Participation of members in adult literacy classes; sale of cotton cloths (<i>kangas</i>); occasional: production and sale of palm-tree roofs (makutis) and food-covers; farming |
| <i>Diani</i> | Group 5: Bahagago | 1984 | Sale of food by chairlady; financial contributions by members |

Source: Maas & van Hekken, 1991: 45

The projects which have been realized so far in Mtwapa have two important characteristics in common. They require relatively large capital inputs and demand qualified labour. Some members should be able to read and write and some projects even necessitate specific job training. These are assets which most of the women's groups

lack. The groups provide part of the required capital inputs themselves but substantial donations from outsiders are essential. Equally important are the necessary training facilities as well as assistance with bookkeeping, marketing, and general management of the group. Most of the projects in Mtwapa are co-financed by outsiders (Kenya Government, private organizations) who also provide for the necessary training and supervision, whereas the groups in Ukunda and Diani until then had not received any such assistance.

In general, the expectation and hope to get a grant one day plays an important part in the motivations of the members to continue. To get access to governments services and private organizations is, it seems, largely a matter of chance - someone living in the same area as the group perhaps having some contacts with the 'outside world' and willing to act as broker between the group and the funding organization. This at least is the pattern that appears from the histories of the Mtwapa groups. Once a group has been provided with a grant or received some form of assistance, funds and aid come more easily. This process is also facilitated if a group is situated not far from the main road and is easily accessible from Mombasa. This, in turn, creates much frustration among the other groups in the area, who are not as well known and do not understand why the money should always go to the same groups. For groups in the hinterland of Kwale and Kilifi access to private funding organizations is probably even more difficult.

The Diani-Ukunda groups clearly lacked the right contacts - members or non-members who are capable and willing to promote the interests of the groups. However, the low profile of the women's groups here also has to be attributed to the lesser level of government services offered in the district.

The ability to read and write is another important factor in group activities. Many women are excluded because illiteracy is too severe a handicap, or they excuse themselves because they feel not capable of managing group projects. Moreover, the degree of literacy of the members is an important factor in the ability or inability to attract funds. The desired projects generally require qualified labour and it is obvious that those who select a group for funding require at least some members to be literate, and this must also make the Diani-Ukunda groups less attractive to donors.

The difference in educational level between the Mtwapa and Diani-Ukunda groups follows from the different histories of the respective groups. In Mtwapa the groups were formed on the initiative of local women with formal or informal leadership positions and

who already had contacts with government officials or representatives of local agencies. Usually these leaders were strongly motivated to promote the group's interest; their commitment was an important factor in obtaining funds. In Diani-Ukunda the process has been quite different. It is government policy to approach adult classes and stimulate the women to form a group. The women's groups in Diani-Ukunda were formed in precisely this way. Educated women do not attend adult literacy classes and as a consequence, they tend not to participate in the groups formed in this way. The educated women who happen to participate are often the teachers of the groups.

In sum, financial and technical support is one of the main conditions for the success of the women's groups in the area. Outside assistance has become more or less a necessity considering the type of projects that the groups aim to realize. Furthermore qualified personnel is often required to keep the projects going. Since group members usually are not qualified, they need training, which again can only be affected with outside assistance.

7. Nutrition and dairy development

Dairy farming in Kenya is an important component of the national economy. The number of dairy cattle is about 2.5 million out of a total cattle population of well over 10 million. National milk production is estimated at about 1.6 billion litres per year and the value of milk production ranks second to that of coffee. The production is realized for 60% by smallholders, 30% by large-scale dairy farms and the remaining 10% by the pastoral population in the more remote areas of the country. The government is actively stimulating the intensification of dairy farming, also in areas which were previously regarded unsuitable, such as Coast Province. As part of this strategy the National Dairy Development Programme (DDP) extended its activities to Kilifi District.

The objective of the Dairy Development Programme is to improve dairy management on smallholders' farms, mainly through the introduction of so-called 'zero-grazing'. The experience in Kilifi District is of particular interest because it stands as an example for areas with a relatively low ecological potential. Furthermore, milk is a valuable commodity because of its nutritional characteristics, particularly in relation to child nutrition and it was considered of interest to study the effect of an increase in milk availability on milk consumption as well as the nutritional status of pre-school children.

Constraints for intensive dairy farming in Kilifi District are quite different from those in the high-potential areas of Kenya. Cattle diseases such as trypanosomiasis and East Coast Fever are more prevalent. Temperatures are higher and soil fertility is lower. Rainfall is less predictable, which makes fodder crop cultivation more complicated and fodder conservation necessary, while farmers with former experience in dairy farming are rare. On the other hand, there are the advantages of a high price for milk and of marketing opportunities in the urban and tourist centres.

In Kilifi District two dairy farming systems are being promoted by DDP: a zero-grazing system for the wetter parts of the district and a semi-zero-grazing system for the drier

areas. The two DDP-systems are capital and labour intensive and depend more on the use of purchased inputs and extension services than traditional dairy systems. The results of the zero-grazing units are promising but farmers following the semi-zero-grazing system have to cope with a high mortality rate of their grade cattle and also face a shortage of fodder.

For the purpose of this study five groups of households were designated: DDP-farmers, independent dairy farmers (neighbours of DDP-farmers keeping cattle but not taking part in the programme), livestock farmers (traditional farmers in the drier part of the province), DDP-customers (rural households regularly buying milk from DDP-farmers) and the general population (a comparison group of rural households). The study groups were located in the CL3 and CL4 zones in Kilifi District, with the exception of the livestock farmers that were taken from the standing study population of the seasonality study (Section 3) in two CL5 locations (Bamba and Kibandaongo).

In all respects, milk production is much higher in the DDP-group than at other dairy farms while there is also a much higher percentage of cows in lactation at the DDP-farms (Table 18). Milk production by DDP-farmers shows important divisional differences and is much higher in Bahari Division. With more than sh.5 per litre, the milk price in this division is much higher than in Kaloleni and Ganze, while the farms are close to the main road and the major urban centres along the coast. This facilitates not only the marketing of milk outside the location but also the purchase of necessary inputs. The farms can also be reached more easily by extension services. The farmers in Kaloleni and Ganze Divisions do not enjoy these favourable circumstances. They depend more on local demand and have to accept lower prices. This is true for DDP-farmers as well as for other dairy farmers.

Table 18
Average daily milk production and cows in lactation

| | DDP-farms N=30 | Indep. dairy farms N=25 | Livestock farms N=11 |
|---------------------------------|-------------------|----------------------------|-------------------------|
| <i>Milk production (litres)</i> | | | |
| - per farm | 9.4 | 5.1 | 3.8 |
| - per lactating cow | 4.8 | 1.9 | 0.7 |
| - per cow present | 3.4 | 0.6 | 0.2 |
| <i>Cows in lactation (%)</i> | 68% | 34% | 36% |

Source: Leegwater et al., 1991: 43

Within the group of DDP-farmers two sub-groups can be distinguished: one formed by farmers who employ labourers and one group who do not employ farm labour but run the dairy unit with family help (Table 19). The households employing labourers, generally keep more cattle, are wealthier and more involved in off-farm activities than the households not employing labourers. The latter depend more on farming for their livelihood and in these households dairy farming competes with other economic activities, something which is not the case in the households who have labourers to do the work.

Table 19

Main characteristics of DDP-households, employing and not employing labourers (average per household)

| | Employing labourers N=14 | Not employing labourers N=14 |
|----------------------------------|--------------------------------|------------------------------------|
| - Number of dairy cows | 3.9 | 1.9 |
| - Number of dairy labourers | 1.4 | 0 |
| - Household income (sh/cu/year): | | |
| - from farming | 3175 | 3195 |
| - from off-farm employment | 3461 | 756 |

Source: Leegwater et al., 1991: 47.

Farm size and household size of the DDP-farmers are remarkably high compared with that of the general population (28.5 vs. 9.0 acres; 14.9 vs. 10.0 members). The average household income is also high and nearly all DDP-farmers belong to the group of wealthy and middle-class households. The higher incomes primarily consists of wage income; income from livestock accounts for only a third of total household income. The same applies in the case of the group of independent dairy farmers with which the DDP-farmers generally have much in common.

The local milk clients of DDP-farmers - the so-called DDP-customers - consist primarily of households of wage earners with permanent jobs in the rural areas, be it in the non-agricultural sector or with the government. On average they buy about one litre of milk per day (Table 20). This is less than the milk consumption per DDP-household, but because the customers have smaller households, milk consumption per consumer unit is higher. Compared with the DDP-households and their customers, the milk consumption

Table 20

DDP-survey: household milk consumption
(ml/day)

| | DDP- households (N=30) | Customer households (N=24) | General population (N=90) |
|---------------------------------------|------------------------------|----------------------------------|---------------------------------|
| Average consumption per household | 1385 | 980 | 56 |
| Average consumption per consumer unit | 200 | 249 | 12 |

Source: Leegwater et al., 1991: 52

of the general population¹ is very low indeed.

The energy intake of the DDP-households is virtually the same as that of the general population, and covers about 90% of the calculated requirements (Table 21). However, the results are confounded by the larger household size of the DDP-farmers, which tends to depress intake figures, as mentioned before (p. 25). After statistical correction for this, the energy intake of DDP-farmers is nearly 220 kcal above that of the general population and similar to the DDP-customers. This is in line with the differences in household income with the general population. In respect of protein intake, the average value of each group is well above the safe level of 50 g edible protein, based on international recommendations (WHO/FAO/UNU, 1985).

The nutritional status of pre-school children, aged 6-59 months, in DDP-households and among the DDP-customers is better than among children from the general population (Table 22, p. 44). It is difficult to say what aspect of the household circumstances

Table 21

DDP-survey: daily energy and protein intake and household size

| | DDP-farmers (N=30) | DDP-customers (N=24) | General population (N=86) |
|-----------------------|-----------------------|-------------------------|------------------------------|
| Household size (cu's) | 8.9 | 6.4 | 6.0 |
| Energy (kcal/cu) | 2652/2855* | 2827/2855* | 2637 |
| Protein (g/cu) | 75 | 84 | 68 |

* Figures after correction for larger household size (70 kcal/cu)

Source: Leegwater et al., 1991: 50

¹ The 'general population' consists of the households from the seasonality survey located in Kilifi District in the same agro-ecological zones in which the DDP-households are found, i.e. Chilulu (CL3) and Kitsoeni (CL4).

Table 22
DDP-survey: anthropometric indices of pre-school children

| | DDP-farmers N=44 | DDP-customers N=39 | General population N= 138 |
|--------------------------|---------------------|-----------------------|------------------------------|
| <i>Height-for-age</i> | | | |
| - average | 93.7 | 94.5 | 91.7 |
| - % children with h-a<90 | 23 | 13 | 33 |
| <i>Weight-for-height</i> | | | |
| - average | 94.2 | 94.4 | 91.7 |
| - % children with w-h<85 | 9 | 8 | 21 |

Source: Leegwater et al., 1991: 54

exactly is responsible for this, the groups differ not only in milk consumption but also in household income, household size and educational level. In fact it is very likely that better child care in general, of which milk consumption is but one aspect, is responsible for the better nutritional status of the children.

8. The FNSP-studies in Coast Province: main conclusions and recommendations

One of the main reasons for the coastal studies were the indications of a greater incidence of rural poverty compared with the rest of the country and corresponding food and nutrition problems among the local population. The FNSP studies attempt to assess, on the one hand, the seriousness of the situation and, on the other hand, the success of different kinds of development efforts in improving the situation. In the first part of this chapter the main research findings of the combined studies are itemized; the second part contains the main recommendations formulated at the conclusion of the seminar.

8.1. Main findings

Income and Resources

General

- The income of rural households in the coastal districts is generally low. The present findings differ little from earlier surveys in 1977 and 1981 and it must be estimated that 40% of the households fall below the food poverty line of sh.1000 per consumer unit per year. These households have insufficient income to assure the necessary food intake, leave alone a minimum existence level.

General

- Income differences are substantial: about 30% of the households realize less than sh.750 per consumer unit; another 30% have more than sh.2,500 per consumer unit. Household income, on average, consists for 60% of wages, 25% of cash crops and livestock and 15% of the value of food crops.

General

- Income from farming activities is generally low and but a small group of households, only 10%, depends mostly on farming and is able to realize a minimum existence in this way. Food production is modest and few households

manage to grow sufficient food to cover household needs. The average degree of food self-sufficiency was less than 50%. In years with 'normal' rainfall like 1985/86, only 10% of the households succeed in providing itself with the staple foods needed for the year.

General

- Cash crop and livestock production offer a small income for the rural households in the two districts. The main cash crops are coconuts, cashewnuts and citrus fruits and they comprise only about 5% of the total household income; this percentage being somewhat higher in the wetter zones than in the drier zones. In the relatively dry hinterland, livestock is of importance, although it still contributes less than 20% to the household income.

General

- Income from off-farm employment contributes about 60% to the average household income. The jobs consist of a mixture of regular employment, self-employment and casual labour, mostly outside the location. About a third of the households depend on wage income for their livelihood with little or no income from farming.

General

- Ecological and infrastructural factors are important to explain the poor showing of agriculture but the role of individual household strategies must not be underestimated. Many households aim to diversify the resource base as much as possible to protect themselves from the uncertainties of agriculture as well as uncertain wage income. Because of the critical importance of wage employment in this, differences in household income and living conditions between agro-ecological zones are less than expected. The variation *within* agro-ecological zones is much greater and more important than the variations *between* zones.

Settlements

- The tenant households generally avail of farms that are larger than in comparable agro-ecological zones. At the same time, there is a considerable differentiation in type and size of land ownership. Only half the settler households are resident on the plot allocated, and own no more land, no less. Almost a third of the tenants have either sold a part of the plot, rented out a plot or obtained a small plot later. Some have sold out completely. A smaller number (about 15%) have managed to enlarge their land by leasing or buying but the schemes differ considerably in this respect.

- Settlements* • Overall income in the settlements is almost twice that among the general population, with wage incomes accounting for about 60% of this. Consequently the percentage of households below the food poverty line is small, only 10-15%.
- Settlements* • The settlement tenants achieve a slightly higher degree of food self-sufficiency, namely 60%, but this still leaves about 40% of the required food to be bought. Cash crop production in the settlement schemes is three to four times higher than among the general population. However, there is no higher productivity per acre and per labour unit compared with the farms outside the schemes in the same agro-ecological zones.
- Settlements* • Wage income in the settlement schemes is much higher than among the general population. This is mainly the result of the favourable location of the schemes, along the coastline with tarmac roads connections that offer easy access to off-farm employment, in Mombasa in particular.
- Dairy Farming* • The Dairy Development Project has demonstrated the feasibility of dairy farming in areas with a relatively low ecological potential. Possibilities exist to realize a substantial income from small-scale dairy farming in the wetter parts of the districts; areas where before only few farmers were successful in keeping grade dairy cattle.
- Dairy Farming* • The value of livestock production in the DDP-households is about twice as high as in the households keeping livestock in the hinterland and far higher than among the general population in the same agro-ecological zones. Milk production in the DDP-households, both per farm and per lactating cow, is substantially higher than among other farmers keeping livestock.
- Dairy Farming* • Nearly all DDP-farmers belong to the group of wealthy and middle-class households. These households are wealthy, because of high incomes from off-farm employment, the same as in the settlement schemes. Wage income accounts for about 40% of the household income; dairy farming about one third.
- Women's Groups* • The number of women organized in groups is still low in comparison with other parts of the country. Groups generally have a multi-purpose character, with such activities as communal farming, trading, and community development but,

as a rule, groups aim to realize some kind of major project that requires large capital inputs.

*Women's
Groups*

- Women's groups usually aim at two aspects of rural development: to provide the community with certain essential services but also to generate an income for the individual members. For most members the second objective is probably the more important, but experience learns that they are usually disappointed in this respect.

*Women's
Groups*

- The success of the groups in realizing projects depends to a large extent on external funding and support. A major bottleneck is the absence of members with basic education and training to manage the project. The groups in Kwale seem rather unsuccessful, probably for a variety of reasons.

*Rural
Development*

- Compared with the general population the income level of settlement tenants and DDP-farmers is considerably higher than among the general population. However, this finding cannot be attributed directly to the development activity as such, since both groups draw the main part of their income from wage employment.

Food Consumption and Nutritional Status

General

- Energy intake in the general population is generally below required levels, reaching only 87% of requirements on average. Protein intake is generally well above recommended levels. Food consumption derives for one-third from home-produced foods and for two-thirds from purchased foodstuffs.

General

- Food consumption is strongly related to household size and varies from 3000kcal/cu in small households to 2100kcal/cu in very large households. Although more food is prepared in large households this is not sufficient to compensate for the greater number of people.

General

- The population does not show the well-known cycle of low food consumption and poor nutritional status during the rainy season. On the contrary, during the long rains food consumption is highest which accords with the higher energy requirement during the cropping season, a time of high labour requirements. The

households are in a position to do this because of wage incomes and because maize meal is available cheaply as a result of government policy.

General • Nonetheless, the higher food intake can not prevent a reduction in the women's nutritional condition during the long rainy season, i.e. the time of land preparation, planting, weeding, etc. On average, the women's weight-for-height, which is already low (around 90% of the reference), drops to about 88% during the wet season, which corresponds with a weight loss of between 1.0-1.5 kg, on average.

General • The findings in respect of the nutritional status of young children, aged 6-59 months, are not different from those of earlier surveys and confirm a relatively poor nutritional situation. About 7% of the children shows serious wasting indicative of momentary imbalance; and 36% of the children shows signs of stunting, reflecting a poor health and nutrition history.

General • The weight status of children does not show regular seasonal fluctuations as among the mothers, because length and weight show different growth patterns over the year. During the dry season from December to March there is an accelerated height growth with weight growth lagging behind, such that weight-for-height declines. The arrears in weight, in turn, are compensated by a weight spurt in the March-June period.

General • There is little or no difference between agro-ecological zones in respect of food consumption and nutritional status but there are differences between income groups. However, it is not the women in the lowest income class that show the greatest weight variation but the women from the better incomes groups. This could be related to the fact that the latter women have larger food areas to cultivate. The children from the lowest income group show indeed the largest fluctuations in length and height growth, without having a poorer overall nutritional status, however. In the better-off households the children's growth is more balanced throughout the year.

Rural Development • Compared with the general population, the average energy intake in the tenant households and in households of DDP-farmers, is substantially higher - about 200-300kcal/cu. In the general population, food consumption is rather one-sided and consists for three-quarters of cereals. In the project populations, cereals

comprise 65% of the diet, but because total energy intake is higher there, the absolute level of energy from food groups other than cereals is more than 50% higher than among the general population.

- Rural Development*
- The nutritional status of the children in the project populations is better than in the general rural population. In the settlement schemes, 5% of the pre-school children (6-59 months) was found to be wasted and 26% stunted. In the DDP-group, these figures were 0% and 23%, respectively. Despite this improvement in the two project populations, the percentage of these children being wasted or stunted still equals the national averages.

8.2. Recommendations

- food supply*
- Although it is widely admitted that soil conditions as well as climatic conditions do not permit full food self-sufficiency, at the same time it is generally recognized that a number of measures can be taken to increase food production.

- drought resistant crops*
- Maize is the dominant food crop, even though it is not very well adapted to the local circumstances in Coast Province. It was advised that the range of food crops should be widened; especially the cultivation of more drought-resistant crops - such as cassava, sorghum, millet, simsim, groundnuts, soya beans, cowpeas, pigeon peas, yams, and arrow roots - should be encouraged.

- extension cultivated areas*
- Areas used for food crop cultivation are relatively small and might, where possible, be extended. Here lies a task for the men, for instance by clearing the bushy parts of the fields. This may also reduce the damage caused by wild animals and birds. Men should also be involved in measures to stop further soil erosion.

- small-scale irrigation*
- The unreliability of rainfall seriously hampers food production. Irrigation possibilities are few because of the seasonal character of most rivers. Nevertheless, wherever possible, small-scale irrigation for, for instance, vegetable gardens should be encouraged. A positive side-effect of such measures could also be a less one-sided diet. Farmers might also be assisted at the time of planting, with rain forecasts through the media in the local languages.

- agricultural inputs*
- Productivity of food crop cultivation could be raised in several ways, such as more use of fertilizers and manure, better control of weeds, and the introduction of animal traction and other ways of mechanization. Extension services should be intensified and be directed to education and stimulation of such improvements. In general, higher farm productivity can only be realized through higher inputs; in other words, farmers need money to purchase these items and credit facilities should be provided with easy terms. Still, for many households such investments in food crop cultivation may not be economically viable because of the availability of maize meal at cheap prices. However, it must also be pointed out that without the availability of cheap maize flour throughout the district, the nutritional condition of the rural population probably would be worse than it is now.
- food storage*
- Beside measures to raise the level of food production, household food supply may also be improved by introducing simple (i.e. traditional) methods of food storage and food preservation. An example of such methods concerns the boiling and drying of the leaves of the edible pea-plant. In this way, it can be stored for over twelve months.
- food production settlements*
- Food production in the settlement schemes is higher than among the general population, but could be raised here as well. This can partly be realized with the help of the same measures as mentioned above, and partly by preventing the neglect of land. The latter gives some reason for concern. Tenants should be selected in such a way that maximum utilization of the land is guaranteed as much as possible. Redistribution of neglected plots may also be considered.
- marketing cash crops*
- Cash crop production is hampered by the same physical and cultivation constraints as food crop production, although it is clear that particularly in the wetter zones, potential for cash crops exists. In general, what has been said about measures to increase food crop production applies to cash crop production as well. But there is another problem: except for coconuts (copra), there is no assured market for cash crops in the two districts. Better marketing facilities for products such as cashewnuts and fruits should be explored, including the creation of agro-based industries in the areas.

*dairy
production*

- The DDP-project should be expanded, cattle keeping in general should be encouraged and more bulls should be made available for use by farmers. A precondition, however, is that animal disease control must be intensified in order to reduce loss of animals. Farmers should receive better instruction on the care of their animals and be motivated to increase milk production. In order to increase the profitability for the farmers, the cultivation of fodder crops should be increased, for instance by integrating the project with agro-forestry and by creating nurseries for the fodder plants. Conservation of fodder crops should be stimulated, so that fodder can be used during the dry season. Moreover, the marketing of milk should be improved, for instance through decentralization of the marketing or through co-operative marketing groups of farmers.

*off-farm
employment*

- All being said and done, the potential for food crop production remains limited given soil and climate conditions. It is therefore recommended to focus future development efforts not only on agriculture, but also to consider wage employment as an important priority. In order to raise the general level of living in this part of the country, a strong policy directed towards increasing off-farm employment, especially in the so-called informal sector, is necessary. In this context, the creation of agro-based industries was already mentioned. Infrastructural improvements, all-weather roads in particular, are also essential, because this may encourage commuting and curb rural-urban migration. In that way, a greater part of the wages may reach the household.

*women's
farm labour*

- During the harvesting period women face a very hard task, because there is a lot of agricultural labour to be done, while the regular household tasks continue. During these peak labour periods, there may be less time for cooking and child care, possibly to the detriment of the health and nutritional condition of the children. Thus, from a nutritional point of view, some relief of the women's work load should be encouraged. Some measures haven been mentioned already (encourage men to do agricultural work, reduce the number of children), while others might be found in reducing the distance from the homestead to water sources (especially in the drier areas) and in easier provision of fuel (planting trees, for instance).

*women's
groups*

- To improve the functioning of these groups, a number of policy measures were suggested. The Community Development Officers (CDO's) should advise women groups on leadership, competence, education and literacy level. The

literacy level of existing groups should be raised and training (book-keeping, management) intensified. The women's groups should be legalized, so that credit facilities can be improved. The CDO's should explore the possibilities for co-operative marketing of commodities provided by the women's groups, as well as the possibilities for funding. Finally, the intersectoral collaboration among the officers dealing with women's groups should be intensified.

*family
planning*

- The level of food consumption is not only determined by the households' own food production and by its ability to buy food, but also by the number of mouths to be fed. People in smaller households eat more than people in larger households, all other factors being equal. This is one reason (beside the obvious reasons related to the pressure on the land) that the introduction of family planning should be intensified; the more so because the acceptance rate of the family planning programme in Kwale and Kilifi Districts is very low. Birth spacing is one of the topics that should be stressed.

*health
services*

- Improvement of the health situation and nutritional condition of the children is primarily an extension task. Maternal health care should be improved. Women should be made aware of the danger of malnutrition. Issues like good health or better child development might be raised during such campaigns. Women groups can be used as entry points for passing knowledge on issues pertaining to health and nutritional condition of children.

research

- During the discussions, some suggestions or needs for further research were expressed:
 - on eating habits, food taboos and other issues that impede the nutritional condition of the population and the introduction of other food crops;
 - on child survival in Kwale and Kilifi Districts, in relation to marriages and abandoning of children;
 - on the question why people abandon or sell their plots in settlement schemes;
 - on further settlement schemes; and
 - on the feasibility of projects undertaken by women's groups.

Annexes

Annex 1

Seminar programme

Wednesday - 28th November

- Morning - Arrival participants and registration
- 12.00 - Official Opening
- 12.30 - General introduction to Coast studies
- 13.00 - Lunch Break
- 14.00 - Presentation: Socio-economic profile of general study population

Seasonality

- 15.00 - Presentation
- 16.00 - Tea Break
- 16.30 - Discussion
- 17.30 - End of session
- 17.30-18.00 - Group meetings (familiarization)

Thursday - 29th November

Settlement Schemes

- 9.30 - Presentation
- 10.30 - Discussion
- 11.30 - End of session / Coffee Break

Women's groups

- 12.30 - Presentation
- 13.00 - Discussion
- 13.30 - End of session / Lunch Break

Dairy development

- 14.30 - Presentation
- 15.30 - Discussion
- 16.30 - End of session / Tea Break
- 17.30-19.30 - Group meetings (discussion)

Friday - 30th November

- 9.00 - Group meetings (formulation recommendations)
- 11.30 - Presentation of recommendations
- 12.30 - Summary and conclusions
- 13.30 - Closing
- 14.00 - Lunch Break
- 15.00 - Departure

Annex 2

List of reports

1. On Seasonality

Reports published earlier:

- FNSP report No. 10: *Regional and seasonal food problems in Kenya*, by T. Kliet (1985).
- FNSP report No. 27: *Seasonality in the Coastal Lowlands of Kenya, Part 1: research objectives & study design*, by J. Hoorweg, T. Kliet & R. Niemeijer (1988).
- FNSP report No. 28: *Seasonality in the Coastal Lowlands of Kenya, Part 2: introduction to seasonality*, by D. Foeken & J. Hoorweg (1988).

Reports presented at seminar:

- FNSP report No. 32: *Seasonality in the Coastal Lowlands of Kenya, Part 3: socio-economic profile*, by D. Foeken, P. Leegwater, R. Niemeijer, W. Veerman & J. Hoorweg (1989).
- Draft of *Seasonality in the Coastal Lowlands of Kenya, Part 4/5: food consumption and anthropometry*, by R. Niemeijer, D. Foeken & W. Klaver.

2. On Settlement Schemes

Report presented at seminar:

- Draft of *Economic and nutritional conditions at settlement schemes in Coast Province, Kenya*, by J. Hoorweg, R. Niemeijer, D. Foeken, W. Okello & W. Veerman.

3. On Dairy Development

Report presented at seminar:

- Draft of *Nutrition and dairy development in Kilifi District*, by P. Leegwater, J. Ngolo & J. Hoorweg.

4. On Women's Projects

Report presented at seminar:

- Draft of *Women's social and economic projects; experiences from Coast Province*, by M. Maas & N. van Hekken

5. Related studies

Reports published earlier:

- FNSP report No. 22: *Protein-energy malnutrition and the home environment: A study among children in Coast Province, Kenya*, by C. Peters & R. Niemeijer.
- FNSP report No. 30: *Farming systems and food security in Kwale District, Kenya*, by C. van Oosten

Annex 3

List of participants

| | | |
|----------------------|------------------------------------|---------------------------|
| Dr. O. Oginga | Provincial Planning Officer | Mombasa |
| Mr. A.H. Huitzing | Councillor | Netherlands Embassy, Nbi. |
| Dr. J. Hoorweg | Programme Director | ASC, Leiden |
| Mr. J.O. Onyimbo | Provincial Director of Agriculture | Mombasa |
| Dr. O.E. Omolo | Provincial Medical Officer | Mombasa |
| Mr. G. Ogola Soti | Provincial Statistical Officer | Mombasa |
| Dr. V. Situma Khaoya | Provincial Land & Settlement Off. | Mombasa |
| Mr. G. M. Wainaina | Provincial Animal Production Off. | Mombasa |
| Mr. H. A'jwang | District Development Officer | Kwale |
| Mr. K. Nyambu | District Agricultural Officer | Kwale |
| Mr. F. K. Ng'ang'a | District Statistical Officer | Kwale |
| Mr. J.C. Amoi | District Statistical Officer | Kilifi |
| Mr. S. Nyamanga | District Programme Officer | Kwale |
| Mrs. J.M. Rondo | District Programme Officer | Kilifi |
| Mr. S.N. Wanyoike | District Veterinary Officer | Kwale |
| Mr. W. N. Okwara | District Veterinary Officer | Kilifi |
| Mr. M. S. Njagi | District Livestock Production Off. | Kilifi |
| Ms. M. Locho | District Nutrition Officer | Kwale |
| Mr. D.M. Ndirangu | District Social Development Off. | Kwale |
| Ms. E. Kagiri | Social Development Officer | Kwale |
| Ms. C. Mutiso | Home Economics Officer | Kwale |
| Mr. O. A. Omolo | Land Adj. & Settlement Officer | Kwale |
| Mr. A.N. Chibudu | Animal Production Officer | Kwale |
| Ms. C. E.S. Kambi | FLTC Supervisor | Kilifi |
| Ms. E. Mwenda | Senior Nutrition Assistant | Kilifi |
| Mr. B. C. Ochieng | Hospital Secretary | Malindi |
| Mr. S.L. Asena | Senior Economist | OP, Nairobi |
| Mr. F.E. Chege | Assistant Director Planning | MRST, Nairobi |
| Mrs. J.B.K. Meme | Nutritionist (AG Chief) | MH, Nairobi |
| Mrs. S. Sokoto | Social Welfare Officer | MCSS, Nairobi |
| Miss P. L. Ngure | Social Development Officer | MCSS, Nairobi |
| Dr. K. Havemann | Project Coordinator Danida FLTP | MCSS, Nairobi |
| Mr. F.C. Mng'ong'o | Planning Officer | MOA, Nairobi |
| Mrs. L.I. Shitakha | Planning Officer | MPND, Nairobi |
| Mr. J. Mwangi | Planning Officer 1 | MPND, Nairobi |
| Mr. W. Okello | Planning Officer | MPND, Nairobi |
| Mrs. A. Ngesa | Nutritionist | AMREF, Nairobi |
| Mr. J. S.M. Ngolo | Computer Programmer | CBS, Nairobi |
| Ms. R. Shori | Statistician Nutritionist | CBS, Nairobi |
| Prof. P. Shalo | Senior Researcher | EU, Njoro |
| Ms. N. Muhia | Lecturer | EU, Njoro |
| Ms. P. M. Madeda | Research Assistant | EU, Njoro |
| Mr. S. Rutto | Senior Assistant Registrar | EU, Njoro |
| Dr. M.A. Jama | Research Fellow | IDS, Nairobi |
| Dr. J.W. Muita | Paediatrician/lecturer | ANP, Nairobi |
| Ir. P. Leegwater | Researcher | ASC, Leiden |
| Drs. D. Foeken | Researcher | ASC, Leiden |
| Drs. R. Niemeijer | Senior Researcher | ASC, Leiden |
| Mr. J.C. Cappon | FNSP Field Coordinator | FNSP, Njoro |

Annex 4

List of key participants

| | | |
|--------------------|------------------------------|---------------|
| Mrs. L.I. Shitakha | Planning Officer | MPND, Nairobi |
| Mr. J.C. Cappon | FNSP Field Coordinator | FNSP, Njoro |
| Mr. H. A'jwang | District Development Officer | Kwale |
| Mrs. J.M. Rondo | District Programme Officer | Kilifi |
| Mr. A.N. Chibudu | Animal Production Officer | Kwale |
| Mr. W. Okello | Planning Officer | MPND, Nairobi |
| Prof. P. Shalo | Senior Researcher | EU, Njoro |
| Dr. J.W. Muita | Paediatrician/lecturer | ANP, Nairobi |
| Dr. M.A. Jama | Research Fellow | IDS, Nairobi |
| Ir. P. Leegwater | Researcher | ASC, Leiden |
| Drs. D. Foeken | Researcher | ASC, Leiden |
| Drs. R. Niemeijer | Senior Researcher | ASC, Leiden |

Abbreviations:

| | |
|-------|---|
| AMREF | African Medical Research Foundation |
| ANP | Applied Nutrition Programme |
| ASC | African Studies Centre |
| CBS | Central Bureau of Statistics |
| EU | Egerton University |
| FNSP | Food and Nutrition Programme |
| IDS | Institute for Development Studies |
| MCSS | Ministry of Culture and Social Services |
| MH | Ministry of Health |
| MOA | Ministry of Agriculture |
| MPND | Ministry of Planning and National Development |
| MRST | Ministry of Research, Science and Technology |
| OP | Office of the President |

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